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Multicriteria Decision Analysis for Banks Risks Evaluation

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Methods

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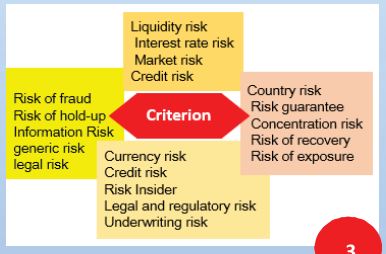

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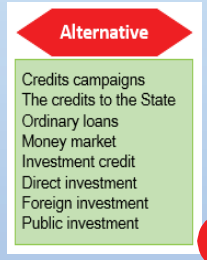

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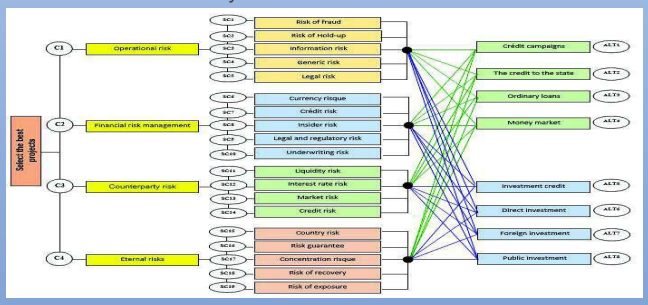
The decision process required to the AHP method is presented in 12 steps, first the problem or the objective of the analysis must be clearly identified as the figures above: the objective select best projects (1) criteria (2), sub-criteria (3) and alternative (4)

The steps after identifying the problems are as follows:

1. Establish the hierarchy structure



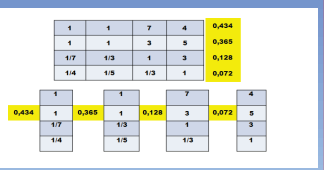
2. Make the pairwise comparisons (binary) criteria in relation to the objective

Pairwise comparison criteria	Considered important criteria	Scale	Evaluation
Operational risk / Financial risk management	Operational risk / Financial risk management	also important	1
Operational risk / risk against parties	Operational risk	Very highly important	7
Operational risk / External risks	Operational risk	intermediate value	4
Financial risk management / risk against parties	Financial risk management	Slightly higher	3
Risk against parties/ External risks	Risk against parties	Slightly higher	3
Financial risk management / external risk	Financial risk management	highly significant	5

Pairwise comparison criteria	Operational risk	Financial risk management	Risk against parties	External risk
Operational risk	1	1	7	4
Financial risk management	1	1	3	5
Risk against parties	1/7	1/3	1	3
External risk	1/4	1/5	1/3	1

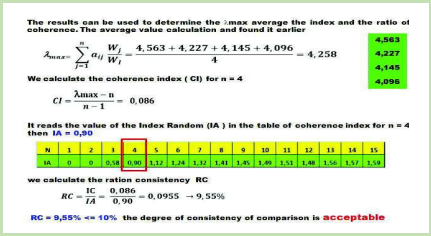
3. Calculate the priorities vectors

1	1	7	4					priorité
1	1	3	5	0,418	0,395	0,618	0,308	0,434
1/7	1/3	1	3	0,418	0,395	0,265	0,385	0,365
1/4	1/5	1/3	1	0,060	0,132	0,088	0,231	0,128
2,39	2,53	11,33	13,00	0,104	0,079	0,029	0,077	0,072



4-5-6-7. Determine the mean of the priority value (λmax), IA, IC, RC

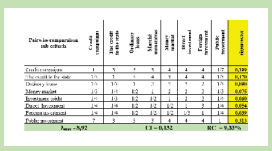
Pairwise comparison criteria	Operational risk	Financial risk management	Risk against parties	External risk	Eigenvector
Operational risk	1	1	7	4	0,434
Financial risk management	1	1	3	5	0,366
Risk against parties	1/7	1/3	1	3	0,128
External risk	1/4	1/5	1/3	1	0,072
$\lambda_{max} = 4,258$		IC = 0,086			RC = 9,55%

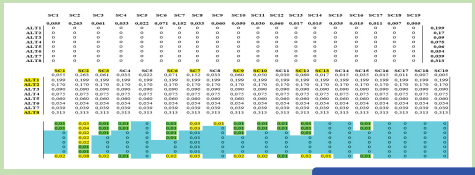


8-9.10.Perform comprehensive comparisons against each existing criterion and the determination the performance of the relative value of each sub consideration of and near the upper level, with the project aggregation

Operational risk C1 [0,434]	Financial risk management C2 [0,366]	Counterparty risk C3 [0,128]	External risk C4 [0,072]
SC1 [0, 126]	SC6 [0, 194]	SC11 [0, 238]	SC15 [0, 489]
SC2 [0, 606]	SC7 [0, 417]	SC12 [0, 514]	SC16 [0, 202]
SC3 [0, 141]	SC8 [0, 089]	SC13 [0, 133]	SC17 [0, 155]
SC4 [0, 075]	SC9 [0, 163]	SC14 [0, 115]	SC18 [0, 091]
SC5 [0, 052]	SC10 [0, 137]		SC19 [0, 063]

11-12. Calculate alternative priorities and Determine the relative performance criteria and alternatives





Results

The results of this study show that ALT8 > ALT2 > ALT1

ALT8 : public investment is the best choice among the alternatives.

The results for each risk event depend on choice of pairwise comparison of decision maker, the AHP method is an effective tool for decision makers in the field of financial institutions.

The processing procedure of evaluation criteria proposed in this study provide policy makers with ideas recommendations for the future.

The multi-criteria analysis method is in itself an additional structured approache to deal with all relevant problematic in an organized manner.

[1] SAATY LT "How to make a decision: The Analytic Hierarchy Process, European of Operation Research, Vol. 48, 1990, pp. 9-26. European journal of operational research ISSN 0377-2217 CODEN EJORDT.

[2] Définition des risques, typologie des risques « Gestion des risques et risque de crédit » Vivien BRUNEL, This version: January 28, 2009

[3] Pascal Kerbel « Management des risques inclus secteur banque et assurance », La définition des risques pris en compte dans le secteur bancaire en conformité avec Bâle II et solvency II, Eyrolles, Paris, 2009