Implications of Using Software to Support Qualitative Research

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INTRODUCTION

There is a long-standing debate about the appropriateness of different research paradigms and methods for studying organizations. This is taken up in the Strategic Management Journal (Rouse & Daellenbach, 1999, 2002), in a series of special issues of MIS Quarterly (Orlikowski & Barley, 2001) and in papers in other journals (Mackenzie & House, 1978; Meredith, Raturi, Amoako-Gyampah, & Kaplan, 1989; Modell, 2010; Pfeffer, 1993; Richards, 2002; Richardson & Robinson, 2007; Scapens, 2008; Vaivio & Sirén, 2010). Some argue for a more in-depth approach to research using qualitative and interpretive methods. The outcome of the methodology debate is an increasing acceptance of qualitative methods.

In the past, qualitative research, employed manual techniques for processing data. Researchers were the principal actor in coding, sorting and interpreting data, though some research assistance, often unacknowledged, may have been employed. However, along with increased acceptance of the use of qualitative research has come development of tools that automate various aspects of qualitative research activity. Yet, the use of computer-assisted qualitative data analysis software (CAQDAS) by qualitative researchers remains contentious (King, 2010) and little discussed.

This article argues that use of qualitative research tools can affect the outcomes of research projects in ways that researchers may not have considered, and the findings from research where such tools have been used may be qualitatively different from findings derived from research where no tools have been used to auto-mate coding and analysis processes. Such differences may be due to a capacity to conduct complex analyses more easily (Hutchison, Johnston, & Breckon, 2010); to manage very large data sets (Holstein & Gubrium, 2003); or they may be due to unanticipated processes (Davidson & Skinner, 2010), unnecessary complexity, or data corruption. There is a need for critical discussion about the impact of CAQDAS, and its potential to affect - possibly detrimentally - research outcomes (Blismas & Dainty, 2003).

The article is structured as follows: it first lays out the research issue; then reviews the issues concerning qualitative research software tools; finally presenting insights into the effects of software tools on the outcomes of research projects.

BACKGROUND

The large volumes of unstructured data typically associated with qualitative methods (Eisenhardt, 1989) are difficult to analyse within available time frames (Blismas & Dainty, 2003), especially considering the time scales often imposed by funders and doctoral studies. Transcription of recorded interviews into digital text is time consuming (Blismas & Dainty, 2003), and coding and analysis is lengthy. One problem with the richness of interview data is that analysis is impractical without a reduction in the form of data, which must be balanced against loss of meaning and general intelligibility (Miles & Huberman, 1994). The basic problem facing qualitative researchers is how to assign a conceptual label to a piece of text in a consistent

and rigorous manner (Blismas & Dainty, 2003) such that it reflects and gives meaning to the data. With time and resource constraints, a wider acceptance of qualitative methods, and copious quantities of data, "The researcher who does not use software beyond a word processor will be hampered in comparison to those who do" (Miles & Huberman, 1994). However, disadvantages of qualitative research software tools include poor immediacy of feedback, lack of non-verbal data, excessive detail, and data fragmentation(Cambra-Fierro & Wilson, 2011).

In this article qualitative data analysis (QDA) software tools in general are examined, and a research project carried out by the authors is used as a case study. The two tools examined are voice recognition software (VRS) tools, used to aid transcription of interviews, and database tools, used in qualitative data analysis. The research aim is to explore whether the technologies used to support qualitative research may impact on the interpretations made, and hence influence the outcomes of the research.

THE USE OF TECHNOLOGY IN GATHERING AND ANAYLISING INTERVIEW DATA

This article focuses on interview data and use of technology in supporting capture, processing, and analysis of that data. There are other ways of capturing interview data, such as interviewer notes and video-recordings, as well as further sources of data available to the researcher, such as archival records, source documents, and direct observation (Yin, 2009). However, as interview data is typically a significant data source for qualitative research projects and recording of interviews is common practice this work focuses on processing recorded interviews. Yet, some issues raised here apply to other data sources since organizational documents may also be digitized and processed much like interview data.

SOFTWARE SUPPORT IN QUALITATIVE RESEARCH

Hannafin (as cited in in Gibson, 1994) offers a typology for cognitive tools: seeking, collecting, organizing, generating, processing, and communicating. The

two tools examined here, a VRS tool used to aid in interview transcriptions, and a QDA database used to help in qualitative data analysis, can be categorized as generating and organizing respectively. VRS enable rapid transcription of recorded interview data. Alternatively, recordings can be sent to a transcription service where a human operator turns the recording into a text document. CAQDAS allows almost limitless manipulations on the data without altering the original data set (Blismas & Dainty, 2003). Qualitative data processing tools allow greater flexibility and specificity of output. Figure 1 shows the qualitative data process together with supporting technologies. Note that things can go wrong for the qualitative researcher at the beginning if the recording device is of insufficient quality to capture sound clearly, is located poorly, or runs out of power or storage capacity. Assuming the researcher deals with these, this article focuses on transcription and coding (organizing) interview data. This research does not address directly the meaning attributed to coded data; the interest here is in exploring the impact of the technology used and the implications for the meaning attributed to data by the researcher.

RESEARCH APPROACH

The example used by this research is a multiple case study research project investigating e-learning strategies in higher education. The research employed semi-structured interviews extensively involving seven cases and thirty interviewees. Each interview lasted for around one hour resulting in approximately 8-10k words when transcribed. Transcription used an audio-transcription typist for some interviews, audio-transcription typing carried out by a researcher for other interviews, and use of VRS software for the remainder. All interviews were transcribed verbatim, as far as possible, using a coding system developed by Newell and Simon (Newell & Simon, 1972) for protocol analysis.

Once transcribed, the interviews were entered into a qualitative data analysis software tool where they were coded into themes identified in the literature review. Additional themes were added as they emerged from the data, identified by interviewees and interpreted by the researcher. The coding, search, and retrieval functions of the software were used, but some of the analysis tools were not used due to there being: no perceived

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