

Chapter 9

On Data Mining and Knowledge: Questions of Validity

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ABSTRACT

Understanding data mining (DM) as part of Information Systems (IS) this contribution investigates the question how this subordination is reasoned in a technological and business logical perspective. For this purpose general characteristics of Enterprise Resources Planning Applications (ERP) and Management Information Systems (MIS; including here Decision Support and Expert Systems) are presented. Based on this evaluation it is examined how knowledge and DM are becoming interdependent for Knowledge Management (KM) in organizations. Knowledge is defined along the Penrose'an dichotomy of information and knowledge in the context of resources and services. Validity of knowledge is analyzed from a methodological (quantitative versus qualitative methods) perspective, probing what key characteristics of both method strands are, and how those fit into the discipline of Organizational Studies. Unveiling a relationship between security and information in Penrose, an alternative account of security originating in Foucault is presented. In this security and knowledge become means for standardization of live in order to allow for continuation of an abstracted, socially generated object. Combining arguments about validity of knowledge claims with that of security, DM based knowledge and security are identified as means abstracting from a human core and attempting constraining variability. Against this background researchers and users of DM based knowledge are asked for awareness of the constructed character of IS, and how much of this constructed character is contained in DM based knowledge.

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INTRODUCTION

The purpose of this paper is examining what grants the special status of data mining (DM), and more general business intelligence (BI), in the dedicated organisation and in organisational sciences. On a conceptual level DM is understood as part of Information systems (IS) research. Furthermore, this paper is interested learning and developing an account of DM and its knowledge creation capabilities. The scope of this paper is limited to intra-organisational and academic development and spread of knowledge to create better “action options”. It does not consider actual methods for data mining. The paper is not reporting about DM procedures for generation of data pools originating in different organisations. The author examines the processes of ‘knowledge’ generation and validity assignment; the paper is of theoretical nature, and rests on interpretative methods.

Two research questions are examined

How does data mining fit into organizations’ information system landscape for information (and knowledge) collection and spread?

How validity is attributed to knowledge that is generated by DM, while other methodological approaches are neglected in organisations and organisational sciences?

Based on these research questions in an introduction chapter an overview to information systems (IS) and how DM is related is given. Following this introduction, knowledge/ Knowledge Management and methods for knowledge generation are examined based on an Penrose’s understanding of knowledge. Penrose is chosen here, as she is widely perceived as one “founder” of knowledge management. Taking up the question why DM based knowledge is more valued than qualitative methods originating one, characteristics of knowledge formation in both methodological stances are presented. It is examined how

DM relates to criticism brought forward against knowledge generated outside of academic and research (e.g. Ravetz 1996; Thompson-Klein 1996; Nowotny et al., 2004). Arguments developed there, form the background for identification of Future Trends in knowledge generation via DM. The chapter concludes in consolidating the technical background of DM under the heading of knowledge management and the alleged methodological superiority of DM. This consolidation happens based on Foucault’s analysis of security and how IS relate to this understanding.

This paper relates itself to the fields of DM and Information Systems suggesting DM is output from and contributing to Information Systems (IS). The author takes up the offer formulating perspectives on the subject of DM and value creation with knowledge by examining how DM initially was part of the discourse on Knowledge Management with a strong technological emphasis (IT technologies). Questioning the validity of knowledge generated with DM the relation between DM and decision making in organizations is analysed. This contribution explores implications of DM and its social (and network) impact. In the author’s account, the paper relates itself to the handbook by highlighting features of DM in organisations and the discipline of Organisational Sciences under the perspective of knowledge creation and validity of DM based knowledge.

Societal effects of technological advancement as enabler for DM, and their impact on globalization (e.g. Castells, 1996), are taken for granted. Reason being that the author is not interested in technologies and their contribution to globalisation, but on the process by which validity is attached to the outcomes from DM (cp. Floyd, 1992 a/b; D’Adderio, 2002; Kallinikos, 2004).

This contribution does not consider data quality, while acknowledging data qualities eminent important role in the process of DM. This omission is justified by noting that the author explicitly refers in course of the paper to notation differences on

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