Information Systems and Qualitative Research

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Abstract. Qualitative research involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain phenomena. Qualitative approach is often used on research in many fields. More recently, researchers from Information System are sowing an increase application of qualitative research methods. After a general overview of qualitative research three related theories are presented, Grounded Theory, Personal Construct Theory, and Narrative Inquiry. This is followed by some discussion about reliability in qualitative research.

Introduction

This paper details about conducting research in information systems guided by a qualitative perspective investigation. Some theories are presented: Grounded Theory, Personal Construct Theory, and Narrative Inquiry. The relationship of these theories to conduct qualitative research in information systems is approached. These theories, often used to tackle other fields of research, can also be used in the information systems discipline.

The focus of this article isn't debate the differences between qualitative and quantitative methods, as this issue has already spent much energy. The research perspective, approach, and method should be determined as a consequence of deciding upon the objectives of the investigation. Neither of these approaches is better or worse than the other. Only the specificities of each research project can point the most appropriate approach.

This paper examines the importance of qualitative research to the field of information systems. A definition of qualitative research is presented followed by the presentation of the selected theories. Finally, conclusions that discuss how this perspective and these theories contribute to information systems theoretical foundations are presented.

Qualitative research perspective

Qualitative researchers attempt to make sense of, or provide an interpretation of, observed phenomena relative to meanings attributed to these phenomena by individuals involved in specific incidents or situations. Thus, qualitative researchers spend a lot of time in the field, working closely with research participants in their natural surroundings. The qualitative researcher and the research participant work together to document and develop interpretations of events or situations relative to a specific research question.

Some time ago it was suggested that the study of information systems would remain a doubtful science as long as it continue to strive to develop its stock of knowledge primarily through the practice of the so-called scientific method. These authors were suggesting that information systems researchers, in order to advance the discipline, should consider other research perspectives. It was further suggested that information systems epistemology draws heavily from the social sciences because information systems are fundamentally social rather than technical systems. This suggestion recommends that information systems researchers move closer to the qualitative research perspective. However, as a caution, Galliers (1992), through his revised taxonomy of information systems research, recommended that information systems researchers should not blindly adopt a specific research method. Indeed, the adopted research method should be based upon the research question(s) and the objective of the research project.

More recently the information systems research community has responded to the call for more of an emphasis on conducting qualitative research (Benbasat and Zmud, 1999). Trauth (2001) in a series of manuscripts presents a number of challenges and considerations when conducting qualitative information systems research. Trauth suggests 'A significant portion of established and emerging IS researchers are grappling with the issue of learning about new research methods even as they struggle to keep up with new information technologies. This is especially the case for qualitative methods' (Trauth, 2001). Lee (2001) provides further elucidation by suggesting that information systems research is more than the study of technology or behavior. Lee suggests that information systems researchers must deal, with the phenomena that emerge when the technological and the behavioral interact, much like different chemical elements reacting to one another when they form a compound (Lee, 2001). Thus, there is a growing community of information systems researchers who are conducting investigations from a qualitative perspective. Members of this community consider information systems to be more social than technical. They are interested in investigating interpretations of phenomena. The next sections present some theories, which respond to and support a qualitative perspective. The discussion includes grounded theory, personal construct theory, and narrative inquiry.

Grounded theory

Grounded theory is defined as the process for the discovery of theory from data systematically obtained from social research. As an approach to research, Grounded

theory may be used in two ways. On one hand, it may be used as a research philosophy. Thus, the researcher approaches a research question with no a priori research framework or theoretical context. A research question, considered interesting, is posed and data are gathered relative to the question. Subsequent data analysis, as explained below, is employed to support the researcher's contention about how the data may be used to respond to the research question. On the other hand, grounded theory may be used as a technique for analyzing data, which involves the process of constant comparison. The theory suggests that categories and properties are concepts that are identified by the researcher and evolve from the constant comparing of the data. A category emerges from the data and may stand by itself as a conceptual element. A property is an attribute of a category. For example, the category 'Communication' may have properties of 'written' and 'verbal'. The constant comparison process may support existing categories or generate new ones. As Glaser and Strauss (1967) put it: 'By comparing where the facts are similar or different, we can generate properties of categories that increase the categories' generality and explanatory power'.

The data analysis process involves three types of coding. First, 'open' coding involves assigning the data to categories that are identified from the data by the researcher. Second, 'axial' or 'theoretical' coding involves identifying relationships between the categories. These relationships support the identification of an overall theoretical framework. Third, 'selective' coding involves ensuring that all available data are associated with an emerging category and that core categories are identified to support the conceptualization of the theoretical framework. Eventually, a situation of theoretical saturation is attained where no new categories or properties emerge from the gathering of further data.

Personal construct theory

Kelly (1955; 1963) developed personal construct theory based upon his work as a clinical psychologist to help assess his patients' interpersonal relationships. He determined that individuals would develop a personalised system for dealing with current or future situations that was based upon their own interpretations of their past experiences.

An individual's personal construct system may be documented using the technique known as the Role Construct Repertory Test, or RepGrid. RepGrid provide a way of doing research into problems in a more precise, less biased, way than any other research method. It is also suggested by these authors that the RepGrid technique enables one to interview someone in detail, extracting a good deal of information and to do this in such a way that input from the observer is reduced to zero. The two main components of the RepGrid are elements and constructs. Elements are entities within the research domain upon which the research participant may be able to form an opinion. The constructs are the research participant's interpretation of the elements within the same research domain.

The RepGrid technique has been employed in research areas beyond those for which it was originally designed. It has been used for general problem construction

and market research (Bannister and Mair, 1968; Corsini and Marsella, 1983; Eden and Jones, 1984; Eden and Wheaton, 1980; Fransella, 1981; Shaw, 1980) and for knowledge acquisition for expert systems (Botten et al., 1989; Latta and Swigger, 1992; Phythian and King, 1992). Also, the RepGrid technique has been employed in a series of information systems research projects (Hunter, 1993; Hunter and Beck, 1996; Hunter, 1997; Hunter and Beck, 2000). The research question related to determining how members of various groups construe the skills and personal characteristics of 'excellent' systems analysts. That is, the research attempted to document the personal construct system of research participants within the domain of discourse relating to their experiences working with systems analysts.

RepGrids were used during the interview process because they bring structure to the interview while allowing flexibility and reducing researcher bias. It was considered important to determine the interpretations of the research participants. Thus, it was necessary to adopt a tool that emphasised gathering data from the research participant while allowing the participant to determine the subject matter and content of the data. This aspect is one of the advantages of the RepGrid technique. RepGrids generate a large amount of rich, in-depth, qualitative and narrative data relating to a research participant's explanation of an elicited construct. The documentation of the research participant's explanations as interview notes forms the basis of the research data. Detailed comments were recorded for each pole of the elicited construct. The researcher determined a system of hierarchies for each construct, which depicted the relationships, within the interview notes, between an elicited construct at the RepGrid level and a detailed action statement, at the interview note level. The interview notes were obtained via the technique of Laddering whereby the researcher probes further regarding the research participant's detailed interpretations of a general comment.

The initial project in this series was conducted in Canada. Subsequent replications were carried out in Singapore and again in Canada. This data supported comments regarding cross-cultural aspects of how the performance of 'excellent' systems analysts is interpreted. Hunter and his colleagues were able to determine, among a number of results, that information systems professionals perceived 'excellent' systems analysts as being process oriented, while business professionals viewed 'excellent' systems analysts as those who were able to deliver content. Further, in the cross-cultural replication, the Singapore research participants viewed 'excellent' systems analysts as experts, while the Canadian research participants regarded 'excellent' systems analysts as coaches.

Narrative inquiry

Narrative inquiry documents a segment of one's life that is of interest to the narrator and researcher. It entails the symbolic presentation of a sequence of events connected by subject matter and related by time. The narrative inquiry approach facilitates documenting stories that are contextually rich and temporally bounded. The contextually rich concept suggests that those events, which are experienced first hand, are the ones that are most vividly remembered (Tulving, 1972). As Swap et al. (2001)

suggest, employing an approach where research participants relate stories about their personal experiences would be more memorable, be given more weight, and be more likely to guide behavior. The second concept, temporally bounded, suggests that narratives should have a beginning and an ending, along with a chronological description of intervening events. Research suggests that the sequential aspect of relating events contributes to the appropriateness of the narrative.

Narrative inquiry has been employed to investigate behavioral science (Rappaport, 1993), fiction and film (Chatman, 1978), and strategic management (Barry and Elmes, 1997). It has been employed to investigate various aspects of information systems by Boland and Day (1989), and Hirschheim and Newman (1991). Further, Hunter and Tan (2001) employed narrative inquiry to identify the major career path impacts of information systems professionals. They interviewed a number of information systems professionals at various stages of their career to determine why these individuals changed jobs. In order to ground the discussion in the research participants' personal experiences, individual résumés were employed as the main instrument to guide the interview and to elicit the narratives. The résumé was employed to assist research participants to reflect upon their work experiences and report these experiences in a sequential account of events as they transpired throughout their careers. The résumé approach has been used previously in information systems research (Young, 2000). The résumé is readily available and an untapped source of data (Dex, 1991), as well as acting as a milestone reference to assist human memory recall (Baker, 1991). While the résumé was used to guide the interview, the next paragraph describes a generic technique upon which the interview was organized.

The long interview technique (McCracken, 1988) may be used in association with narrative inquiry. During the course of the interview research participants were asked to reflect upon past work experiences. Initially, 'grand tour' (McCracken, 1988) questions were asked. These questions are general in nature and non-directive in manner, allowing the research participant to specify much of the substance or perspective of the interview. With reference to the research participant's résumé, questions were asked that focused the discussion on activities of the current position, why the research participant found the current position attractive and why the research participant left a previous position. This process was followed in reverse chronological order, employing the research participant's résumé as a guide to sequential dates. The discussion continued through the dates until the time of initial entry into the information systems profession. Throughout this section of the interview, 'floating prompt' (McCracken, 1988) questions were asked. The nature of these questions depends upon the content of each interview and, generally, relate to the researcher's decision to pursue a thread of discussion in more detail. Specific, or 'planned prompt' (McCracken, 1988) questions were asked near the end of the interview in order to address issues gleaned from the literature or previous investigations.

The objective of this research project was to document the factors surrounding job changes among a number of information systems professionals at various stages of their careers. It was anticipated that analysis of the interview data would help to identify and categorize events surrounding career path changes and career advancement. The results of this research have provided a more thorough

understanding of the events within an individual's career path, which have resulted in the research participant's current social positioning within the occupational community. Finally, trends have been identified that indicate the more beneficial aspects relating to career advancement for information systems professionals. Suggestions have been made for the information systems professional, the organizations that employ these individuals, and societies to which information systems professionals may belong.

Based upon the transcripts of the interviews, common themes were identified. These themes represented two common trends for the profession. First, the information systems professionals interviewed tended to associate more closely with the profession than with a specific organization. Second, there was an increased desire to remain current with technology and to have experience with the leading edge technologies. Hunter and Tan (2001) were able to provide recommendations and suggest implications for various stakeholders, including information systems professionals, and organizations.

Conclusions

This paper has outlined a qualitative perspective to conducting research in information systems employing grounded theory, personal construct theory, and narrative inquiry. Some published research examples have been presented to support the description of the theories and to demonstrate their application to the information systems field.

A concern about conducting qualitative research relates to verification. In general, qualitative researchers tend to agree that replication is the best means to validate conclusions determined from qualitative research. Further concerns about verification relate to researcher bias, and reliability.

Qualitative researchers become closely involved in research situations and with research participants. There arises then a concern about researcher bias. Thus, in an interview, questions may be posed in a certain way, or certain aspects of the discussion may be pursued more or less intensively. Some researchers would consider this flexibility to be beneficial, allowing the researcher to obtain relevant data. However, as Reason and Rowan (1981) suggest, it is much better to be deeply interesting than accurately boring. In the end, emphasis should be placed on the research method in order to counteract the potential introduction of bias.

When conducting qualitative research, it is incumbent upon the investigator to gather data in a systematic way in order to address the above concerns. The RepGrid technique has been shown (Stewart and Stewart, 1981) to be an acceptable method to document the personal constructs of research participants. Its use in the information systems field will support a response to the call for applied theories (Lee, 1999) and practical relevance (Benbasat and Zmud, 1999; Robey and Markus, 1998). The Long Interview technique (McCracken, 1988) supports an open unbiased investigation. It allows the researcher to document a research participant's interpretation of an event.

Finally, these techniques respond to the concern for qualitative researcher bias by allowing the research participants to determine the response and to provide their own

comment elaboration. The techniques lend structure to the qualitative data gathering process while allowing flexibility in the research participants' responses. Incorporating these techniques will support the grounding of interview data within the environment as interpreted by the research participant.

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