

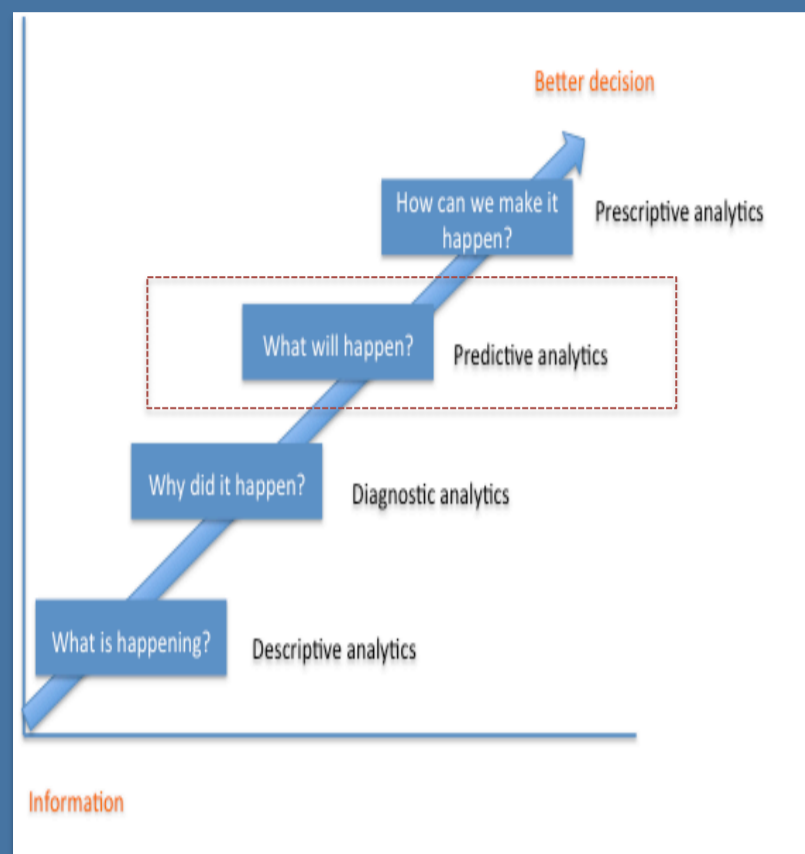
Requirements Engineering for Big Data Predictive Analytics (BDPA)

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The scope of BI



Background

Business Intelligence (BI): Collecting and analyzing internal and external data to provide decision support across the organization.

Features of regular BI:

- Expressed by KPIs in dashboards.
- Deductive in nature: users have some sense of patterns within data.
- Queries, reporting, and OLAP tools are used to validate users' hypotheses.

Features of (BDPA):

- Inductive in nature (data leads the way).
- Data exploration for meaningful pattern.
- Complexity because of statistics and algorithms.
- Iterative and collaborative analytics.
- Data sources are explored by IT and business users, algorithms are applied by data scientists, results are handed to business users.

Problem statement

Business perspective:

BDPA is the source of competitive advantage now but only 6% of companies adopt it.

Barriers:

- Vague notion of business areas and applications of BDPA.
- Lack of internal skill to use the BDPA to drive decision making.

System development perspective:

Barriers:

- Unclear goals, function and constraints of BDPA for business users.
- Difficult for business users to carry out BDPA because of its inherent complexity.

Research path

- Reviewing the literature of theoretical concepts on RE.
- Reviewing the context of big data and predictive analytics.
- Studying the RE process of companies with BDPA experience.
- Developing of a conceptual framework for the RE process of BDPA.
- Implementing the proposed conceptual framework to a case study.

Who would benefit

- **Companies:** Facilitating organizations' path to implement BDPA solutions.
- **Research community:** Clarifying research directions on requirements modeling and visualization area (simplicity of requirements meets complexity of analytics).

Research questions

Barriers are addressed by Requirements Engineering (RE) activities.

- Where and what are the goals and applications of BDPA in an organization?
- What are the appropriate modeling and visualization tools to communicate the complexity of BDPA with business users?

Objective

Supporting BDPA with a RE process to make the path to adopt the analytics easier.

- A RE process with certain phases and defined activities. (transforming problems to prediction insights)
- A template where activities of the RE process have a certain visualization and modeling tool. (common language).

✓ Emphasizing on the business relevance of the resulting insights

Work already done

RE concept

Tasks:
 Discovery
 Specification
 Validation & Verification
 Management

Phases:
 Early RE
 Late RE

Tools:
 Modeling languages, techniques

RE for BI

Problem addressed: cognitive fit

Goal-oriented approach

KPI aggregation

Methodical approach: incorporating goals, decision making mechanism and KPIs

Enterprise perspective (heterogeneous users, data, decisions)

RE for Big Data Predictive Analytics

CRISP

SEMMA

P3TQ

Future work

Framework development

Decision making mechanism

Incorporating with business processes

Prototyping

Adopting modeling and visualization techniques for BDPA

Case study

Refining the proposed framework

Validating the results

Ongoing work

Literature review:

Progressing on literature review (BI and BDPA).

languages and visualization tools.

Survey study on companies:

Preparing and sending out the questionnaire to companies with BI and BDPA experience.



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