

Business Intelligence Operational Structures: Towards the Design of a Reference Process Map

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Abstract

Business intelligence (BI) is often seen as a combined business and IT function. As such, the operational structure of BI is not always clearly defined. In this paper, we present an overview of typical BI operational structures and elaborate their characteristics. Based on this analysis, we will (in future work) design a reference process map for BI which can be used as a template to define organization-specific BI operational structures.

1 Introduction

Business intelligence (BI) is a topic widely discussed in IS literature and has, as a combined business and IT function, become an essential component of the information supply infrastructure and a contributor (and prerequisite) to overall organizational success (Wixom & Watson, 2010, p. 14).

In research and practice, various process models (PMs) for structuring the BI function have been proposed. Some of these models, e.g. the biTIL model by Steria Mummert Consulting, are based on reference models for IT service management, other models are more business oriented. But currently, there is no common understanding which processes a BI organization should cover. Furthermore, it can be doubted that purely business- or IT-driven models reflect the business-IT-duality inherent to BI.

Therefore, our research goal is to analyze BI PMs currently used in practice and synthesize a BI reference process map (BI RPM) from these models, which covers all important aspects of BI and which can be used as a template to define organization-specific BI operational structures. With the (synthesized) design of the BI RPM, we aim at the construction of a better IS-related problem solution (Winter, 2008). This early phase of our research is solely focussed on current corporate practice in order to document the state of the art of BI processes in practice. In later stages we will also include scientific approaches and results in order to establish a theoretically sound foundation for our research.

The research presented within this paper is work in progress. We describe our anticipated research methodology, conceptual foundations, present some related work, and derive requirements for a BI RPM. As an outlook, we present first ideas how the actual BI RPM might look alike. Its methodologically sound design and evaluation is subject to future work.

2 Research methodology

In order to document the state of the art of existing BI PMs and to identify their key characteristics, we conducted a literature review following two established frameworks (Cooper, 1988; Webster & Watson, 2002), summarized in table 1.

Item	Description
Scope	BI PMs
Goals	Analyze existing models (integration/generalization)
Perspective,	Neutral representation
Coverage strategy	Selective, as we only want to cover PMs from current practice (Cooper, 1988, p. 110).
Timeframe	Not restriction
Organization	Historically
Addressees	Specialized BI scholars and BI practitioners
Sources	As we want to analyze BI PMs from practice, we searched the data bases of well-established European BI practitioner events (http://awf.unisg.ch/ , https://www.tdwi.eu/nc/veranstaltungen/konferenzen/ , http://www.infotage.cubeware.de/) for suitable content.
Procedure	We examine at least titles and abstracts in order to limit the amount of identified literature.
Outcome	Identification of the key characteristics of the models. For the content analysis and the synthesis of the PMs, we use a concept-centric approach based on concept matrices (Webster & Watson, 2002, pp. xvi-xviii).

Table 1: Research methodology for literature review

3 Conceptual foundations

3.1 Reference process models and process maps

Conceptual models represent selected phenomena in some domain and play an important role in documenting best-practice data and PMs (Wand & Weber, 2002, p. 363). Reference (process) models are generic conceptual models which can be used to accelerate the development of improved organization-specific models (Fettke & Loos, 2007, p. 2).

In order to group and classify processes, (reference) process maps are used. Rather than focussing on a single process flow, process maps serve as a means to structure a set of processes (Heinrich, 2007, p. 83). Reference process models and maps serve as a blueprint for developing organization-specific model.

3.2 Business intelligence

BI was initially coined as a collective term for data analysis tools (Anandarajan, Anandarajan, & Srinivasan, 2004). Meanwhile, BI broadly encompasses all components of an integrated decision support infrastructure (Baars & Kemper, 2008). A central component of BI systems is the data warehouse (DW), which integrates data from various transactional IS for analytical purposes.

As there is no universally accepted BI definition (Wixom & Watson, 2010, p. 14), we adhere to the one of Wixom & Watson (2010, p. 14), which also includes processes (including the usage of data, i.e. business processes): “Business intelligence (BI) is a broad category of technologies, applications, and processes for gathering, storing, accessing, and analyzing data to help its users make better decisions.” Compared to other definitions, this definition does not only focus on technology and/or applications, which is important as we want to cover all kinds of processes which can be attributed to BI.

4 Related work

In the following, an overview of four BI PMs from practitioners is presented. The findings of this practice-based analysis are used for gap identification and will be compiled to a list of practice-based requirements for the design of a BI RPM.

4.1 Overview

The first PM by the **Business Application Research Center (BARC)** (Keller, 2009) lists tasks of a BI CC with reference to Gartner models. Similarly, the PM of **Deutsche Post** (Trbara, 2008) also describes BI CC functions. The models of **T-Mobile** (Leipert & Dittmar, 2009) and **Gansor & Totok** (2009) were discussed at a TDWI conference series.

The T-Mobile model features a process map of their so called business insights services unit, whereas the latter model again focuses on BI CC functions. More details of the PMs with respect to content are summarized in Figure 1.

4.2 Analysis & synthesis

In order to analyze the content of the BI PMs, we examined the sub-processes in several discussion sessions. We used a bottom-up approach because only the less generic sub-processes allow for comparison. As such an examination is subjective by nature, a standardized process for content analysis and synthesis (conceptualization, codebook creation, coding, refinement, & reliability check) was used, thereby helping to ensure the necessary rigor (Neuendorf, 2002, pp. 50-51). Figure 1 briefly summarizes the results of this analysis, which serve as foundation for the design of a BI RPM. The identified processes are already pre-structured in a way which we believe could be suitable for a BI RPM, but this is subject to future work.

Process		Description	 BARC	 Deutsche Post	 T-Mobile	 Gansor & Totok
BI management processes	BI planning & control	Management tasks such as project, performance, financial and risk management				
	BI governance	BI portfolio and requirements management, strategy development and coordination of business and BI operations				
	BI marketing	Promoting BI mission inside organization by means of internal marketing, sponsorship and business championship.				
	BI architecture	Design and integration of BI architecture from a technical as well as from a business perspective				
BI core processes	BI development	Complete BI development process including: change, test, version and release management, and implementation of tools and applications.				
	BI operations	Maintenance of technical infrastructure and applications (DWH, tools and reports), and configuration management				
	BI consumer assistance	Incident and problem management as well as consumer requirements and demand identification				
	BI education	Tool education, education concept and BI education programs				
BI support processes	BI data management	Data integration, security, consistency, and quality management as well as meta and master data management				
	BI human resources	Development, administration and acquisition of human resources				

Figure 1: Overview of BI processes

5 Key findings and research outlook

Table 2 summarizes the key findings from our analysis that should be incorporated in the design of a BI RPM.

Key Finding	Description
Management activities play a major role in BI (F1)	Current BI practices explicitly encompass a rich set of management activities (planning, implementation, and control). BI strategy and governance aspects are good examples for this.
Inconsistent and ill-structured models (F2)	Analysis showed that process granularity is often inconsistent in models. But processes of the same level are required to be of similar granularity. In addition, main process categories should be unambiguous, such that there is as less overlapping between sub-processes as possible.
Data management plays a major role in BI (F3)	Three out of four models included comprehensive data management functionality, which makes sense as data is the prime source for BI services.
Need for reference framework (F4)	A generic reference process framework, e.g. ITIL, could improve understandability and applicability of a BI RPM

Table 2: Summary of key findings

We will use these findings in conjunction with further requirements from academia to develop a theoretically sound and in regards to content comprehensive BI RPM. The result will provide guidelines for developing organization-specific BI operational structures.

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