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PUZZLE: a concept and prototype for linking business intelligence to business strategy

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Abstract

Business intelligence (BI) is a strategic approach for systematically targeting, tracking, communicating and transforming relevant weak signs¹ into actionable information on which strategic decision-making is based. Despite the increasing importance of BI, there is little underlying theoretical work, which directly can guide the interpretation of ambiguous weak signs. This paper gives an insight into the issue through a new strategic business intelligence system called *PUZZLE*. We describe this system and validate it by designing a prototype, test the system using in-depth interviews, and hold learning sessions in order to further knowledge about BI. The main results from tests show that: interpreting weak signs is potentially important for senior managers, consultants, and researchers; interpretation can be achieved gradually by bringing the weak signs together using a tracking form based upon the concept of actor/theme/weak signs/enrichment /links; interpreting weak signs is a complex process of establishing links between the weak signs. Final results show that the individual cognitive process appears heuristic when interpreting weak signs. Implications for strategic management practice and research are addressed. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Business intelligence; Weak signs; Interpreting weak signs; Fast response management; Strategic information system; Strategic business intelligence system; Creativity; Ill-structured problem; Research engineering; Exploratory research; Prototyping

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¹ The authors use the concept of weak sign instead of ‘weak signal’ as proposed by Ansoff, 1975 because they feel the word ‘signal’ implies greater quantitative measurability. However, authors continue to use it for the same purpose.

1. From business intelligence to interpreting weak signs

Companies are evolving in turbulent and equivocal environments (Drucker, 1993; Kelly, 1998; Grove, 1999). This requires companies to be alert and watchful for the detection of weak signals (Ansoff, 1975) and discontinuities about emerging threats and opportunities and to initiate further probing based on such detection (Walls and Widmeyer, 1992). In such environments, business intelligence (BI) is surfacing to deal with the large volume of information available but which are often misleading, inaccurate and untimely (Martinsons, 1994; Futures Group, 1997; Attaway, 1998; Herring, 1998; Freeman, 1999; Groom and David, 2001). The main crucial question raised by companies in such environments is how to exploit these information elements to grasp opportunities, and avoid surprises when discontinuities occur (Grove, 1999; Moore and McKenna, 1999). This is the reason that companies need to have a well analysed, designed, and developed strategic business intelligence system (SBIS) (Martinsons, 1994). The emphasis here is on information systems that enhance strategic decision-making and that support the competitive strategy of an organisation (Wiseman, 1988). Much has been written on environmental scanning systems since Aguilar, Ansoff and Porter (e.g. Beal, 2000). However, it seems that the growing uncertainty of business environments still raises the need for an efficient SBIS to support scanning and interpreting information so that valuable intelligence may be delivered to senior managers. This paper develops a new SBIS and its implementation as a computer system. It is oriented to improve the BI and to ensure success of the business strategy. The meaning of BI emphasised in this paper, termed in French as *veille stratégique*, is considered as a systematic approach by which a company keeps itself vigilant and aware of developments and early warning signs in its external environment in order to anticipate business opportunities or threats. The external environment includes all factors and events outside the company that can affect its performance. Designing a successful SBIS requires an understanding of the relationship between the BI process and weak signs. There are several similar variants of BI processes (Martinsons, 1994; Attaway, 1998; Nolan, 1999). Our intent is not to describe in detail those approaches but only to show the link to weak signs. The description of these similar processes is beyond the scope of this paper. Among these, one is certified ISO 9001 and is mainly oriented toward weak signs management. This process is explained below.

1.1. Focus of this research

We consider the BI process as cyclical, involving five phases (Fig. 1, adapted from Lesca, 1994).

The first phase ‘targeting’ consists of bounding the *surveillance* of the company’s environment to set tracking priorities. The second phase consists of organising tracking and selecting the crucial weak signs. The third phase consists of routing the weak signs collected from outside to inside the organisation. The fourth phase ‘interpreting’ consists of transforming the collected information into actionable intelligence. If interpretation is significant, actions can be taken in phase 5. Otherwise, information search has to be refined in a more specific way (return to phase 2) if information is imprecise or; (2) the boundary (target) has to be redefined (return to phase 1) if it is too large. Of these five phases, the

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