AN INDUSTRIAL ENGINEERING PERSPECTIVE OF BUSINESS INTELLIGENCE

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ABSTRACT

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Key words:

Business intelligence, strategy alignment, Balanced Scorecard, strategy map, enterprise modelling, business process management, performance management, value chain, data warehouse, dimensional modelling, key performance indicators.

Summary:

In this thesis the candidate explores the apparent gaps between strategy development and strategy implementation (the strategy alignment question), and between business end-user needs and the suppliers of information technology (IT) related products and services. With business intelligence (BI) emerging as one of the fastest growing fields in IT, the candidate develops a conceptual model in which BI is placed into context with other relevant subjects such as strategy development, enterprise architecture and modelling and performance measurement.

The emphasis is on the development of processes and templates that support a closed loop control system with the following process steps:

- A business strategy is defined.
- The implication of the strategy on business processes, supporting IT resources and organizational structure is formally documented according to enterprise architecture principles.
- This documented blueprint of the organization helps to implement the selected business strategy.
- A performance measurement system is developed and supported by a well-designed data warehouse.
- On a regular basis the measurements that were defined to support the implementation of the strategy, together with information from the external environment are interpreted and this analysis leads to either a new strategy, or refinement of the implementation of the existing strategy. Both options may lead to changes in the enterprise architecture, the execution of business processes and/or the performance measurement system.

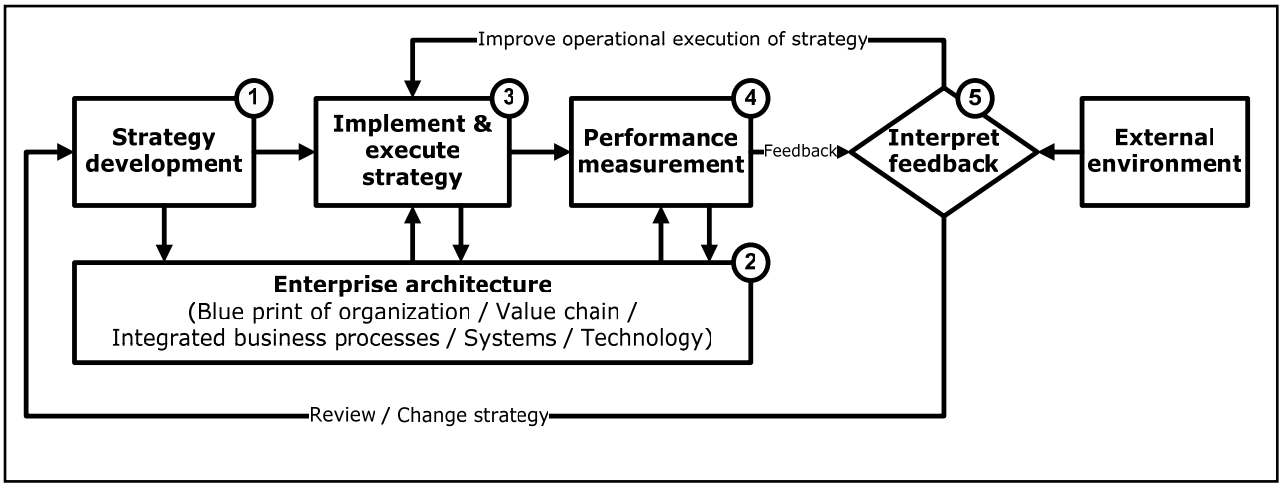
Some of the individual components of the model are supported by existing theories, for example the Zachman Framework for enterprise architecture and the Balanced Scorecard from Kaplan and Norton. The contribution of the author was to position them in the bigger picture to indicate how they can add value with regard to the establishment of business

intelligence in organizations. Instead of packaging existing ideas slightly differently under a new name, the author intentionally searched for existing theories to fulfil certain requirements in the Bigger Picture BI Context Model.

Apart from a set of templates that were adapted from various other sources and packaged into practical formats that can be used during facilitation sessions, the author has also developed and described the Fourier Model and the Pots of Money Model. The Fourier Model is a powerful conceptual model that helps a business to package solutions for market related requirements through selections of previously defined building blocks (technical components) that can be delivered through various business entities, depending on the requirements of the opportunity. The Pots of Money Model is a quantitative model embedded in a spreadsheet format to illustrate and communicate the effect of spending decisions in one area of the business on other areas.

The candidate demonstrates the Bigger Picture BI Context Model in several case studies. The thesis is accompanied by a CD ROM, which contains over 700 references to relevant literature (most of them available in full text) and links to internet web sites, as well as examples of the software templates that support some of the steps in the context model.

The following figure depicts the conceptual model in schematic format:



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acronyms

AIM	Absolute information management
B2B	Business to business
BAM	Business activity monitoring
BP	Business process
BPM	Business performance management
BPM	Business performance measurement
BPM	Business process management
BI	Business intelligence
BSC	Balanced scorecard
CD	Compact disk
CD ROM	Compact disk read only memory
CIF	Corporate information factory
CIM	Computer integrated manufacturing
CORS	Cognitive, operit, revit and synit
CRM	Customer relationship management
CSF	Critical success factor
CuTS	Culture, technology and skills
DSS	Decision support system
DW	Data warehouse
EA	Enterprise architecture
EAI	Enterprise application integration
EBIS	Enterprise business intelligence suite
EDW	Enterprise data warehouse
EII	Enterprise information integration
ER	Entity relationship
ERP	Enterprise resource planning
ETL	Extraction, transformation, loading
FK	Foreign key
GERAM	Generalized enterprise reference architecture and methodology
IE	Information ecosystem
IS	Information system
I and T Layer	Integration and transformation layer
IT	Information technology
ICT	Information and communication technology
JIT	Just in time
KM	Knowledge management
KPI	Key performance indicator
MBO	Management by objectives
MIS	Management information system
MOLAP	Multidimensional OLAP
OLAP	Online analytical processing
OLTP	Online transactional processing
ODS	Operational data store
PERA	Purdue enterprise reference architecture
PK	Primary key
ROLAP	Relational OLAP
RSA	Republic of South Africa
SCM	Supply chain management
SIG	Swanborough information grid
SWOT	Strengths, weaknesses, opportunities and threats
TQM	Total quality management
UI	User interface