Application of Hybrid Models AHP and Fuzzy Goal Programming in Managing the Budgets of Commercial Banks (An Applied Study on the Banque de Crédit Populaire Algérien)

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Summary: This study aims to implement a hybrid model that integrates the Analytic Hierarchy Process (AHP) with Fuzzy Goal Programming in managing the assets and liabilities of Algerian banks, with the objective of achieving targeted goals within an environment marked by uncertainty. The research was applied to the Banque de Crédit Populaire Algérien, where six primary objectives of the bank were identified. The Analytic Hierarchy Process was used to determine the relative weights of these objectives, after which a Fuzzy Goal Programming model was applied in accordance with Yaghoobi's methodology (2008). The findings indicated that this model constitutes a modern and effective mathematical tool for addressing complex problems and supporting the selection of optimal alternatives.

Keywords: Banks, Multi-Criteria Analysis, Fuzzy Goal Programming, Analytic Hierarchy Process.
Jel Classification Codes : C61; G21; D81

Introduction

The management of a bank's assets and liabilities represents one of its most critical strategic functions, as it ensures the financial stability of banking institutions by maintaining balance between the different components of assets and liabilities. This balance enables the achievement of key objectives, including sustaining adequate liquidity, improving profitability, and reducing risks associated with interest rate fluctuations and broader market conditions.

Nevertheless, the complexity of the banking environment—driven by market volatility, fluctuations in interest rates, and the increasing uncertainty surrounding available information and data—has made financial decision-making particularly challenging. This situation necessitates the use of advanced analytical tools capable of addressing the ambiguous nature of data and the uncertainty that constrains decision-making processes.

Within this context, the Analytic Hierarchy Process (AHP) has gained recognition as an effective method for ranking objectives and identifying their relative priorities based on expert assessments. In parallel, Fuzzy Goal Programming offers a flexible framework for planning in uncertain and complex environments by combining mathematical programming techniques with fuzzy logic. This integration enables the formulation of optimal solutions while accounting for varying estimations and constraints.

In line with these considerations, the present study develops a hybrid model that combines the Analytic Hierarchy Process and Fuzzy Goal Programming to support decision-making in asset and liability management within banks. The Banque de Crédit Populaire Algérien was selected as the case study for the application of this model, through the identification of a set of key objectives for the bank and the use of appropriate methodologies to achieve them in a balanced and effective manner.

Based on these foundations, the study addresses the following research question:

"How can a hybrid model combining the Analytic Hierarchy Process (AHP) and Fuzzy Goal Programming be applied to support decision-making in managing bank assets and liabilities within an environment characterized by ambiguity and uncertainty?"

Research Hypotheses

- The application of hybrid models such as the Analytic Hierarchy Process (AHP) and Fuzzy Goal Programming enhances the quality of decision-making within the bank, particularly in environments characterized by ambiguity.
- Fuzzy Goal Programming contributes to achieving an optimal balance between the components of the bank's budget under prevailing risks.

Study Objectives

This study seeks to accomplish the following:

- To develop a hybrid mathematical model that integrates the Analytic Hierarchy Process (AHP) and Fuzzy Goal Programming for managing banks' assets and liabilities.
- To evaluate the effectiveness of the proposed model through its application to the Banque de Crédit Populaire Algérien.
- To provide practical recommendations that may contribute to improving decisions in asset and liability management.

Research Methodology

This research employs a quantitative analytical approach by designing a mathematical model that combines the AHP technique with Fuzzy Goal Programming. The methodological steps consist of:

- Collecting qualitative and quantitative data related to the bank's objectives and operational criteria.
- Applying the Analytic Hierarchy Process (AHP) to determine the relative weights of the six principal objectives of the bank, based on expert judgments.
- Constructing a Fuzzy Goal Programming model using the approach of Yaghoobi (2008), while incorporating the weights obtained into the model.
- Applying the constructed model to real data from the Banque de Crédit Populaire Algérien.
- Analyzing the results and assessing the extent to which the model provides realistic and effective solutions.

II – Theoretical Framework

The theoretical framework of this research addresses the fundamental concepts on which the proposed hybrid model is based, namely:

1-Asset and Liability Management (ALM)

Asset and Liability Management refers to the process of planning and monitoring the balance of a bank's balance sheet structure, with the objective of ensuring financial stability and maintaining both liquidity and profitability. This process involves monitoring the gap between assets and liabilities in terms of maturities, interest rates, and associated risks, while making decisions that secure efficient resource allocation and the achievement of strategic objectives.

Several definitions of Asset and Liability Management in the banking sector can be highlighted: According to Yuliya (2010), Asset and Liability Management (ALM) is the process of formulating, implementing, monitoring, and continuously reviewing strategies related to assets and liabilities in order to accomplish the financial objectives of the institution, while subjecting it to a set of constraints and risks.

Asset and Liability Management (ALM) is also regarded as one of the most important tools in banking risk management, since the banking sector is exposed to various risks, including market risk, financial risk, and interest rate risk. ALM involves overseeing the balance sheet to mitigate risks arising from changes in interest rates, exchange rates, and liquidity levels within the bank. The significance of this management function has grown as a result of major changes affecting banks' assets and liabilities in recent years, making the balance between profitability, liquidity, and risk management a matter of critical importance (Rabat, 2016, p.23).

1-1 Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP), developed by Thomas Saaty, is a quantitative method designed for prioritizing complex multi-criteria decisions. It is based on the construction and analysis of pairwise comparison matrices in order to determine the relative weights of each criterion or objective. The strength of this method lies in its capacity to translate subjective preferences into quantitative measures that systematically support decision-making.

1-2 Fuzzy Goal Programming (FGP)

Fuzzy Goal Programming extends classical Goal Programming by incorporating concepts from fuzzy set theory to address ambiguity in goals or constraints. Membership functions are employed to represent decision-makers' preferences with a degree of flexibility, thereby allowing adaptation to uncertain or imprecise environments.

1-3 The Hybrid AHP-FGP Model

This model is built upon the use of the Analytic Hierarchy Process (AHP) to determine the relative weights of objectives or criteria, followed by the integration of these weights into a Fuzzy Goal Programming (FGP) model to achieve an optimal solution that accounts for uncertainty in the bank's operating environment. It represents a contemporary approach that has proven effective in solving multi-objective problems within a fuzzy environment.

2. Previous Studies

A. Yaghoobi & Razmi (2008)

Proposed a hybrid model to address multi-objective decision-making problems under uncertain conditions by integrating AHP and FGP. The model was applied in the field of industrial resource allocation, and the findings demonstrated its capacity to provide more effective solutions compared to traditional models.

B. Sadeghi & Shavandi (2012)

Applied the AHP-FGP model in the insurance sector to determine investment priorities and select optimal strategies. The model proved effective in managing data ambiguity and accommodating the diverse preferences of decision-makers.

C. Al-Arabi, Mohamed (2016)

Examined the application of Goal Programming in commercial banks operating in unstable environments, highlighting the inadequacy of traditional models and advocating for the adoption of more flexible fuzzy models in contexts where accurate data are lacking.

D. Bouhouch, Samir (2020)

Conducted an applied study on an Algerian bank to assess the use of mathematical programming models for resource allocation between assets and liabilities. The study recommended adopting more integrated models, such as AHP-FGP, to enhance the quality of decision-making.

III -Case Study :

Decision-makers within banks aim to maintain balance in their balance sheets through the optimal management of assets and liabilities, while adhering to a set of constraints and obligations throughout the management process.

To this end, the hybrid model was applied to the balance sheet of the Banque de Crédit Populaire Algérien for the fiscal years 2021/2022 (Appendix No. 1). The Analytic Hierarchy Process and the Fuzzy Goal Programming model were adopted according to the method developed by Yaghoobi (2008).

A total of 10 questionnaires (Appendix No. 2) were distributed to a group of decision-makers (experts) at the Beni Saf and Tlemcen branches in order to determine the relative importance of the objectives pursued by the bank.

Table No. (1): Table Representing the Balance Sheet Elements of the Banque de Crédit Populaire Algérien (2021/2022)

Assets	Liabilities
X1 Cash, Central Bank, Public Treasury, Postal Checking Account	Y1 Central Bank
X2 Financial assets held for trading	Y2 Debts to financial institutions

X3 Financial assets available for sale	Y3 Debts to customers
X4 Loans and receivables from financial institutions	Y4 Debts represented by financial instruments
X5 Loans and receivables from customers	Y5 Current taxes – Liabilities
X6 Financial assets held to maturity	Y6 Deferred taxes – Liabilities
X7 Current taxes – Assets	Y7 Other liabilities
X8 Deferred taxes – Assets	Y8 Adjustment accounts
X9 Other assets	Y9 Provisions for covering risks and charges
X10 Adjustment accounts	Y10 Equipment subsidies – Other subsidies
X11 Investments in subsidiaries, joint ventures, or associates	Y11 Funds to cover general banking risks
X12 Investment property	Y12 Subordinated debts
X13 Tangible fixed assets	Y13 Bank's capital
X14 Intangible fixed assets	Y14 Premiums linked to capital
X15 Goodwill	Y15 Reserves
	Y16 Valuation differences
	Y17 Revaluation differences
	Y18 Retained earnings (−/+)
	Y19 Net result of the financial year (−/+)

***Source**: Prepared by the researchers based on the financial statements (2021/2022) of the Banque de Crédit Populaire Algérien*

Through interviews conducted with a group of experts within the bank's branches, six objectives pursued by the bank were identified and summarized in the following table:

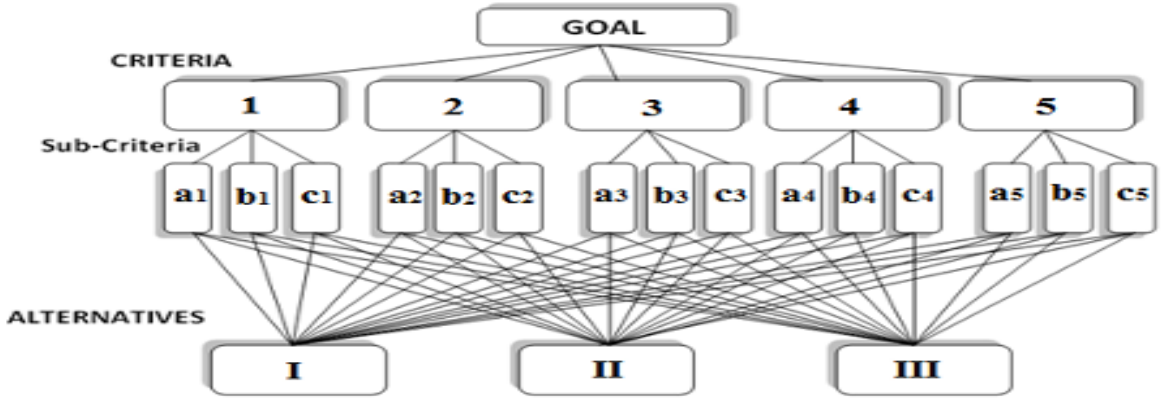
Table No. (3): Bank Objectives

Objective	Liquidity	Capital Adequacy	Market Share of Credit	Market Share of Deposits	Return on Assets	Return on Equity
Ratio or Amount	≥100%	≥12.5%	2,313,880	1,306,821	≥1.5%	≥15%

***Source**: Prepared by the researchers based on the bank's financial statements, according to Basel III Agreement*

2-1 Application of the Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is considered one of the most widely used methods in evaluation, as it relies on ranking alternatives and selecting the optimal one when multiple objectives and criteria underpin the decision. The AHP method is based on analyzing and structuring the problem into a hierarchy consisting of a main goal and a set of criteria, which may sometimes branch into sub-criteria, as illustrated in the following figure:



***Source**: (E & M, 2013, p.191)*

It can be said that the Analytic Hierarchy Process relies on converting subjective assessments of relative importance into weights, based on the pairwise comparison matrix, expressed in the general form as follows:

$$A = (a_{ij})_{n*n} = \begin{bmatrix} a_{11} & a_{12} & a_{13} & & a_{1n} \\ a_{21} & a_{22} & a_{23} & \dots & a_{2n} \\ a_{31} & a_{32} & a_{33} & & a_{3n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & a_{n3} & \cdots & a_{nn} \end{bmatrix}$$

***Source**: (Mostafa & Al-Tayeb, 2022, p.73)*

Where:

- : a_{ij} : degree of importance of the criterion, greater than zero.
- $j = 1,2,3, \dots . n$
- n: number of criteria.

2-1-1 Constructing the Pairwise Comparison Matrix

The construction of the pairwise comparison matrix was based on calculating the geometric mean of responses concerning each pairwise comparison between criteria and determining the degree of importance of each criterion according to Saaty's scale, as shown in the following table:

Table No. (4): Saaty's Scale for Pairwise Comparisons

Degree of Importance	Equal Preference	Moderate Preference of One Criterion over Another	Strong Preference of One Criterion over Another	Very Strong Preference of One Criterion over Another	Absolute Preference of One Criterion over Another	Intermediate Values
Value	1	3	5	7	9	2, 4, 6, 8

***Source**: (Tomas L, 2008, p.86)*

Table No. (5): Pairwise Comparison Matrix Between Criteria

Criteria	Liquidity	Capital Adequacy	Market Share of Credit	Market Share of Deposits	Return on Assets	Return on Equity
Liquidity	1.0000	2.7663	2.9113	2.0345	1.7826	3.1687
Capital Adequacy	0.3615	1.0000	0.7201	0.6915	0.8027	0.7708
Market Share of Credit	0.3435	1.3887	1.0000	0.9603	0.8604	0.8360
Market Share of Deposits	0.4915	1.4461	0.8360	1.0000	0.8360	1.0414
Return on Assets	0.5610	1.1367	0.9330	0.9603	1.0000	0.9330
Return on Equity	0.3156	1.2104	0.9603	0.7708	0.8604	1.0000

***Source**: Prepared by the researchers based on Excel program*

2-1-2 Consistency Ratio Calculation

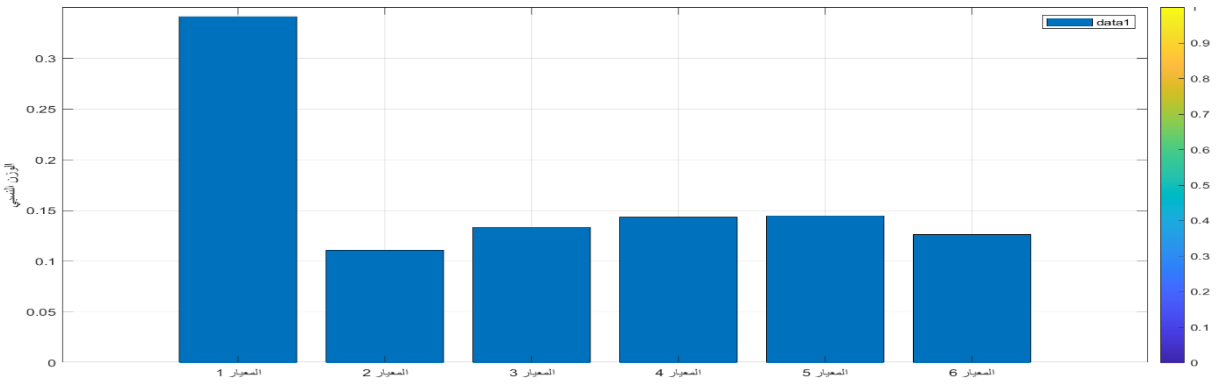
The Matlab program was used to calculate the Consistency Ratio (CR) in order to determine the stability of judgments, as proposed by Saaty. This ratio should not exceed 1%. The calculated CR value was 0.0310, which is less than 1%, indicating that the matrix is consistent.

Table No. (6): Relative Weights of the Criteria

Criteria	Weights
Liquidity (Criterion 1)	0.3410
Capital Adequacy (Criterion 2)	0.1109
Market Share of Credit (Criterion 3)	0.1334
Market Share of Deposits (Criterion 4)	0.1436
Return on Assets (Criterion 5)	0.1449
Return on Equity (Criterion 6)	0.1263

***Source**: Prepared by the researchers based on Matlab program*

Figure No. (1): Relative Weights of the Criteria



***Source**: Prepared by the researchers based on Matlab program*

2-2 The Mathematical Formulation of the Fuzzy Goal Programming Model According to Yaghoobi (2008)

2-2-1 Constructing Membership Functions for the Fuzzy Goals

In this case, a membership function is constructed for each goal, as follows:

2-2-1-1 The Goal of Meeting Liquidity Requirements

The liquidity ratio is compared with the total deposits of the bank, that is, the bank's ability to meet obligations, specifically its ability to repay short-term deposits (Qrouche, Fdili, & Ezzedine, 2021, p. 35).

Liquidity is calculated using the following equation:

$$\frac{\text{Cash balances deposited at the central bank}}{\text{Total deposits}} = \boldsymbol{Liquidity\ Ratio}$$

$$f_1(x) = x_1 + x_2$$

Where:

$$x_1 + x_2 \geq 100\%(y_2 + y_3 + y_4)$$

$$2732837 \leq f_1(x) \leq 2953207$$

$$\mu_1[f_1(x)] = \begin{cases} 1 & if f_1(x) \geq 2732837 \\ \dfrac{f_1(x) - 2732837}{220370} & if\ 2732837 \leq f_1(x) \leq 2953207 \\ 0 & if\ f_1(x) \leq 2953207 \end{cases}$$

2-2-1-2 The Goal of Capital Adequacy

This is also referred to as banking solvency or capital solvency, expressing the soundness and strength of the bank's financial position. It is defined as the bank's ability to absorb losses arising from credit and investment operations through equity without being exposed to obligations resulting from deposits (Samir Abdul Razzaq, 2008, p. 140).

The capital adequacy ratio, as defined by Basel III, is calculated as follows:

$$\frac{\text{Capital}}{\text{Operational Risk} + \text{ Market Risk } + \text{Credit Risk}} = \text{Capital Adequacy Ratio}$$

However, it is difficult for banks to apply this due to the pressures and constraints imposed on them.

Where:

$$265769.875 \leq f_2(x) \leq 275251.375$$

$$\mu_2[f_2(x)] = \begin{cases} 1 & if f_2(x) \geq 265769.875 \\ \dfrac{f_2(x) - 265769.875}{9481.5} & if\ 265769.875 \leq f_2(x) \leq 275251.375 \\ 0 & if\ f_2(x) \leq 275251.375 \end{cases}$$

2-2-1-3 The Goal of Increasing Market Share of Deposits

Banks strive to implement effective strategies to attract a greater volume of deposits. The bank commits to returning the deposited amount upon maturity in addition to paying interest on the deposited amounts.

$$f_3(x) = y_2 + y_3 + y_4$$

$$2732837 \leq f_3(x) \leq 29530207$$

$$\mu_3[f_3(x)] = \begin{cases} 1 & if f_3(x) \geq 2732837 \\ \dfrac{f_3(x) - 2732837}{220370} & if\ 2732837 \leq f_3(x) \leq 2953207 \\ 0 & if\ f_3(x) \leq 2953207 \end{cases}$$

2-2-1-4 The Goal of Increasing Market Share of Credit

The income generated from granting bank loans is a primary source of financing for banks. Therefore, careful management of these loans is essential, as they represent the largest share of the bank's assets.

$$f_4(x) = x_2 + x_3 + x_4 + x_5$$

$$1376701 \leq f_4(x) \leq 2096389$$

$$\mu_4[f_4(x)] = \begin{cases} 1 & if\ f_4(x) \geq 1376701 \\ \dfrac{f_4(x) - 1376701}{719688} & if\ 1376701 \leq f_4(x) \leq 2096389 \\ 0 & if f_4(x) \leq 2096389 \end{cases}$$

2-2-1-5 The Goal of Maximizing Return on Assets

Return on assets, along with return on equity, is one of the indicators reflecting bank profitability. It is defined as the rate of return on each monetary unit invested in assets (Slimani, 2021–2022, p. 28), and is expressed as follows:

$$\frac{\textbf{Net Profit After Tax}}{\textbf{Total Assets}} = \textbf{Return on Assets}$$

$$f_5(x) = \mathbf{1.5\%} \sum_{i=1}^{15} x_i$$

$$30441 \leq f_5(x) \leq 37500$$

$$\mu_5[f_5(x)] = \begin{cases} 1 & if f_5(x) \geq 30441 \\ \dfrac{f_5(x) - 30441}{7059} & if\ 30441 \leq f_5(x) \leq 37500 \\ 0 & if\ f_5(x) \leq 37500 \end{cases}$$

2-2-1-6 The Goal of Maximizing Return on Equity

Return on equity measures the financial leverage on profitability, that is, the accounting return to shareholders on their investments in the company (Salman, 2017, p. 192).

It is also expressed as:

$$\frac{\textbf{Net Profit After Tax}}{\textbf{TaxBook Value of Equity}} = \textbf{Return on Equity}$$

$$f_6(x) = \mathbf{15\%} \sum_{i=11}^{16} y_i$$

$$30441 \leq f_6(x) \leq 37500$$

$$\mu_6[f_6(x)] = \begin{cases} 1 & if f_6(x) \geq 30441 \\ \dfrac{f_6(x) - 30441}{7059} & if\ 30441 \leq f_6(x) \leq 37500 \\ 0 & if\ f_6(x) \leq 37500 \end{cases}$$

2-3 Constructing the Model

2-3-1 General Formulation of the Model:

$$\text{Min z} = \sum_{i_1}^{i_0} w_i^+ \frac{\delta_i^+}{\Delta_{iR}} + \sum_{i=i_0+1}^{j_0} w_i^- \frac{\delta_l^-}{\Delta_{il}} + \sum_{i=j_0+1}^{k} \left(w_i^+ \frac{\delta_i^+}{\Delta_{iR}} + w_i^- \frac{\delta_l^-}{\Delta_{il}} \right)$$

st

$f_i(x) - \delta_i^+ \leq g_i \quad i: 1 \dots i_0 \qquad f_i(x) - \delta_i^- \geq g_i \quad i: i_0 + 1 \dots j_0$

$f_i(x) - \delta_i^- - \delta_i^+ = g_i \quad i: j_0 + 1 \dots k \qquad u_i \frac{\delta_i^+}{\Delta_{iR}} = 1 \quad i: 1 \dots i_0$

$u_i \frac{\delta_i^-}{\Delta_{il}} = 1 \quad i: i_0 + 1 \dots j_0 \qquad u_i \frac{\delta_i^+}{\Delta_{iR}} + u_i \frac{\delta_i^-}{\Delta_{il}} = 1 \quad i: j_0 + 1 \dots k$

$$x_i, u_i, \delta_i^+, \delta_l^- \geq 0$$

Based on the above, the mathematical formulation of the fuzzy goal programming model (Yaghoobi, 2008), using membership functions, is as follows:

2-4 Analysis and Discussion of Results

After entering the model into the statistical software (Lingo 18), we obtained the results presented in Table (6) and Appendix (1).

2-4-1 Decision Variables and the Objective Function

From the results obtained, it is observed that all the goals set at the specified level of importance were achieved in the model, as the value of the objective function according to the applied model was zero.

Table (6) illustrates the achievement of goals and the satisfaction level of the decision-maker.

Goal	Deviations			Result	Satisfaction Level	Outcome
	δ_1^+	δ_1^-	Type of Deviation	Goal Achievement	1	Fully satisfied
First Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied
Second Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied
Third Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied
Fourth Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied
Fifth Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied
Sixth Goal	/	0	No Deviation	Goal Achieved	1	Fully satisfied

***Source**: Prepared by the researchers based on Lingo 18 outputs.*

From the table, the following observations can be made:

- **Liquidity goal:** The undesirable deviation equals zero, indicating that the first goal was achieved in full (100%). This outcome reflects the decision-maker's satisfaction with the application of the proposed plan using the fuzzy goal programming model, which results in a liquidity ratio of 2,953,207.
- **Capital adequacy goal:** The undesirable deviation is zero, demonstrating that the second goal was also fully achieved (100%). This confirms the decision-maker's satisfaction with the proposed plan, which ensures a banking solvency level of 275,251.375.
- **Increasing the market share of deposits:** The undesirable deviation is zero, confirming that this goal was fully achieved. Consequently, the decision-maker expressed complete satisfaction with the proposed plan.
- **Increasing the market share of credit:** The decision-maker expressed complete satisfaction with the proposed plan, as the market share of credit reached 2,096,389.
- **Maximizing return on assets and maximizing return on equity:** Both goals recorded zero deviations, further confirming the decision-maker's complete satisfaction with the proposed plan, which was constructed using the fuzzy goal programming model developed by Yaghoobi (2008).

IV- Conclusion:

The fuzzy goal programming model constitutes one of the modern and advanced mathematical approaches for solving complex problems that obstruct decision-making, particularly by identifying the most appropriate solution under complex environments.

In this research, a modern mathematical model was formulated to support the achievement of the objectives of the Banque de Crédit Populaire Algérien. Six primary goals were defined for the bank, and the weights of the criteria were determined using Matlab software. With the support of Lingo 18, a plan was generated that enables decision-makers within the bank to select the most appropriate and effective decisions.

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Appendix(1) : LINGO 18 Program Output

Total variables:	35	Global optimal solution found.	
Nonlinear variables:	0	Objective value:	0.000000
Integer variables:	0	Infeasibilities:	0.000000
Total constraints:	38	Total solver iterations:	0
Nonlinear constraints:	0	Elapsed runtime seconds:	25.03
Total nonzeros:	82		
Nonlinear nonzeros:	0	Model Class:	LP

Variable	Value	Reduced Cost
X8	3901.000	0.000000
X10	33.00000	0.000000
X11	15046.00	0.000000
X15	0.000000	0.000000
Y11	36111.00	0.000000
Y12	0.000000	0.000000
Y16	1370.000	0.000000
U1	1.000000	0.000000
U2	1.000000	0.000000
U3	1.000000	0.000000
U4	1.000000	0.000000
U5	1.000000	0.000000
U6	1.000000	0.000000
Y7	17344.00	0.000000
Y13	48000.00	0.000000
Y15	158060.0	0.000000
Y17	15921.00	0.000000
Y18	0.000000	0.000000
Y19	30441.00	0.000000
U	1.000000	0.000000

Variable	Value	Reduced Cost
N1	0.000000	0.1547398E-05
N2	0.000000	0.1169646E-04
N3	0.000000	0.6053456E-06
N4	0.000000	0.1995309E-06
N5	0.000000	0.2052699E-04
N6	0.000000	0.1789205E-04
X1	456152.0	0.000000
X2	2276685.	0.000000
X3	203126.0	0.000000
X4	588440.0	0.000000
X5	2313880.	0.000000
X9	12188.00	0.000000
X12	0.000000	0.000000
X13	17153.00	0.000000
X14	420.0000	0.000000
Y2	862637.0	0.000000
Y3	1812898.	0.000000
Y4	57302.00	0.000000
X6	435694.0	0.000000
X7	2964.000	0.000000
Variable	Value	Reduced Cost

Appendix(2) :Budget of the Credit Populaire Bank of Algeria 2021/2022

القرض الشعبي الجزائر ج.
CREDIT POPULAIRE D'ALGERIE

نشرة إعلامية- أسهم بنك القرض الشعبي الجزائري -

❖ الخصوم

الوحدة: مليون دج

الخصوم	2018	2019	2020	2021	2022
البنك المركزي					
ديون إتجاه الهيئات المالية	369 012	644 726	743 997	862 637	**907 389**
ديون إتجاه الزبائن	1 558 266	1 500 129	1 513 359	1 812 898	**1 982 892**
ضرائب الجارية- خصوم	38 251	43 695	49 465	57 302	**62 926**
الضرائب المؤجلة-خصوم	9 046	7 140	9 116	10 549	**9 314**
خصوم أخرى	37	420	352	542	**638**
حسابات التسوية	16 532	23 540	35 082	17 344	**22 617**
مؤونات لتغطية المخاطر و الأعباء	7 532	10 605	13 052	14 485	**19 651**
إعانات التجهيز-إعانات أخرى	3 113	24 995	51 370	50 141	**49 174**
ديون تابعة	0	0	0	0	**0**
رأس مال البنك	37 740	37 107	40 475	36 111	**35 522**
علاوات مرتبطة برأس المال	0	0	0	0	**0**
احتياطات	48 000	48 000	48 000	48 000	**48 000**
فارق التقييم	0	0	0	0	**0**
فارق إعادة التقييم	114 501	135 482	147 457	158 060	**173 500**
ترحيل من جديد (+/-)	-390	689	884	1 370	**1 929**
نتيجة السنة المالية (+/-)	15 921	15 921	15 921	15 921	**15 921**
المجموع	40 981	21 974	20 603	30 441	**37 500**
	2 258 544	**2 514 424**	**2 689 134**	**3 115 801**	**3 366 973**

القرض الشعبي الجزائر ج.
CREDIT POPULAIRE D'ALGERIE

نشرة إعلامية- أسهم بنك القرض الشعبي الجزائري -

يمكن للقرض الشعبي الجزائري اجراء عمليات ذات الصلة بنشاطها، لاسيما فيما يتعلق بعمليات الصرف توظيف القيم المنقولة وكل منتوج مالي، اكتتابها وشرائها وبيعها وتسييرها وحفظها.

3-2 معلومات مالية

الوحدة: مليون دج

الأصول	2018	2019	2020	2021	2022
الصندوق، البنك المركزي، الخزينة العمومية، الحساب الجاري البريدي.	319 731	252 915	320 975	456 152	**672 631**
أصول مالية مملوكة لغرض التعامل	5 410	698		3 982	**22 789**
أصول مالية مملوكة جاهزة للبيع	133 921	172 616	175 170	203 126	**189 687**
سلفيات وحقوق على الهيئات المالية	383 406	536 175	555 444	588 440	**528 253**
سلفيات وحقوق على الزبائن	1 370 000	1 502 233	1 583 266	1 376 701	**1 355 660**
أصول مالية مملوكة إلى غاية الاستحقاق	1 087	507	507	435 694	**541 126**
الضرائب الجارية- أصول	2 555	7 645	5 456	2 964	**5 477**
الضرائب المؤجلة- أصول	2 143	2 249	2 804	3 901	**3 998**
أصول أخرى	10 954	9 936	13 258	12 188	**11 922**
حسابات التسوية	39	49	262	33	**34**
المساهمات في الفروع، المؤسسات المشتركة أو الكيانات المشاركة	12 711	12 198	14 872	15 046	**17 548**
العقارات الموظفة	0	0	0	0	**0**
الأصول الثابتة المادية	16 305	16 833	16 739	17 153	**17 489**
الأصول الثابتة غير المادية	281	369	384	421	**359**
فارق الحيازة	0	0	0	0	**0**
المجموع	**2 258 544**	**2 514 424**	**2 689 134**	**3 115 801**	**3 366 973**

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