Reconciling care quality constraints and management constraints: the problem of financing healthcare production in Algeria (econometric study with the PCA method)

التوفيق بين قيود جودة الرعاية الصحية وقيود التسيير: مشكلة تمويل إنتاج الرعاية الصحية في الجزائر (دراسة قياسية بطريقة ACP)

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Abstract:

Providing high-quality health care requires significant financial resources, and in light of the scarcity of resources that Algeria knows, it has become imperative to reconcile quality and management constraints by finding effective ways of financing.

Hence the idea of the research through which we try to highlight the most important elements that must be focused on, to achieve the required quality level. These elements were determined by applying the principals components analysis (PCA) method to a sample of health care seekers in Algeria.

Keywords: Quality; health care; Algeria.

JELClassificationCodes :I18.

ملخص:

إن توفير رعاية صحية ذات جودة عالية يتطلب موارد مالية كبيرة، وفي ظل شح الموارد الذي تعرفه الجزائر أصبح لزاما علينا التوفيق بين قيود الجودة وقيود التسيير وذلك من خلال إيجاد سبل تمويل فعالة.

من هنا جاءت فكرة البحث الذي نحاول من خلاله إبراز أهم العناصر التي لابد من التركيز عليها لتحقيق مستوى الجودة المطلوب بحيث تم تحديد هذه العناصر بتطبيق أسلوب تحليل المركبات الأساسية *(ACP)* على عينة من طالبي الرعاية الصحية في الجزائر.

كلمات مفتاحية: الجودة، الرعاية الصحية، الجزائر.

تصنيفات JEL: I18

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1. INTRODUCTION

Considering the costs and the colossal budgets devoted to the health system, it is essential to be interested in his mode of financing and its mode of management in the hope of reducing the costs and guarantee a better return with less expenses by adopting a more efficient financing system.

In the richest countries in the world, health spending represents more than 10% of national GDP. In this context, the socialization of health spending is inevitable insofar as the sums involved greatly exceed an individual's ability to pay.

Public spending on the health system has become so significant that its regulation has become essential, especially in the current context of crisis. It requires the accomplishment of a collective effort in order to better understand and better master the health system, but this new governance cannot go beyond a balance so difficult to find aiming to reconcile the constraints of care with the management constraints. And the problematic is:

What is the relationship between the health sector financing mode and the quality of care production? Andwhat are the most important factors that we should focused on to raise the level ofhealth services qualityin Algeria?

2. The characteristics of the health sector:

Health occupies a specific place in the economy. It is the only household expenditure which at least partially benefits from reimbursement or community support. These expenses are therefore “socialized”(BRUCKER, RIOU, & FERRAND, 2013, p. 51), they give rise to social cover implemented by specific institutions and all this is due to the particularity of the health sector.

First, "good" health has important features. It may be recalled that it touches on questions of life and death and is therefore based on strong psychological factors. In addition, while the need for food or housing or clothing are regular and predictable needs, health has a very high share of unpredictability, hazards, and therefore "risk". it follows that the patient cannot anticipate his level of health expenditure and in addition this risk of

being ill is unevenly distributed in the population.

Secondly, the health market and despite the multiplicity of providers and applicants, is quickly recognized as outside the traditional framework of competition. In particular the fact that the patient is ignorant of medical knowledge and cannot therefore be supposed to benefit from the perfect information specific to the model of perfect competition.

Thirdly, the institutions offering care are characterized by an extraordinary diversity of economic status and behavioral logic. Their status can be public (often hospitals) or private (especially clinics). Their objectives can be profit in a purely capitalist logic, or the management of a public service. They may face local, national or international demand.

Health financing refers to the collection of funds from various sources, the pooling of funds and the distribution of risks across the largest population groups, as well as the allocation or use funds to purchase services from public and private health care providers.(Organisation Mondiale de la Santé, 2010)

According to the WHO national health accounts, the financing of health expenditure on a global scale is characterized by the intervention of several actors: States contribute 33% to health expenditure, Security as well as the various social health insurance schemes contribute 25% in the financing of health expenditure. Private health insurance, very widespread in developed countries, covers 20% of these expenses. Beneficiaries bear 22% of expenses represented by non-reimbursed expenses and those incurred in the private health sector.

The first objective of a health insurance system, whether public or private, is to pool risks between sick and healthy people. It is the very translation of the principle of risk pooling which is the foundation of all insurance activities(JUSOT, 2016, p. 16). This solidarity means that the premiums of healthy individuals finance the care of the sick.

3. Choosing a financial strategy for the health system:

In the area of financing the health system, one wonders about the origin of the funds used for prevention and care. Who are the payers? How can we explain the collective financing, the respective share of the tax, the social contributions, the insurances or the mutuals, finally the direct

payment by the patients? What reasons justify a preference for one or the other mode of financing?(MAJNONI D'INTIGNANO, 2001, p. 295)

In a context of strong budgetary constraints weighing on the financing of health systems, the funders of these systems seek to combine economic efficiency and quality of service provided to the population covered.(GOURIEUX, 2017, p. 287)

A health system can be described as a series of resource transfers, each type of transfer performing a function in the system.(EVANS, 2002)

The first transfer comes from households and brings revenue to third-party payers, this transfer aims to ensure the financing function of the system and answers the question "Who pays how much?" ". The second transfer of resources starts from these third-party payers and goes to the care producers (hospitals, doctors, nurses, pharmaceutical industries, etc.). This transfer aims to ensure the payment function of the system and answers the question "Who receives how much?" ". Finally, a third transfer sets in motion non-monetary resources the time and effort of health care providers to produce treatments that benefit patients. This transfer aims to ensure the production function of the system and answers the question "Who benefits from what?"(GRIGNON, 2010, p. 54)

The first transfer always comes from households, whatever form the funding takes, the payers of last resort are households, that is to say individuals. Sometimes this is hidden, for example when we talk about employer contribution or sales tax (such as VAT) the alleged share of the employer is always deducted from the payroll, just as the manufacturer who makes consumer pays the tax, which makes housekeeping the payer of last resort. This is completely normal because the household is also the beneficiary of last resort.

In general, the choice of a financial strategy for a country depends on its socio-economic development, its fiscal capacity, as well as the development of its political and administrative system.(BIZAR, 2015, p. 140).

Vertical equity refers to the distribution of the financial burden

between the rich and the poor. Horizontal equity seeks justice between people of the same income level.

Risk pooling is necessary due to the uneven distribution of the disease within the population. Uncertainty related to the disease requires a financial strategy in which risks are effectively pooled. The ability to pool varies widely between the five main financial options: public budget, social security, private insurance, direct payment and Community funding.

There is no "pure" financing model, each country uses several financing methods among the five main modes mentioned above.

4. Types of health systems and how they are funded:

Access to health care is a fundamental right, and the principle of horizontal equity, which requires equal treatment with equal need, is now widely accepted to judge the fairness of health care systems.(WAGSTAFF & DOORSLAER, 2000)

Health systems can be grouped according to the nature of their main sources of funding, since these largely define the conditions of access to care and the methods of organizing care. It is therefore a question of distinguishing systems according to the respective magnitude of public and private funding on the one hand and social insurance systems from systems financed by taxation on the other.

Health systems can also be distinguished according to the nature of the primary sources of funding, that is, tax or social security contributions. Health systems based on social insurance are characterized by a multitude of insurance organizations independent of caregivers. Care is then provided by a multitude of providers, both public and private, in general, there are many payers.

On the contrary, in tax-funded health systems or national health services, the financing and production of care are assured by the same organization. These systems are thus sometimes called integrated health systems, insofar as there is a single payer who also manages the production of care at the national level.(OR, JUSOT, & YILMAZ, 2009, p. 524)

Many studies have compared the merits of these two types of systems. Social insurance systems are often considered better in terms of patient satisfaction and the quality of care provided, while national health systems

are more considered cost-effective.(Health Consumer Powerhouse, 2007)

So in general there are two main types of funding: public funding and private funding. Public financing takes two forms, when the third party payer is the state (or a government agency receiving its state budget), the transfer is called tax and the payer takes the form of the taxpayer, it is a compulsory and statutory funding. In general, this transfer is linked to the ability to pay of each taxpayer, which means that the "richest" pay more. This transfer therefore carries out a double redistribution, from the healthy to the sick, and from the rich to the poor.

When the third-party payer is a social security fund, the transfer is called social contribution and the payer takes the form of a worker, again, funding is statutory, but slightly less compulsory, if the contribution rate varies by type (employees, self-employed) or by business sector. Contributions are linked to ability to pay, with the highest earnings contributing the most, and contribution systems therefore generate the same type of double redistribution as tax transfers. The major difference with the state system is that the assessment base is narrower than that of the tax.

Private financing also takes two forms, when the third-party payer is an insurer the transfer is called premium and the payer takes the form of the insured, the financing here is not compulsory and not statutory, there exists within this form of financing a distinction between risk-adjusted premiums which therefore do not carry out any redistribution, and flat-rate premiums which follow a principle of redistribution from the healthy to the sick but not from the rich to the poor. Therefore, pure insurance systems do not set themselves the objective of organizing transfers other than the pooling of risks within the same risk class, which makes the absence of solidarity between the high income and the poorest. These systems therefore do not obey social justice considerations which require that certain groups assist other groups.(JUSOT, 2016, p. 16)

In its second form, private financing takes place without third party payer, also called direct payment by the patient, in this case no transfer of income takes place.

And finally it should be noted that there is a possibility of sharing funding between public and private. Massialos and Thomson thus distinguish three main categories: the substitute private, the additional private and the complementary private.(MASSIALOS & THOMSON, 2004, p. 83)

The substitute private sector concerns populations excluded from compulsory insurance mechanisms (the self-employed) or individuals who have the possibility of opting for cover purchased on the private market (they do not then pay their contributions to the compulsory scheme).

The additional private sector concerns countries covering 100% care but guaranteeing a level of quality deemed too low by individuals. Also the public system offers access with too long waiting times. As a result, individuals have the option of taking out additional insurance, giving them access to a parallel system in which care is of high quality and access is faster.

The complementary private allows the cost to be shared between the public plan and the insured, so the public plan leaves a part to be borne by the insured for certain treatments and therefore the compulsory insurance does not cover all treatments.

5. Control of health spending:

The economists Soubie and Mougeot, having looked into the question of controlling health spending, have developed a set of regulatory tools alternating between several different logics. We can distinguish for this purpose three modes of regulation. One is based on the tools by which the State manages and controls the health system; it is called "accounting control". The other regulatory mechanism is based on a relative logic, a medical arbitration between the care needed and that deemed more effective; it is called "medical mastery". The third category is based on a logic of liberal inspiration, this is "market mastery".(SOUBIE, 1994)

Accounting control is a control, generally, of a budgetary type which is characterized by a centralized and previously determined definition of supply, demand and prices of health goods as well as the envelopes of care to be allocated. The procedure for determining budgets takes an administrative and accounting form.

Finding a balance between resources and spending on health is the main objective.

This method is based on administered regulatory tools, the basis of which is to control or even contain the growth in health spending. Planning and budgeting are the main instruments. The most common accounting techniques can be summarized as follows:

- ✓ Planning and control of the offer;
- ✓ Control of demand;
- ✓ Budgeting tools;
- ✓ The administered prices.

The concept of medical control is based on a premise: medical utility is a profitable approach. This method is based on studies that seek to determine how to obtain the best result from scarce resources. In this case, the effectiveness of a health action, curative or preventive, is better assured, insofar as it takes into account all the sociological and epidemiological aspects of the population in order to finally opt for the most economically viable option. The concept of just care or medically justified care are the only valid criteria for avoiding waste and obtaining control over health expenditure.

It is based on the premise that it is possible to contain the growth in health spending by identifying and discarding medically unnecessary care, which often results in unnecessary spending. Controlling spending then becomes purely medical.

Market control is an alternative to accounting and medical regulation. The limits of fiscal policy have led to the development and promotion of economic self-regulation. The idea is to introduce competition and encourage the laws of the market to rationalize the health system. Two types of competition have been introduced at two levels: at the level of healthcare providers and at the level of health insurers.

6.Quality of care assessment:

Today, clients of the healthcare system have become progressively more demanding. They claim:

- ✓ More security, and no longer a minimum and regulatory level of security;
- ✓ Control of risks linked to acts;
- ✓ Care of the best possible quality;
- ✓ Recognition and tangible proof of the quality of the services provided;
- ✓ A possibility to compare between several care providers;
- ✓ Validated, codified and written practices.

In other words, they want to be able to directly or indirectly evaluate healthcare providers, on the basis of qualitative and quantitative criteria measured objectively, recognized and communicated.

In this context, the concept of quality of care assessment appeared. The World Health Organization (WHO) has defined the evaluation of the quality of care as being: "an approach which must make it possible to guarantee to each patient the assortment of diagnostic and therapeutic procedures which will assure him the best result in health term, in accordance with the current state of medical science, at the best cost for the same result, at the least iatrogenic risk and for its greatest satisfaction, in terms of procedures, results and human contacts within the care system ".

In other words it is a scientific, systematic, qualitative and quantitative analysis of care with the aim:

- ✓ Evaluate the quality of the course of care (preventive, diagnostic or therapeutic);
- ✓ Evaluate their short, medium and long term effects and their consequences on an individual (for a given patient) and collective (for a given group or population) scale;
- ✓ To determine to what extent a treatment or a set of treatments successfully achieves one or more objectives previously set.

Quality measurement and quality indicators are means of demonstration and proof. They are also management tools for healthcare establishments and it is necessary and essential to measure quality, this measurement has four objectives:

- ✓ Manage the process of continuous quality improvement;
- ✓ Allow the establishment to quantify the services it has delivered

compared to what it has planned;

- ✓ Allow to know what customers think of the benefits and services provided in relation to their expectations and requirements.
- ✓ Be proof of professionalism and respect for the rules imposed, in the eyes of the authorities and the public.

6.1. Health quality indicators:

There are several health quality indicators that fall into five basic categories:

- ✓ Structure indicator: it measures the means and resources used by a health system to offer the provision of care that meets the objectives set (number of individual rooms, number of qualified people, number of beds, etc);
- ✓ Process indicator: it measures the activities which make it possible to achieve the objectives;
- ✓ Result indicator: it measures the achievement of the objectives set;
- ✓ Customer satisfaction indicator: it measures the level of quality as perceived by the customer (the patient);
- ✓ Sentinel indicator: it signals a particular event or phenomenon that systematically triggers an in-depth analysis of the causes and rapid corrective action. It can be an indicator of structure, process or result.

6.2. Customer satisfaction indicators:

Healing involves improving the patient's state of health. This can only be done by meeting their needs and expectations, thus ensuring their satisfaction. Healthcare establishments must assess the level of satisfaction of their customers by developing tools to measure satisfaction and the performance of the service provided.

This assessment of client satisfaction is of fundamental importance in health care, since the patient's perception of his care is an essential determinant of his care, and therefore of improving his state of health. Medical practice cannot be limited to the technical aspects of care only.

Customer satisfaction surveys belong to the family of performance measurement indicators. We can distinguish qualitative and quantitative

methods of measuring satisfaction. Qualitative methods are exploratory studies that are used to determine what patients want or consider important. The objective is to identify the needs, expectations and requirements of customers, in order to improve the quality of services by taking these parameters into account. Over time, the judgment criteria of individuals change. It is therefore recommended to periodically renew these qualitative studies.

Quantitative methods are customer satisfaction surveys on samples representative of the target population. These surveys make it possible to verify that there is a good correlation between the characteristics of the service provided and customer satisfaction.

7.The case of Algeria:

Studying the tools for regulating health spending as well as the costs generated by the use of financial, material and human resources will necessarily mean studying the spending structure of the healthcare system, based on its sources of funding.

The modes of health financing in Algeria were listed in the health charter and the law n ° 85-05 of February 16, 1985. The financing of health is done by the state, social security organizations, businesses and administrations, local communities and the care recipients themselves.

The state finances the majority of public health services (around 80%), social security organizations finance according to criteria and proportions set by the laws and regulations in force. local authorities participate in the funding of prevention, hygiene and health education programs. Companies and administrations participate in the financing of health within the framework of actions established in accordance with the legislation and regulations relating to social works. Particularly for the implementation of actions to prevent professional risks and monitor the state of health of employees, User participation takes the form of user fees remaining payable by patients, fee-for-service or contribution even insignificant during the care provided at the level of public health establishments.

Algeria has introduced, for more than 30 years, tools to control health spending which mainly focus on capping the budget dedicated to health and

through the modes of financial accountability of the insured.

The reforms undertaken since the early 1990s were aimed at the introduction of so-called "cost recovery" measures. These measures have resulted in the implementation of several expenditure control tools essentially focusing on the rationalization of the demand for care.

The National Social Insurance Fund (CNAS) has applied three regulatory mechanisms: the co-payment, the reference rate and the reimbursement.

The user fee was applied in 1995, consultations with a specialist or a general practitioner, working near a public health establishment, became from that date paying. The user is required to pay 100 DA for the first and 50 DA for the second. In addition, there is a financial share of 20% assumed by the insured. The latter are called upon, in this regard, to cover part of the expenses not reimbursable by social security, mainly consisting of the cost of medicines. The patient is reimbursed 80% of the expenses incurred as a result of a medical visit.

The main purpose of the reference rate is to encourage practitioners to prescribe generic drugs rather than princeps.

"Reimbursement", distinguishing reimbursable drugs from those that are not. In this perspective, efforts to control demand relate to the exclusion of treatment of specialties with a rendered medical service, which is not proven, and to treatments not classified as "health care".

With regard to the regulation of the supply of care, Algeria has previously relied on a "completely interventionist approach" according to which the public authorities aimed to control the extension of the number of beds and health professionals, and the establishment of planning and supervision mechanisms for the evolution of the offer. Algeria has developed two systems for this purpose: one focused on the virtues of planning and rationalizing the development of the hospital fabric, via the health card, and the other aims to restrict access to medical studies via an approach similar to "numerusclausus".

Furthermore, we note that the privatization process that took place

during the 1990s and the gradual removal of obstacles linked to the authorization to open private clinics have led to the multiplication of private health establishments. The private sector operates in Algeria in complete freedom. Guided by a lucrative logic, private medicine settles in the wilayas likely to provide it with the best returns and opts for the most profitable niches.

The quality of public health services in Algeria can be considered as weak because the glaring lack of specialized establishments and the far Appointments of medical examination, What requires reviewing the various components of health service in search of weaknesses and addressing them.

8. Econometric study:

The objective of our econometric study is to assess the degree of satisfaction of care seekers with public health establishments in Algeria and to determine the factors that must be highlighted to improve the quality of service and detect the causes of dissatisfaction and dysfunction. For this we use the technique of principal component analysis which is an exploratory factor analysis whose results allow us to better understand the problem and to propose probable solutions.

The study was conducted on a sample of 90 health care seekers across the different provinces of the country during the year 2019.

8.1. Variables of the study:

Nine variables were usedthat reflects the questions asked in the questionnaire:

APP: Appointment of medical examination (question 1);
ATE: access to the establishment (question 2);
RAE: reception at the establishment (question 3);
BDN: behavior of doctors and nurses (question 4);
CAG: the care given (question 5);
CTD: the conditions under which the treatments were done (question 6);
TWT: timetables and waiting times (question 7);
ELS: extension of the network of local structures (question 8);
DRA: drug availability (question 9);

8.2. Statistical tests:

Before analyzing and interpreting the factor structure, it is necessary to read

the main tests(BODSON & STAFFORD, 2011, p. 82).

- The determinant of the correlation matrix is equal to (0.003) which is acceptable and means that there is no perfect correlation between some variables.
- The Kaiser-Meyer-Olkintest, which is a generalized measure of the partial correlation between the study variables. In the factor analysis of our study, the validity of the test (KMO) is high (0.880).
- Bartlett's test, which measures the significant absence of sphericity of the model. In our study, the significance of the test is (0.000) so we can continue studying the main components.

8.3.Analysis of results:

Table (1) gives the final assessment of the main component analysis of our study. We can see from the table that the model explains to (71.69%) the satisfaction of care seekers and (28.31%) remains unexplained by the chosen variables.

The first column of the table groups together the components and variables classified according to their importance. In the second column, we have the coefficients placed in order of magnitudes. And in the third column is presented the variance explained by the factor model. Component (1) represents (60.41) and component (2) represents (11.28).

Component (1) called "Course of care" includes six variables classified according to their importance: CTD, APP, BDN, RAE, TWT, CAG. Component (2) called "Proximity" includes three variables: ELS, DRA, ATE.

The principal component analysis shows that the satisfaction of care seekers rests essentially on certain aspects: the conditions under which the treatments were done, Appointment of medical examination, behavior of doctors and nurses, reception at the establishment, timetables and waiting times and the care give, with very close degrees.

There is a hierarchy between the components and a hierarchy between the variables of the same component.

We can see that the second component "Proximity" is less important for the satisfaction of care seekers. So we can say that the variables: “extension of the network of local structures”, “drug availability” and “access to the establishment” are necessary qualities but not determinative of the satisfaction of care seekers.

Table 1. The main components analysis of the satisfaction of care seekers by the Varimax rotation method

Components and variables	**Coefficients**	**Variance %**	
		real	**internal**
Component 1: course of care		60.41	84.26
CTD	0.829		
APP	0.787		
BDN	0.783		
RAE	0.764		
TWT	0.735		
CAG	0.723		
Component 2: proximity		11.28	15.73
ELS	0.871		
DRA	0.824		
ATE	0.725		
Total		71.69	100

Source:done by the researcher using outputs of SPSS

We can conclude that improving the quality of health care in Algeria and improving the services provided in public hospitals must first focus on the conditions in which the health care is given, and provide structures to reduce the waiting period and avoid relatively far examination dates, as well as improve reception and treatment conditions that patients receive.

Moreover, it comes in the second-degree proximity of hospitals to those seeking treatment. We note through the views of treatment seekers that they do not refrain from moving to relatively distant institutions if good conditions exist to receive treatment.Therefore, a solution to this problem can be proposed that is to open poles for treatment in places with large population densities providing high-level services that serve as models who make foundations for a quality health service.

9. CONCLUSION

Providing health care is a basic requirement for individuals in all societies. Given the high cost of this requirement, the state guarantees a

large part of it, which requires large financial resources. In light of the scarcity of resources that Algeria knows, it has become necessary to reconcile quality and management constraints by adopting a method of quality assessment and improvement.

In this context, the study has searched for the most important points that must be focused on in order to achieve the level of quality required. The study reached in the end that the priority will be to improve the conditions in which treatment is provided and received, as well as providing structures to reduce the waiting period, the solution is by establishing hospital centers Ideal as poles in which high quality services are provided, identify and embody best practices in the field of health care.

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10. Appendices :

Appendice 1: Questionnaire on quality in public health establishments

Within the framework of a research work concerning the quality in thealgerian public health establishments. We would be grateful if you complete this questionnaire.

Note: along the questionnaire the answers will be provided in a scale format ranging from (1) to (5). (1)means very dissatisfied, 2 dissatisfied, 3 not very satisfied, 4 satisfied, 5 very satisfied.

1. Are you satisfied with the time of your appointment?
2. Are you satisfied with access to the health facility? (road signs to access the establishment, parking facility, entrance to the establishment)
3. Are you satisfied with the reception at the health facility? (reception office, information provided, signage in the establishment)
4. Are you satisfied with the behavior of doctors, nurses and other caregivers?
5. Are you satisfied with the care given at the establishment level? (Quality of care, help provided when requested, your information, respect for your privacy).
6. Are you satisfied with the conditions under which the care was given? (The hygiene of the place, the comfort, the calm in the service, presence of the toilets).
7. Are you satisfied with the schedules and waiting time to see the doctor?
8. Are you satisfied with the extension of the network of local health structures?
9. Are you satisfied with the availability of drugs?

Appendice 2: results SPSS

Table 1 : Correlationmatrix[a]

		APP	ATE	RAE	BDN	CAG	CTD	TWT	ELS	DRA
Correlation	APP	1,000	,458	,512	,574	,578	,619	,610	,284	,429
	ATE	,458	1,000	,408	,512	,531	,520	,573	,583	,599
	RAE	,512	,408	1,000	,705	,591	,582	,613	,448	,385
	BDN	,574	,512	,705	1,000	,741	,662	,604	,488	,489
	CAG	,578	,531	,591	,741	1,000	,651	,660	,487	,595
	CTD	,619	,520	,582	,662	,651	1,000	,776	,372	,462
	TWT	,610	,573	,613	,604	,660	,776	1,000	,558	,528
	ELS	,284	,583	,448	,488	,487	,372	,558	1,000	,659
	DRA	,429	,599	,385	,489	,595	,462	,528	,659	1,000
Signification	APP		,000	,000	,000	,000	,000	,000	,003	,000
	ATE	,000		,000	,000	,000	,000	,000	,000	,000
	RAE	,000	,000		,000	,000	,000	,000	,000	,000
	BDN	,000	,000	,000		,000	,000	,000	,000	,000
	CAG	,000	,000	,000	,000		,000	,000	,000	,000
	CTD	,000	,000	,000	,000	,000		,000	,000	,000
	TWT	,000	,000	,000	,000	,000	,000		,000	,000
	ELS	,003	,000	,000	,000	,000	,000	,000		,000
	DRA	,000	,000	,000	,000	,000	,000	,000	,000	

a. Determinant = ,003

Table 3 : KMO andBartlett's test

Kaiser-Meyer-Olkinmesure of samplingadequacy		,880
Bartlett's test of sphericity	approx. Khi-square	508,579
	df	36
	Sig	,000

Table 4 : Communalities

	Initial	Extraction
APP	1,000	,645
ATE	1,000	,665
RAE	1,000	,641
BDN	1,000	,732
CAG	1,000	,716
CTD	1,000	,754
TWT	1,000	,736
ELS	1,000	,799
DRA	1,000	,763

Extraction Method : principal component analysis

Table 5 : Total Variance explained

Component	Initial elgenvalues			Extraction sums of squaredloadings			Rotation sums of squaredloadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5,437	60,410	60,410	5,437	60,410	60,410	3,833	42,585	42,585
2	1,016	11,287	71,697	1,016	11,287	71,697	2,620	29,111	71,697
3	,610	6,773	78,469						
4	,472	5,241	83,710						
5	,407	4,526	88,235						
6	,389	4,318	92,553						
7	,277	3,075	95,629						
8	,242	2,687	98,315						
9	,152	1,685	100,000						

Extraction Method : principal component analysis.

Fig 1 :Scree Plot

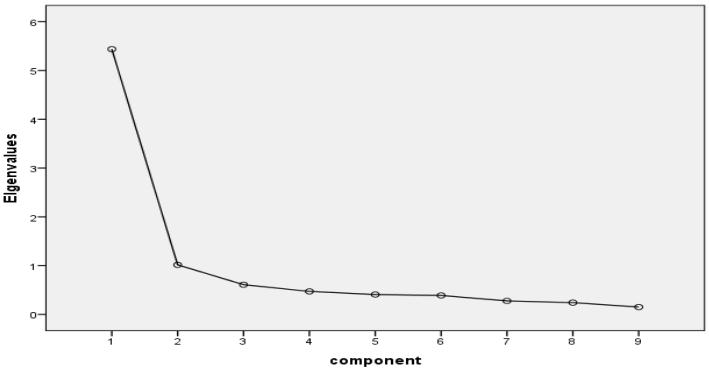

Table 6 : Component matrix[a]

	component	
	1	2
TWT	,853	-,089
CAG	,842	-,084
BDN	,833	-,196
CTD	,817	-,294
RAE	,754	-,269
ATE	,735	,353
DRA	,728	,483
APP	,726	-,344
ELS	,687	,572

Extraction Method : principal component analysis.

a. 2 components extracted.

Table 7 : Paternmatrix[a]

	Component	
	1	2
CTD	,829	,257
APP	,787	,163
BDN	,783	,345
RAE	,764	,239
TWT	,735	,443
CAG	,723	,440
ELS	,204	,871
DRA	,291	,824
ATE	,375	,725

ExtractionMethod : principal component analysis.
Rotation method: Varimaxwith Kaiser normalisation
a. rotation convergedin 3 rotations

Table 8 : Matrice de transformation des composantes

Component	1	2
1	,798	,602
2	-,602	,798

ExtractionMethod : principal component analysis.
rotation method:Varimaxwith Kaiser normalisation

Fig 2: Plot of components in space after rotation