

The logo for UNIL, featuring the word 'Unil' in a white, cursive script font.

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Comparison of Multicriteria and Prediction Market Approaches for Technology Foresight

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Introduction

One of the critical issues in IT management is to **“situate the challenges facing the IT managers regarding emerging technology...”**.

McKeen and Smith (2003)

This requires companies to adopt a systematic process to stay up-to-date and assess new technology for a potential integration into modern organizations.

How to choose the best approach?

We propose to establish a comparison framework based on characteristics derived from past research previously presented (MCDM and PM).

- **Presentation of the Approaches**
- **Design of the Artifacts**
- **Settings of the Experiments**
- **Analysis of the Results**

This framework aims at helping us to compare our two approaches and identify their key success factors.

- **Comparison of the Methods**
- **Conclusions**
- **Future Work**

Presentation of the Approaches

MCDM

A Management Science Approach

- uses either quantitative or qualitative criteria simultaneously and concurrently
- determines the solution approaching the “optimal” in regards of several criteria or among existing solutions

PM

An Emerging Approach

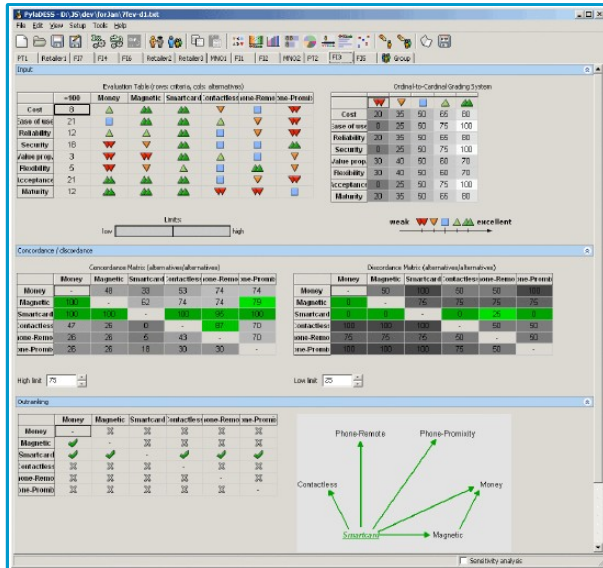
- aggregates automatically the information disseminated among all actors in a corporate crowd
- determines the consensual equilibrium price of the underlying solution

Design of the Artifacts

MCDM

A Group Decision Support System

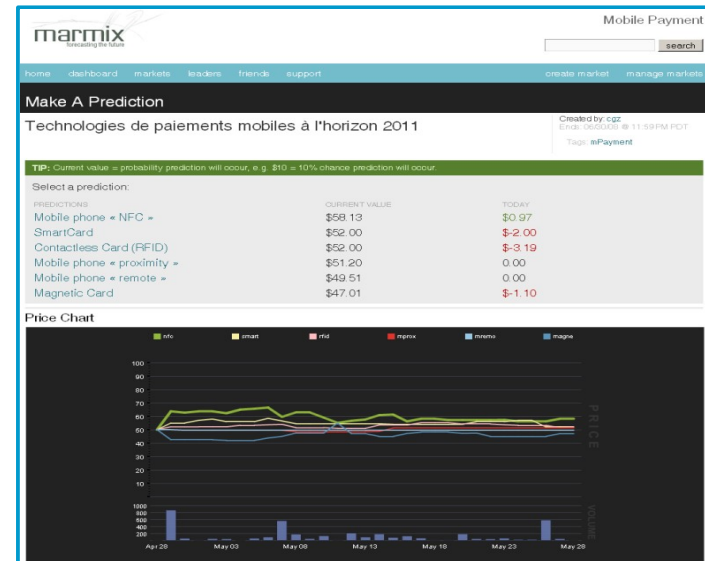
PylaDESS



PM

e-Trading Market

MarMix



Settings of the Experiments

MCDM

Visiting Swiss Experts

PM

Gathering the Crowd

Selected Experts

Who

Master Students (crowd)

Individual interviews with each company followed by a roundtable for all the experts to meet and discuss the results.

Where

One group meeting to start the market and some trading activities. Later, the participants continue to trade alone anytime.

6 month

When

1 month

Several month for setup, interviews and analysis

How

Few days for setup and analysis

Analysis of the Results

MCDM

Ranking and Outranking



1. SmartCard

2. NFC

3. Contactless Card

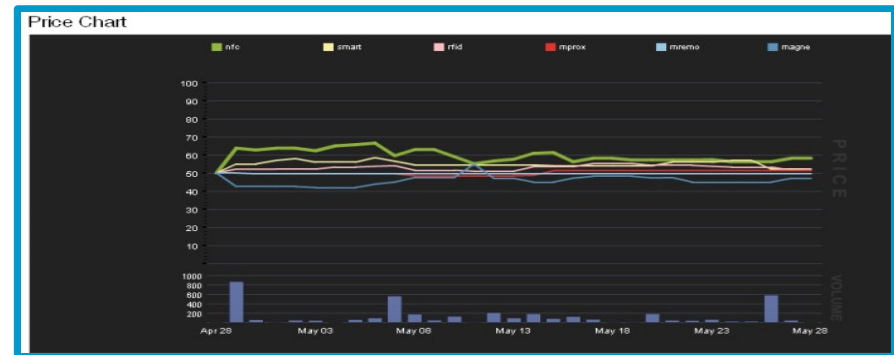
4. Magnetic Card

5. Phone proximity

6. Phone remote

PM

Price of Contracts



1. NFC

2. SmartCard

3. Contactless Card

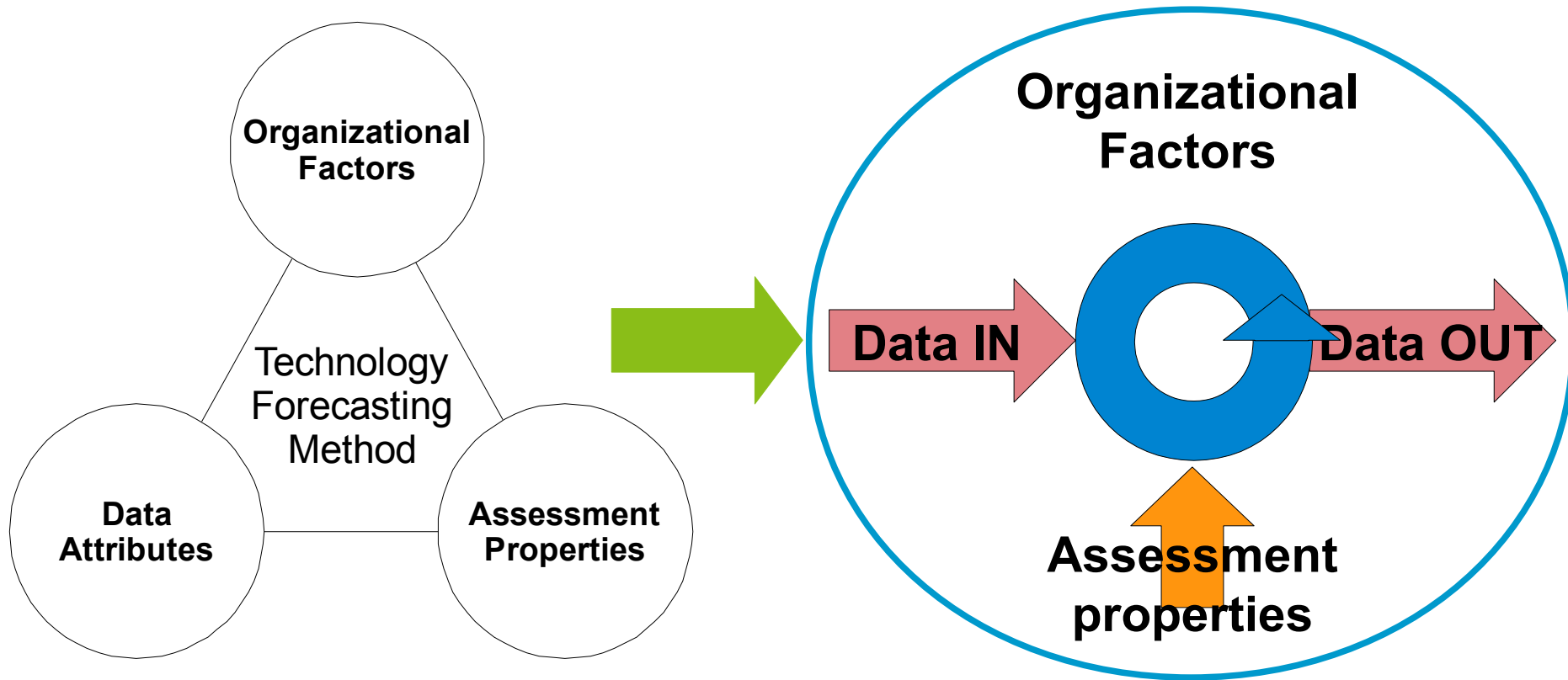
4. Phone proximity

5. Phone remote

6. Magnetic Card

Comparison of the Methods (1/5)

A Framework of Comparison



Comparison of the Methods (2/5)

Organizational factors

MCDM

- organizations with formal and less participatory decision-making processes
- relies mainly on relevant experts
- experts need a good knowledge of the method

PM

- organizations with participatory and informal decision-making style
- community of players driven by the game and its financial profits
- does not require in depth knowledge of the method

Comparison of the Methods (3/5)

Assessment Properties

MCDM

- gives a posteriori results to support the resolution of a decision problem
- detailed snapshots taken at certain times

PM

- longitudinal studies for assessments requiring frequent or permanent update
- movies shot over a period of time

Comparison of the Methods (4/5)

Data Attributes

MCDM

- Endogenous Data Collection
- External Validation Process
- Extended Outcome

PM

- Exogenous Data Collection
- Internal Validation Process
- Aggregated Outcome

Comparison of the Methods (5/5)

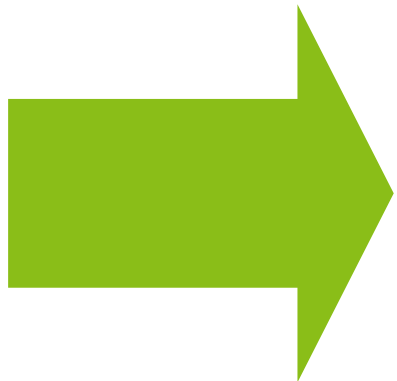
Key Success Factors

- Experts vs Crowd
- Hired Facilitator vs Motivated Crowd
- Valid Data vs Validated Data
- Explicit Outcome vs Implicit Outcome

Conclusions

MCDM approach brought an analytic explanation of the phenomenon by a controlled and criteria-based evaluation

PM provide a synthetic aggregation of numerous individual beliefs, constantly adjusted and made available for everyone



The combined strengths of the MCDM approach and prediction markets could be exploited for technology assessment and foresight to improve IT investment decisions.

Future Work

- Expand the framework to a tool to choose the right Computer Aided Technology Foresight Tool based on the forecasting context
- Use our framework with other forecasting methods

The research presented in this slideshow is available as a research paper on the website of the author:

<http://www.hec.unil.ch/cgaspoz/en/publications.html>



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Cédric Gaspoz's research focuses on information aggregation, primarily to support decision making. He explores ways of aggregating disseminated information to structure it and increase its significance. His research covers a broad range of topics like prediction markets, group decision support systems (GDSS), negotiation support systems (NSS), semantic search and Mashup. His actual focus is on using prediction markets to support portfolio management of research projects in mobile information and communication systems.