

Application Of Grounded Theory Method In Information Systems Research: Methodological And Practical Issues

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ABSTRACT

This paper argues that the grounded theory method (GTM) is a positivist-oriented research method from a methodological standpoint. It argues that following the systematic procedures, principles, and mechanism of conducting the research and creating knowledge and theories, and the unavoidable influence of the literature, places GTM under the umbrella of the positivist paradigm. It also sheds some light on practical issues that information systems (IS) researchers face when applying GTM such as applying theoretical sampling and coding in GTM, concerns of presenting GTM data, and the politics of applying GTM. These issues, which are methodological in nature, and their implications will also be discussed.

Keywords: Information Systems Discipline; Research Methods; Qualitative Research; Grounded Theory Method

INTRODUCTION

Kein and Myers (1999) distinguished three paradigms of IS research: positivist, interpretive, and critical. These paradigms differ in three key characteristics (Khazanchi & Munkvold, 2003). The first focuses on the philosophical assumptions of whether the empirical world (ontology) is considered to be objective and exist independently of humans, or whether it is subjective and constructed through human interactions and thought. The second involves assumptions about the nature of knowledge and its scope (epistemology). The third refers to methodological assumptions on how the knowledge is generated. There is a debate regarding classifying GTM as interpretive or positivist. In his paper “Re-grounding grounded theory”, Bryant (2002) pointed out that the grounded theory method is consistently positivist through the GTM literature from the 1960s to the 2002. He also demonstrated that by providing specific quotations taken from Glaser and Strauss’ (1967), and Strauss and Corbin’s (1990) books. His paper focuses on philosophical assumptions of ontology and epistemology. Urquhart and Fernández (2006) revealed that it is helpful to move beyond debates about epistemology to consider the practical issues of using GTM in IS, with all the variations that this use implies. They stated that GTM helps to build theory, and it is in this light that GTM should be viewed by IS researchers. Hence, they attempted to avoid discussing this issue (i.e. the ontology and epistemology of GTM) in their paper, merely stating that GTM can be considered positivist or interpretive depending on the paradigm of the researcher. In addition, Leahmann and Fernández (2007) pointed out that Glaser (1998) proposed that grounded theory should be regarded as a “general method”, without being restricted to ontologies/epistemologies. The current paper addresses the practical issues associated with applying GTM, and it also highlights the paradigm into which GT should be placed, but from the methodological aspect. Taking the recommendation of Urquhart and Fernández (2006) as a base on which to build, this paper will not address GTM from the philosophical aspect (specifically, ontology and epistemology), but rather from the practical and methodological aspect.

Bryant (2002) pointed out that confusion exists regarding the distinction between the grounded theory method (GTM) and grounded theory itself. He proposed that a grounded theory is the possible outcome of using GTM (i.e. research method). This paper agrees with Bryant on one point and disagrees on another. It agrees with using GTM to refer to the research method, but disagrees with using the term “grounded theory” to refer to the outcome of GMT. Using grounded theory as the outcome of using GTM, remains confusing. One could produce a

grounded theory that becomes a grounded theory method, especially if GTM (i.e. research method) is used to develop the theory for studying a process. The outcome for the process, in this case, is not the GTM research method, but rather GTM for studying the process. Thus, this is still confusing. Therefore, the author prefers to call the resulting theory from applying GTM a generated theory or emergent theory. The rest of the paper argues that GTM is methodologically positivist, and it highlights some technical issues and implications of its application in IS research.

INTERPRETIVE AND GTM PRINCIPLES AND PROCEDURES

Lee and Hubona (2009) argued that both positivist and interpretive research follows the fundamental principles of logic and scientific reasoning, and both can build on a common scientific basis. In order to consider interpretive IS research scientific, rigorous and robust principles for applying interpretive research are required, as well as criteria for evaluating it. Otherwise, it only deals with stories about people's daily activities. Information systems is a scientific discipline (Lee & Hubona, 2009; Iivari, 2003; Khazanchi & Munkvold, 2000). Therefore, the notion of setting these principles and evaluation criteria are essential in order to produce scientific knowledge. The question is if one provides the principles, procedures and criteria for applying interpretive research, then this impinges the methodological philosophical issue. In other words, it determines the way of creating one's knowledge, which is mechanism-oriented. That is a basic assumption of the positivist research paradigm.

Strauss and Corbin (1990, p. 24) defined grounded theory as "Qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon. In his up-to-date official website of the Grounded Theory Institute, Glaser also states that "It is the systematic generation of theory from systematic research. It is a set of rigorous research procedures leading to the emergence of conceptual categories."¹ In addition, Charmaz (2006, p. 2) defines the grounded theory method as "Systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories 'grounded' in the data themselves."

All of the definitions refer to the systematic aspect of creation theory. This systematic paradigm gives this method the facet of being scientific, but this aspect also places the GTM within the positivist paradigm, in that the method of creating the theory requires applying principles and procedures that are mandatory and mechanism-based. Researchers prefer to follow clear systematic procedures and techniques when applying GTM. The reason is that any scientific knowledge built should be based on clear procedures and verifications. This is not a deficiency, but rather gives the method value as a scientific method. This is also why other fields such as software engineering use it as a systematic method for requirement engineering (Halaweh, 2011; Chakraborty & Dehlinger, 2009; Coleman & Connor, 2007).

Klein and Myers (1999) and Strauss and Corbin (1990) asserted that the process of setting principles is flexible and not mandatory. However, this is what interpretive theorists always claim to be in the save side against any objection with methodological philosophical assumptions and to leave a margin for flexibility. Klein and Myers (1992) state:

Our use of the word "principles," therefore, guards against the idea that their use is mandatory; rather, it is incumbent upon authors, reviewers, and editors to exercise their judgment and discretion in deciding whether, how, and which of the principles should be applied and appropriated in any given research project. However, this does not mean that we advocate arbitrarily selecting some principles while ignoring others, since at the end of this section we shall argue that the principles are, to some extent at least, interdependent. Klein and Myers. (1999, p.71)

In fact, they contradict themselves, as their paper shows that there are interdependences between principles. This means that if one applies a set of principles, this implicitly implies that others are also applied and ensured. For example, they pointed out that if principle 6 and 7 are applied, this leads to principle 2, and if principle 6 and 4 are applied, this implicitly leads to principle 7. Therefore, this implicitly means that all principles are applied. Another issue, which is a linguistic matter here, is the term "principles". In any field or subject, it means that it should be

¹ www.groundedtheory.com/

followed, irrespective of the research topic and context. It also means “a fundamental truth; a comprehensive law or doctrine... or a rule or law concerning a natural phenomenon...”².

Strauss and Corbin (1990) also asserted that the coding procedures in grounded theory are not automatic or compulsory: “We do not at all wish to imply rigid adherence to them” (Strauss & Corbin, 1990, p. 59). What is the implication of that? Even though Strauss and Corbin (1990) and Klein and Myers (1999) proposed that these principles and procedures are not mandatory, one can argue the opposite. Practically, when IS editors and reviewers evaluate papers for conferences and journals or examiners assess PhD work, they consider these mandatory and they check them to ensure that the work is rigorous. Klein and Myers (1999, p.68) clearly stated that “We believe that it is better to have some principles than none at all, since the absence of any criteria increases the risk that interpretive work will continue to be judged inappropriately”. Consequently, any interpretative work that misses these criteria and principles lacks the rigors. Secondly, many research studies conducted review interpretive grounded research in IS to classify which research studies are actually grounded theory research, which are combined with other methods, and which are not grounded theory research, as claimed. The way of classifying these has been achieved based on checking the principles, procedures, and techniques as to what extent the articles adhere to them. For example, a Lehmann et al. (2006) survey of information systems articles that used GTM from 1996 to 2005 found that GTM use fell into four categories: full use of the method, using the method to generate concepts, combining grounded theory with other research methods, and mislabeled as GTM, i.e., not following any known procedures of either Glaser and Strauss or Strauss and Corbin.

Another recent purposive survey of articles, from top IS journals from 1985 to 2007, was examined by Matavire and Brown (2008). They found four main grounded theory approaches in IS research, classifying them as follows: the “Glaserian” grounded theory approach, the “Straussian” grounded theory approach, the use of “grounded theory” as part of a mixed methodology, and the simple application of grounded theory techniques as a data analysis technique. This classification asserts the notion that when one evaluates GTM research, it is necessary to check the principles or procedures to consider whether it is actually GTM. If some of these principles, procedures and techniques are missing, the articles are criticised and considered mislabelled, so the claim of flexibility is refutable. Thirdly, indicating that flexibility is required is also vague, as it is unclear as to what extent the researcher should be flexible, under which circumstances the researcher can be flexible, and which principles or procedures can be overlooked and still be considered acceptable amongst IS community researchers. Those questions are not usually answered by scholars. Although some may accept the adaption, the principles should be preserved. Leahmann and Fernández (2007) proposed extending the traditional GTM whilst asserting that its “core canons and tenets” be fully preserved.

GTM AND THE EMERGING THEORY IN IS RESEARCH

Some IS research does not discuss or highlight which GTM approach is applied (Hekkala, 2007) and what is the purpose of its application. The purpose of applying GTM is basically for developing theories. However, if this is not the case, then this should be highlighted by the researcher, as the method of evaluating the research differs. Honesty in explaining the GTM approach is required. One PhD student claimed that he followed the Glaser approach of grounded theory, but his supervisor discovered that he had actually applied the Strauss approach. Another question arises here: Can the purpose of research change throughout the discourse of conducting the empirical work?

One could start with the aim of only using GTM to analyse data, but later could end with a theory. The reverse is also correct, as one could claim the aim of its use is to create theory, but end the research with only a set of concepts or research themes. Hence, does that affect the validity of the research and the generated theory, if it was created? Actually, there is no simple answer to this question. The reason is that there is a question about the nature of theory that is built in information systems. Does a set of constructs and relationships exist between them? If so, it can be said that all research applied GTM builds theory, as this is the expectable result of applying the coding steps (open, axial, selective coding). However, the method of coding the steps, formulating the categories, and linking them together is positivist in nature.

² <http://dictionary.reference.com/browse/principle>

Applying the paradigm model proposed by Strauss and Corbin (1990) is a way of searching for causality in the data, which is also positivist in nature. However, Gregor (2006) pointed out that the interpretivists have a different viewpoint than the positivists in developing the theory, where the primary goal is not to develop theory that is testable in a narrow sense and that has the verification principle. Nevertheless, she also pointed out that in interpretive theories, the validity or credibility still needs to be assessed. This can classify the research that applies GTM as positivist. Given that the validity criterion is a measure suitable for positivist quantitative research, it is not suitable for interpretative qualitative research (Golafshani, 2003). Another concern here involves the definition of theory in information systems, which is problematic, per se, as an information system is a socio-technical system. This means that any definition of theory in IS discipline should not rely solely on one aspect (i.e. social or technical). Therefore, any proposed definition inherited from social/behavioral science is irrelevant. Similarly, any definition from the technical sciences (computer and math) is also irrelevant. Rather, any definition should address the interaction between them. Lee (2001, p. iii) pointed out that “Research in the information systems field examines more than just the technological system, or just the social system, or even the two side by side; in addition, it investigates the phenomena that emerge when the two interact”.

Therefore, the generated theory should describe or explain this nature of information systems theories. There is a debate about the nature of IS concerning whether it is a core discipline or multi-disciplinary. Benbasat and Zmud (2003) pointed out that IS needs to focus on the core of the discipline to survive. They carry the liability to the IS research community for making the discipline’s central identity ambiguous by “under-investigating phenomena intimately associated with IT-based systems and overestimating phenomena distantly associated with IT-based systems” (p. 183). Currie and Galliers (1999) and Galliers (2003) objected this point of view, arguing that information systems should be viewed as trans-disciplinary. Cecez-Kecmanovic (2002) stated that defining IS as multi-disciplinary emphasises the notion of the IS body of knowledge as an assemblage of various segments of knowledge from different disciplines such as computer science, management, marketing, business, and social psychology.

However, this understanding of IS does not explain how such an assemblage of knowledge can be productively applied in practice. Defining IS as a multi-disciplinary field justifies the claim that anyone can become an IS professional, as long as he/she acquires some knowledge from IT and a few other disciplines. He also pointed out that if IS is considered a discipline, it will have a clearly defined domain, a core body of knowledge, and typically uniform research paradigms and methods. Furthermore, he proposed that IS contains a distinct, unique character that is revealed in the interaction of and permanent interplay between the social system and the technology.

This particular interaction between the social and the technological creates a unique domain that differs from the individual discipline domains of business/management, social sciences, engineering and computer science. This is related to GTM, based on the above argument regarding defining IS, in that it should be viewed as a core discipline, and it is necessary to study the interaction between humans and technology, rather than technology and human activities separately. This implies that the generated theory from the use of GTM should reflect that. The point here is, understanding the scope of IS discipline assist in specifying the scope of generated theory to be fit with IS research, not other fields.

In addition, if theory creation is the main product, there should be clear implications on how the generated theory contributes to the organisations and investigated fieldwork. Practical implication is required, as involved participants are interested in knowing the research results. It is not sufficient to only attempt to generate a number of theories per se by applying GTM; rather, the practical application of these theories is of parallel significance. Khazanachi et al. (2001) also recommended the following:

There is need for ‘public relations’ for the IS field; we need to learn to make a greater effort as a community to communicate our research findings effectively to all our stakeholders. There is need for producing research results of practical relevance, both to serve the needs of businesses and to “stay in touch with the real world. (p. 7)

GTM AND THE LITERATURE REVIEW

A GTM principle, that there is no need to review the literature before entering the fieldwork, has recently become questionable and debatable. For example, Urquhart and Fernández (2006) pointed out that the notion of a preliminary literature review helps graduate students working on a dissertation, as it provides a way to conform to the university or college requirements. However, this principle is sometimes used in an opposite manner. PhD researchers can save time on reading the literature by claiming that GTM is used. Hence, there is no need to review the literature, as this is one of the main principles, which neglects an important part of the PhD work.

Urquhart and Fernández (2006) also stated that researcher can look at the preliminary data, but not impose a framework on future data collection. Actually, this is impractical advice, as even if the researcher remains open-minded, this does not guarantee that he is not at all influenced. On the other hand, one's knowledge is accumulated from past knowledge. A researcher engaged in teaching and/or research has past experience, which is equivalent to the literature review. The idea here is that the researcher has past experience, and that provides a background on related issues in a certain field. If the argument is correct that the researcher can start with the background on the area, then the inductive approach is not applied completely. This means that the generated theory has been partially deduced or influenced from an existing body of theory. Thus, one of the main principles of interpretive research is violated, as inductivity was not applied completely, and this can place GTM under a positivist paradigm. Inductive analysis means that "the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis" (Patton, 1980, p. 306).

Claiming that the literature review is surveyed solely to guide the research is vague as to what extent the researcher remains open-minded, or not influenced, or avoids linking the gathered data to what already exists in the literature. GTM can be considered positivist if a research relies on, or is influenced by previous work. Reviewing previous work violates the emergent nature of interpretive research. GTM is practically interpretive if it is applied in an area that has not been investigated; therefore, the emergent nature here is automatically assured. To judge that, the researcher may unsuccessfully attempt to find literature on a certain topic. In this case, the nature of the topic, as it is emergent, novel and contemporary, forces the researcher to start without the literature. It is known that IS research investigates contextual phenomena, and gives a value for different contexts. For example, empirical research can be investigated in the United States, UK or China and produces different results, and many empirical research is classified under this category (contextual IS research).

This type of research is not considered novel in this context, as the phenomenon has already been investigated, but in different contexts. For example, the technology acceptance model (TAM) has been applied intensively in various IS research studies and contexts, so any future research within this area (technology acceptance, regardless of the technology) merely confirms or extends the concepts. However, the topic is not novel, and the researcher should be familiar with what has been found. In contrast, an example of a novel contemporary topic would be green computing, at least at the time this paper is written. One potential novel area of research is how one can design information systems that contribute to the organisational environment. This is a novel topic; Few, if any, researchers have examined this topic within IS research. Therefore, starting with GTM is a suitable approach to interpretive research, since very little literature exists in this area, thus the inductivity approach is automatically ensured in this case.

Urquhart and Fernández (2006) referred to Martin's (2006) point with regard to literature use in GTM, in that it is a question of phasing. However, if it is used before entering the fieldwork visit, it will influence the researcher. If it is used after the empirical work, this is also problematic, as how can the researcher know if he has actually developed a new concept and theory if he does not know what information already exists in the literature. Thus, he may end up repeating others' work by neglecting the literature review.

Urquhart and Fernández (2006) also pointed out what Glaser stated in a conference discussion: "Let me be clear. Grounded theory is a general method. It can be used on any data or combination of data". This poses the questions: What is data? and What are the sources of data? Of course, literature review and fieldwork (interviews / observations) are the main sources of data. However, as argued before, the researcher also gains past experience, which is implicit accumulated knowledge and is another source of data. Therefore, based on the previous argument,

surveying the literature is required, as one cannot ensure whether the researcher is incompletely influenced. What is considered part of the literature review is also questionable, as one's past experience may be equivalent to the literature review and influence the end results. If it is required, it is not an inductive approach to conducting the research, and this implies that it is not interpretive research.

APPLYING THEORETICAL SAMPLING AND CODING IN GTM

Another critical issue that arises through the empirical work is the applying of the theoretical sampling technique. Does the researcher apply theoretical sampling correctly, in that the emergent issues in the initial interviews are discussed in the following interviews with the participants, or are the emergent issues neglected, hidden, forgotten, or underestimated by claiming they are beyond the research objectives? Based on what the researcher considers, is a certain issue out of the research scope or does it fall within the scope, especially if he did not look at the literature in advance? Actually, an ethical issue arises here: Transparency should be clear from the researcher's side, as it can intentionally or unintentionally occur.

Theoretical sampling is based on theoretical ideas that guide the researcher as to deciding who to interview, and which participants are related to the theoretical concepts. Again, these theoretical ideas come from the literature review and the researcher's past experience. How researchers know who to interview actually depends on the initial theoretical ideas. Thus, this also asserts the point that has been discussed in the previous issue regarding the literature review. Furthermore, to what extent does the researcher remain open-minded throughout the coding process? Through coding, the researcher codes keywords and assigns names for them, which later become concepts and categories. The method of selecting the names relies on the participant's phrases or in vivo (concepts revealed directly by the participant). However, the researcher also needs to be creative and innovative in choosing meaningful, representative, and reflective names. This creativity involves brainstorming and manipulating the data several times. The notion here is that creating a name for a new concept/category is not an easy task, since the code sometimes reflects a sentence or even several statements/paragraphs. Asking multiple researchers to individually read the same transcribed data, to determine whether they would assign the same or relevant names to the same keywords, would validate the concepts and categories.

PRESENTATION OF GTM DATA AND RESULTS

Another technical issue is related to the data: how to present the data and its analysis in GTM. Some researchers present data (codes/concepts/categories) in a table (see Allan, 2003), and they gradually show how concepts are categorised and linked to each other to finally form a model or theory. Other researchers provide narrative text/quotes or just examples to show the context of phenomena investigated and then provide a list of themes (see Seidel & Recker, 2009). However, given the paper length limitation, it is acceptable to tabulate the codes instead of presenting quotes.

For a PhD thesis, where the researcher has more free space, the full data (quotes) can be displayed. This also is required to ensure the creditability of the research and that the generated theory is noticeably emerged from the data itself. It is also a common practice amongst IS researchers to represent the generated theory (concepts, categories and relationships) in a graphical model. This is helpful and provides an abstract view of the research results. It also assists in testing the model in future research by quantitative methods. However, there is no consistency amongst these models in terms of notations and rules, which can sometimes be confusing as to what is indicated (see Allan, 2003; Coleman & O'Connor, 2007; Georgieva & Allan, 2008; Virili & Sorrentino, 2010).

POLITICS AND GTM

Researchers and especially PhD students have often thought that they have little choice with regard to theory and are required to follow their supervisors' suggestion (Bernd et al., 2008). They also use GTM as a theoretical base for their research to defend their PhD with a well-established research method. It is also noted that GTM is used as a prestigious approach to their research. The term "GTM" and its use to generate theory is a sense of pride and ego amongst PhD students that a theory will be produced and developed from their research.

CONCLUSION

This paper has pointed out that since information systems is a scientific discipline, it should involve rigorous principles, procedures and criteria for conducting research using GTM. As a result, it can be argued that this mechanism (systematic) of conducting the research and creating knowledge and theories places GTM under the umbrella of the positivist paradigm from the aspect of methodological assumptions. This is how GTM should be viewed in IS research instead of being mislabeled as interpretive. Rather, it should be addressed as a qualitative research method unless it is applied to a novel and unique topic as discussed earlier, in which case it can be classified as interpretive, as inductivity is completely ensured.

Nonetheless, this is limited in IS research, as a huge number of empirical IS articles are considered contextual research, that addresses existing phenomena but with different contexts. However, this does not mean that no new concepts may emerge, as each context has its own particularities. Rather, these extend the existing concepts and theories, even though they do not generate an emergent theory. This paper has also addressed some of the technical issues and implications regarding the application of GTM in IS research, such as surveying the literature theory, the nature of the generated theory, concerns of presenting GTM data, and the politics of applying GTM. This paper has made a contribution by arguing that GTM is methodologically positivist-oriented, and by providing some practical implications of its use by IS researchers.

AUTHOR INFORMATION

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