New-Generation Managers and Their IS Support—Getting It Right with the Corporate Navigator

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1 Design Problem

Companies today operate in an increasingly dynamic environment. Due to their overall responsibility, managers are particularly affected by this situation. Information systems (IS) that aim at helping managers are known as management support systems (MSS). They are designed to serve as their central, hands-on, day-to-day source of information [1].

MSS design currently entails two interesting aspects. Taking the 2008/2009 economic crisis as our reference point, we firstly examine a new orientation of the corporate management task and its implications for the (functional) MSS design [2]. Secondly, digital natives increasingly populate organizations' management along with digital immigrants. The latter have learned to engage with IS and developed into MSS users over the years [3]. These new-generation managers more naturally accept MSS, but have higher (non-functional) expectations about how IS should accommodate their user preferences [4]. The objective of this article is to examine the changing IS requirements for a *new MSS architecture design*, implement and evaluate it with the prototype on hand.

2 Requirements Analyses

To specify a MSS architecture design for new-generation managers, we conducted a longitudinal study in the field. Since corporate management without IS has become impossible in large, international companies, the study targeted companies listed in the Financial Times "Europe 500" report on April 1st, 2008 and October 19th, 2009 with the following results [2].

More operational responsibility at headquarters: During the period of growth from 2003 to 2007, managers devoted most of their time to strategic leadership. According to our 2008 survey results, 23% of the managers said that they intervene frequently and extensively in operations—in parallel to their strategic management tasks. Another 8% characterized their involvement as very frequent and very extensive. This trend started 2008/2009 in the financial sector due to the economic crisis is now evident in the industrial sector as well: One third of the managers said their involvement in operations is frequent and extensive, another 10% specified that they intervene very

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frequently and very extensively. New-generation managers work more operationally than their predecessors. Thus, MSS have to increasingly provide operational information such as production rates, throughput times, quality information, and stock levels by incorporating drill-throughs into the underlying transaction systems.

More biased IS objectives: A second question examined new-generation managers' demand for flexibility. In 2008/2009, almost 50% answered that they are operating in an environment that is more aggressive than ever, and this situation continues in the 2009/2010 survey. While the earlier generation predominantly viewed IS as a "cost pool" [2], new-generation managers consider IS flexibility to be of similar importance in MSS architecture design (Fig. 1). Furthermore, managers have to make decisions faster than they have in the past and, thus, they want their MSS in a more self-service user mode [5].

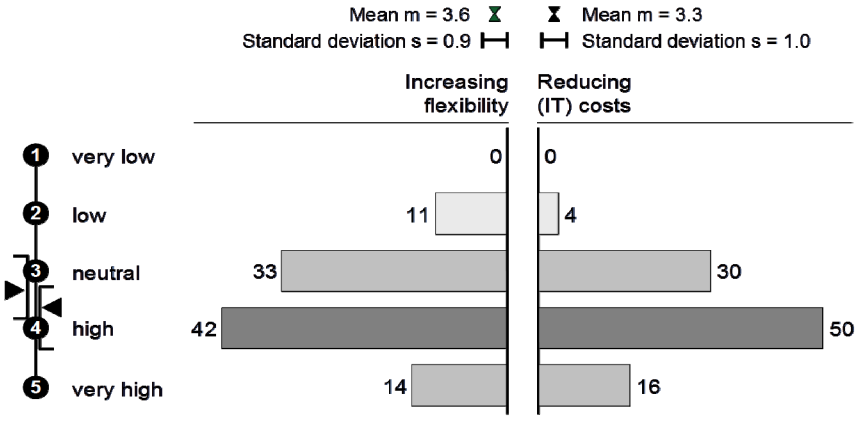

Fig. 1. New-generation managers' perspective on MSS architecture objectives [2]

3 Conceptual Design

Two characteristics distinguish the new MSS architecture[1] —we call it the "Corporate Navigator"—from its predecessors [7]: Firstly, it consistently integrates *four design layers* (strategic positioning, conceptual design, business/IT alignment, and IT components) to ensure that MSS can react flexibly to changing business requirements (Fig. 2, left side). The business/IT alignment layer[2] is structured by business domains, in a service-oriented architecture enterprise services, applications, and capabilities which align on different levels of granularity business requirements with IT capabilities. The remaining layers house the MSS software and data structures, as well as the IT infrastructure.

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1 Architectures can be defined as "the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution" [6].

2 The term business/IT alignment is used to indicate that the IS design is focused on business requirements and the business value of IS [8].

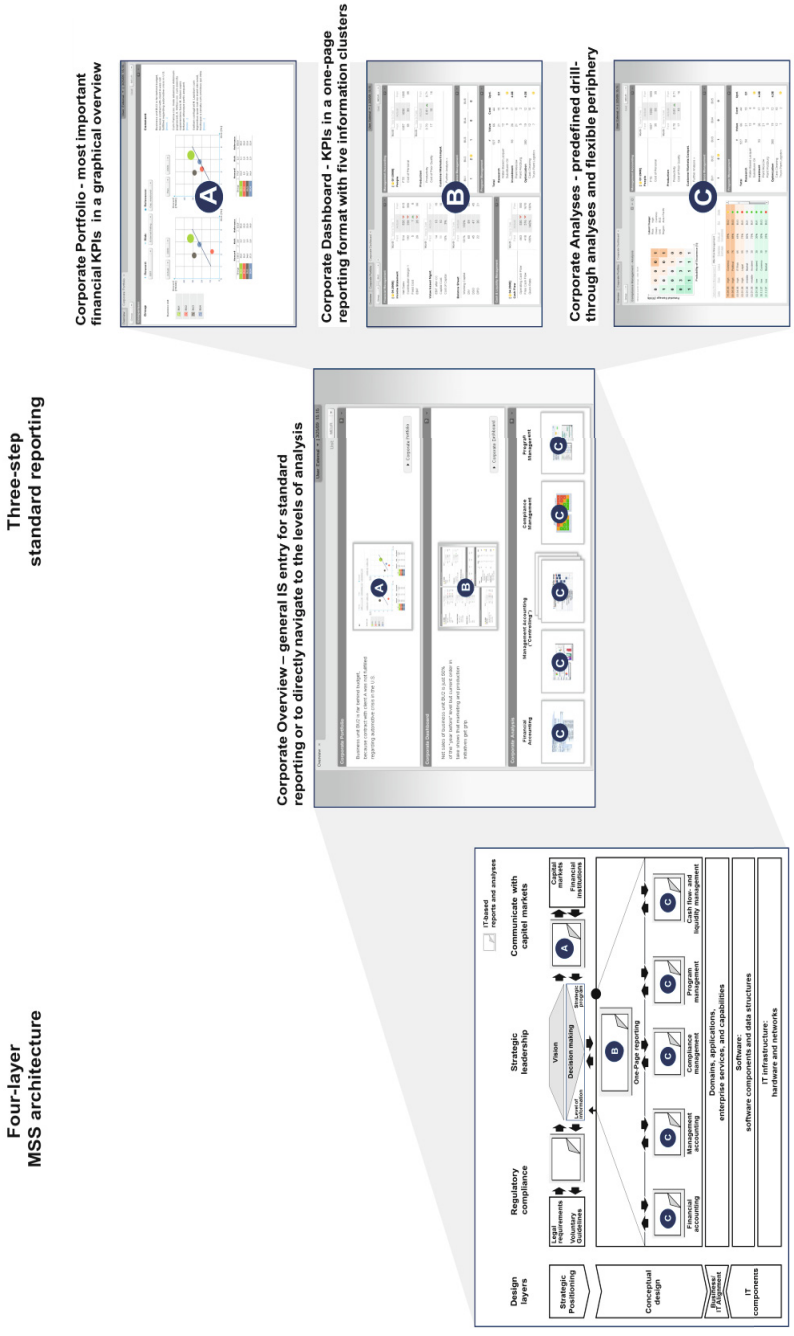

Fig. 2. Corporate Navigator-An integrative IS architecture with four design layers and a three-step standard reporting for new-generation EIS. Based on [2, 7].

Secondly, a *three-step standard reporting* ensures that information is synthesized hierarchically and presented in a condensed format for faster decision making with self-service MSS [9]. Easy-to-use IS handling supports navigation between the three steps of analysis. The corporate overview shows their interplay (Fig. 2, center): The *corporate portfolio* ("A") is the most aggregated level of analysis and provides a graphical overview of financial performance at the group, division, and business unit levels with just three KPIs: reward, risk, and relevance. The *corporate dashboard* ("B") is the second level of analysis and consists of a one-page report with more detailed KPIs structured in five information clusters: financial accounting, management accounting, compliance management, program management, and cash flow and liquidity management. Finally, *corporate analyses* ("C") enable deeper analyses with about ten standard analyses and a flexible periphery for ad-hoc reporting, non-routine information, and links to the underlying transaction systems.

4 Implementation and Evaluation

Implementing the Corporate Navigator at an automotive supplier with, as of December 31st, 2011, annual revenues of EUR 30.5 billion (USD 49.95 billion) and 164,000 employees at 200 production sites [10], has had two dimensions: modeling a more flexible MSS architecture and a revised group reporting for faster decision making leveraging self-service MSS.

The Financial Reporting (FIRE) navigator of the automotive supplier focuses on the accounting reports to Level 1 (group CxO) and Level 2 (group directors and heads of divisions), but other reporting domains are currently complemented step by step. The FIRE Navigator consists of SAP ERP 6.0 as the enterprise resource planning system, BW 7.3 as the business warehouse, SEM-BCS 6.34 as the business application, and Business Object (BO) dashboards as the frontend application. Fig. 2 shows the three-step standard reporting hierarchy and the attached click-demo presents further details.

For *research* purposes, the Corporate Navigator is a rigorous starting point. The architecture is driven by requirements that have been validated empirically from a business perspective and its modular design allows to integrate further results (Fig. 3). Environmental scanning systems—a Corporate Radar—complement our approach and enterprise services help to identify identical functionalities such as currency conversion applied in different solutions.

For *practice* purposes, the revised MSS architecture with an integrative multi-layer approach exposes essential artifacts for proper corporate management and is more flexible than the traditional MSS architecture in the early 1990s. Accommodating changing requirements, the Corporate Navigator increases the business value of performance data by presenting the most relevant KPIs in a content-wise comprehensive, but condensed, intuitive manner. Using a new frontend application makes MSS interfaces close to managers' "look&feel" needs.

Traditional MSS design (early 1990s)	Revised MSS architecture: Corporate Navigator
Requirements analysis: Business requirements often not aligned with IT capabilities	Requirements validated from a business perspective across companies listed in the FT "Europe 500" report
Design: Strategic leadership islands, often no integration with the downstream transaction systems	Integrative architecture with four design layers and three levels of analysis supporting "drill-throughs" into the underlying transaction systems
Prototyping: "One-size-fits-all" approach instead of flexible adaptation to different information needs and use situations	Modular design of financial and complementing non-financial reporting and adaptation mechanisms for different classes of similar user-group preferences

Fig. 3. "Corporate Navigator" compared to traditional MSS solution architecture [based on 7]

5 Avenues for Future Research

The more managers expand their role in day-to-day business and make decisions faster than in the past, the more a MSS architecture has to become integrative. The prototype on hand serves as a first demonstration for new-generation MSS. Thus, a next design cycle with a systematic, broader implementation and evaluation should follow.

Besides stationary MSS use, IS has to embrace managers' growing need to access MSS from mobile devices [11]. It should not be too difficult to define a company-specific profile to select appropriate devices and user-interface designs, but how to generalize patterns for such a selection, bearing different use situations in mind, should be another avenue for IS research.

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