Grounded in Practice: Using Interpretive Research to Build Theory

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Abstract: This paper provides guidance for carrying out research using an interpretive framework to build theory of IS practice. The purpose of the paper is to provide an example of (a) factors influencing the choice of interpretive methods, (b) developing a theoretical framework, (c) particulars of data collection and analysis, and (d) an application of evaluative criteria applicable to interpretive research. This paper is different in that the focus is on describing the research process, conceptual issues and the research methods used rather than the findings. This format is important given that there is no accepted general model for communicating interpretive research, and few guidelines exist for conducting the inductive process central to interpretive research.

Keywords: Interpretive perspective, case study, grounded theory, qualitative research.

1. Introduction

This paper provides guidance and an example for carrying out research using an interpretive framework to build theory of IS practice. The paper provides an example of (a) developing a theoretical framework, (b) how to choose an appropriate research method, (c) particulars of data collection and analysis, and (d) appropriate evaluative criteria applicable to interpretive research. The research example is a study of decision-making by owner-managers of small firms in the IT industry in Australia. The aim of the study (1) was directed toward exploring and describing the decision making process of owner/managers regarding their participation with on-the-job training schemes for the first time; and (2) to develop process theory explaining their participation. While structured as a typical research paper, this paper is different in that the focus is on describing the research process, conceptual issues and the research methods used rather than the findings. This format is important for two reasons: (1) unlike positivist research, there is no accepted general model for communicating interpretive research. (2) Similarly, few guidelines exist for conducting the inductive process central to interpretive research. Throughout the paper, issues relating to the choice and application of the methods in terms of conducting inductive research are discussed. Given the practical importance of interpretive research in information systems it is argued that documenting the decisions about the research process may be particularly valuable to researchers in the information systems community.

1.1 The nature of interpretive research

It is important first of all to provide a definition of interpretive research and to draw a distinction between a related term — qualitative research. Firstly, qualitative research can be interpretive or positive depending on the philosophical assumptions of the researcher. According to Schwandt (2001), qualitative research is a diverse term covering an array of techniques seeking to describe, decode, translate, and somehow come to terms with the meaning, rather than the measurement or frequency of phenomena in the social world. In other-words, qualitative research tends to work with text rather than numbers. Interpretive research, on-the-other-hand, is a more specific term and is defined in terms of epistemology.

Following Klein & Myers (1999), the foundation assumption for interpretive research is that knowledge is gained, or at least filtered, through social constructions such as language, consciousness, and shared meanings. In addition to the emphasis on the socially constructed nature of reality, interpretive research acknowledges the intimate relationship between the researcher and what is being explored, and the situational constraints shaping this process. In terms of methodology, interpretive research does not predefine dependent or independent variables, does not set out to test hypotheses, but aims to produce an

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understanding of the social context of the phenomenon and the process whereby the phenomenon influences and is influenced by the social context (Walsham, 1995).

Keeping the above definition of interpretive research in mind, the scope of this paper is to clarify (by way of example) the nature of interpretive research methods, and to advise others how to employ interpretive methods. In reference to Klein & Myers' (2001) classification scheme for interpretive research in IS, this paper can be identified and characterised as advancing interpretive research methods. Before embarking on a research project a researcher needs to define how he/she is conducting the research, what theoretical lens is being applied, and what methods are most appropriate to collect and analyse the data. The paper examines these issues and then illustrates how they were applied in the particular research example.

The paper is organised as follows. The first section lays the foundation by considering important factors that influence the choice of qualitative methods, and in particular, an interpretive approach for IS research. The sections following are applied and focus on building a theoretical framework, and conducting interpretive process-oriented research, respectively. The last section evaluates the research by way of reference to Klein & Myers' (1999) criteria.

2. Factors influencing the choice of qualitative methods

Trauth (2001) lists five factors influencing the choice of qualitative methods in IS research. The first factor is the nature of the research problem, second is the researcher's theoretical lens, and the third is the degree of uncertainty surrounding the phenomenon. These three main factors are now illustrated by way of example in the ensuing sections.

2.1 The research problem

Trauth argues that the nature of the research problem should be the most significant influence on the choice of a research methodology. "That is, *what* one wants to learn determines *how* one should go about learning it" (Trauth, 2001: 4). This paper goes further and states that what we want to learn will help shape the research questions posed, and the questions posed will depend on the stage of knowledge accrual about the phenomenon. These two factors may be distinct but they are nevertheless interrelated.

Based on research documented in Rowlands (2001), this section provides a narrative of how the research commenced, how the research problem was initially identified, and how the subsequent research questions were posed. The impetus began in 1995. For a number of years prior to the conduct of this study, the author was a manager within a large training provider in New South Wales, Australia. Toward the end of 1995, the author was approached by an Information Technology Industry Training Advisory Board to manage a pilot program involving the introduction of an Australian Qualification Framework level-4 traineeship in Information Technology. This program provided employees with a recognised qualification and competencies in networking, communications equipment, and PC hardware implementation.

As part of this pilot program, the author was responsible for securing the participation of industry, and managing the delivery of the off-the-job training. It was then, from a training provider's perspective, that the vexing problem of a lack of employer participation became evident. One question that kept recurring in the author's mind was, given that there was (and still is) considerable demand by industry for the skills and competencies supplied by the program, and a large pool of suitable trainees to recruit from, why weren't small and medium sized enterprises participating? Eventually, this experience led to the commencement of this study, the framing of the problem, and to the later definition of the research questions.

As a manager responsible for providing IT training, the author wanted to research this problem and hopefully contribute some of the findings back into practice. As a starting point the author turned to the literature for possible answers. A review of the literature found that there had been a number of studies undertaken and reports published providing solid data identifying key constructs and variables relating to

training in small business in general. For instance, enough was known about the following kinds of questions: What is the general attitude of small business to current training reforms? What factors and contextual elements influence the decision of small firms to participate? What is the current level of knowledge in small business about formal workplace training procedures? These predominantly 'what' type questions indicated that only one half of the problem had been examined. For instance, we did not know enough about why some firms decided to participate, of those that did, how they arrived at their decision. In other-words, using Trauth's phrase '*what* I wanted to learn' was expressed as: wanting to know the processes small firms in the IT industry went through in making their decision.

The author identified a need for a research method enabling exploration and then explanation to this problem – which involved the '*how* one should go about learning it'. From knowledge obtained in graduate courses on research methods, the author chose the in-depth case study because the desire was to uncover the "story behind the factors" about the reluctance of small employers to participate with formal on-the-job training schemes. The case study has been an essential form of research in the social sciences, and has been used in research involving small business (Chetty, 1996), and extensive research within organisations (Barrett & Walsham, 2004). According to Yin (2003), a major strength of the case study is that it allows the researcher to understand the problem, the nature and complexity of the process taking place; and valuable insights can be gained into new topics emerging in the rapidly changing field, such as training practices in the IT industry. In addition, case research can contribute to knowledge by relating findings of the particular to generalisable theory.

After this initial review of the literature, the author was firming in his mind that the research approach most appropriate to the problem would be exploratory, most likely inductive, and as discussed later, would be a process study. At this early stage the author hadn't chosen a method of data analysis, but knew of grounded theory and had a personal preference for qualitative research over quantitative approaches. To recap at this stage, what one wants to learn — the subtleties of the decision-making process — determines how one should go about learning it — the case method.

2.2 The researcher's theoretical lens

Trauth's (2001) second important influence on the choice of research method is the theoretical lens that is used to frame the investigation. By theoretical lens, Trauth is referring to philosophical issues of epistemology and a choice among positive, interpretive and critical studies. For researchers, the starting point is to identify one's philosophical and theoretical assumptions leading to a choice of an appropriate methodology. The following paragraphs make explicit the author's fundamental assumptions about the nature of knowledge (*epistemology*), and the nature of ways of studying phenomena (*methodology*).

Like all fields of inquiry, organisational study is paradigmatically anchored. An interpretive paradigm is based on the view that people socially and symbolically construct their own organisational realities (Berger & Luckman, 1967). By adopting an interpretive approach, the author assumed that the participation decision-making process and the perceived meaning of on-the-job training schemes are not objective phenomena with known properties or dimensions. The research approach, accordingly, is consistent and compatible with the epistemological and ontological assumptions that the world and reality are interpreted by people in the context of historical and social practices. That is, experience of the world is subjective and best understood in terms of individuals' subjective meanings rather than the researcher's objective definitions. By choosing the assumption of subjectivity and interpretivist methods for research, this example claims that the aspects of the phenomena under investigation – the participation process – are too complex to define and measure with standard instruments. In order to gain greater knowledge about owner managers' willingness to participate with on-the-job training schemes, the example proposes a method capable of capturing social meanings of participation, as generated by owner/managers of small firms. The

proposed method is the interpretive case study.

An interpretive study – such as this research – focuses on the human action aspect of training initiatives, seeing participation as a product of interpretations, interventions and individual decisions. Interpretive researchers thus attempt to understand phenomena through accessing the meanings that participants assign to them. In direct contrast to positivist studies, interpretive researchers reject the possibility of an 'objective' or 'factual' account of events and situations, seeking instead a relativistic, albeit shared (between the researcher and the interviewee) understanding of phenomena. Generalisations from the setting, usually from a small number of case studies to a population is not sought; rather, the intent is to understand the deeper structure of a phenomenon, which it is believed can then be used to inform other settings.

In summary, the emphasis in this research example was on interpreting how owner/managers understand their situation, their attitudes towards training initiatives and their relationships with training providers. The researcher's theoretical lens – involving both perspective and method – is in the realm of interpretive and qualitative research.

2.3 Degree of uncertainty surrounding the problem

While the researcher had made clear his epistemological preference in the previous section, certain contingencies of the problem — such as degree of uncertainty surrounding the topic — also confirmed the author's qualitative, inductive, interpretive stance. For example there was little prior research investigating the conditions under which small businesses were prepared to engage in formal training schemes, or the issues involved in their decision-making process. Of the research that had been undertaken, the dominant paradigm (or theoretical lens) had been positivist with an emphasis on factor analytic studies and surveys as the main methods of analysis and data collection. The preliminary review of the literature identified previous research to be over-reliant upon mail surveys and telephone interviews with factor analysis as the main data analysis technique. The positivist lens told us that various factors were influential — "the what", but it could not tell us "why" managers participated as they did. It could not provide us with an in-depth look at the worldviews that sat behind the *facts* shared by the owner-managers. There was very little attention given to the intentions, actions, context or processes surrounding participation that explained how these issues interact and how and why participation outcomes were associated.

In light of the paucity of previous research on the process of participation, the research example provided an alternative perspective to an emerging research topic. The author argued that without more emphasis on the dynamic nature of the participation process, an incomplete understanding of the uptake problem would result. The author argued further that more attention should be paid to the development of new theory more fully specified through grounded research that is better able to account for the phenomenon under investigation. In pursuit of these dual objectives, the outcome *focus* of this study was aimed at theory building, not theory testing, for the purpose of describing and explaining the participation process. In sum, the degree of uncertainty surrounding the problem — limitations in the literature and the nature of the problem — influenced the author to choose an inductive approach and grounded theory techniques for data analysis.

Before ending this section it needs to be acknowledged that Trauth (2001) identified two additional factors that influence the choice of qualitative methods for IS research. The 4th factor is the researcher's skills. The paper has already alluded to the author's preference based on prior research training to using qualitative methods. The 5th factor – academic politics, was not an issue as the academic research centre expressed no preference involving the choice of positive, interpretive or critical methods. However, each researcher's circumstances are different and these two additional factors may well prove to be relevant when choosing an 'appropriate method' for IS research.

Further issues that accompany these influences are at the core of this paper.

The following section has a focus on three further practical issues involved in the conduct of the empirical research. These issues involve (1) conceptualising the problem, (2) an emphasis on process oriented research, and (3) building a theoretical framework, respectively.

3. Practical issues related to developing a theoretical framework

3.1 Conceptualising the problem

Given the author's epistemological stance, the author rationalised that an interpretive analysis of the texts were needed to get at the *why* of the participation decision-making behaviour and the mechanics of the *how* within the particular context. However, this was not sufficient in itself to commence the theory building process. As part of this process, the author reflected on improving our research models, and also our methodologies and perspectives so that the results of the work would be of greater value to policy-makers and practitioners.

To provide an alternate perspective to this under-researched topic, the author conceptualised the problem of training participation as a process of socio-technical innovation. In undertaking this research, the author qualified this judgement by reviewing and discussing definitions of innovations, technology, social technologies and argued a case for understanding on-the-job training schemes as an innovation in the process of acquiring skills within the firm. For example, the author borrowed from Perrow (1967) who sees organisations as places where raw materials are transformed, thus defining what is done and how it is done – the process – as the technology of organisations. This perspective of viewing on-the-job training as a process of socio-technical innovation departs from the bulk of the literature (Saunders, 2001) that shared a conventional economic focus on how firms make decisions about skilling. Alternatively, by focusing on the problem as a process of socio-technical innovation, the author began to develop a theoretical framework comprised of individual, organisational, social, governmental and economic forces that introduced some typically unexamined aspects of participation within small firms.

In building this framework, the research discussed theory that addressed the concepts of innovation and social technologies. One theory – the social construction of technology (Bijker *et al*, 1987) – describes a theoretical approach to studying the meanings of technology, and how those meanings affect the adoption of technology within an organisation. A second theory – innovation diffusion theory (Rogers, 1995) provided a general explanation for the way new ideas and objects spread through a social system over time. These literatures and a framework of process-oriented research (to be discussed next) provided valuable tools for the examination and analysis of the participation decision-making process.

3.2 An emphasis on process oriented research

The second major conceptualisation that departed from the bulk of previous research involved a focus on process. The author advocated a need for *process-oriented research* based on Markus & Robey's (1988) classification. Markus & Robey (1982) suggests that two fundamentally different types of theoretical approaches can be used to investigate organisational phenomena: *variance* and *process* research. The majority of prior research at the time was of the variance persuasion with a focus on correlations between groups of variables and a specific outcome. However, this paper's approach involved process research and aimed to understand the sequence of events leading to a result over time.

To understand more about process-oriented research Wolfe (1994) differentiates two generations of process research. Earlier work, called *stage model* research, conceptualised innovation as a series of stages that unfolded over time. The purpose of this early work was to determine whether the innovation process involved identifiable stages, and, if so, what they are and in what order. The *second generation* of process research involves in-depth, longitudinal, research conducted to fully describe the sequences of, and the conditions which determine, innovation processes. This type of research often involves theory building and qualitative data collection. Examples of process research following this research stream can be found in Langley (1999).

These studies tend to be inductive, in-depth, examinations of how innovations develop over time. Methods employed include historical analysis of archival data and published reports, interviews, questionnaires, and field observations. The form of process modelling adopted in this research example is that of *Second Generation Process Theory*, where the objective is to provide a better understanding of how and why the "pieces of the puzzle" interact and work together to produce a participation decision.

3.3 Building a theoretical framework

The last practical issue relates to building a theoretical framework. A theoretical framework consists of a selection of concepts and relations among them, grouped so as to enable its users to easily see their structure (Whetten, 1989). To borrow again from Whetten, a theoretical framework can be understood by considering four building blocks, or four essential elements. Each element is described briefly in the following paragraphs.

The first building block of a theoretical framework, "the what", refers to the elements (variables, constructs, concepts) that should be considered as part of the explanation of the phenomenon. As reported from an initial review of the literature, some conceptual and empirical research had provided researchers with a preliminary list of factors believed to be critical to participation.

However, the main contributions of this research were situated within the second building block of theory development, to determine conceptually "How" and "Why" the elements relate to each other. Having already argued that participation cannot be adequately explained by considering or manipulating one or two factors (the positive, dominant economic perspective), the author mounted a case for a new perspective based on the concepts of socio-technical innovation, decision-making, and process.

The third building block refers to a theory's assumptions – that is, the theoretical glue that welds the model together. Answers to the "Why" component push back the boundaries of our knowledge by providing compelling and logical justifications for altered views. "Only when a researcher can specify his (sic) logic, then he can follow certain rules in determining the propositions he can make about his theory" (Whetten, 1989). A previous part of this section discussed the use of *2nd Generation Process Theory* (Wolfe, 1994) as a meta-theoretical framework for studying the participation decision-making process. This meta-theory was used as part of a conceptual lens for describing and understanding the participation decision-making process.

The last building block places limitations on the propositions generated from the theoretical model. Specifically, the "Who", "Where", "When" elements set the boundaries of generalisability, and as such establish the range of theory (Whetten, 1989). In this example, the research attempted to go beyond previous research by developing an initial set of theoretical propositions (sharpened by recourse to the full literature) regarding the dynamic nature of training initiatives participation in the IT industry in SE Queensland, Australia.

3.4 Inductive versus deductive research

In applying these 'four building blocks', in the development of the theoretical framework, the author had to make a major decision of approach. For example, most qualitative researchers attempt to avoid prior commitment to theoretical constructs before gathering any data (Yin, 2003). Yet, as discussed by Whetten (1989), two different approaches may be taken, or combined. In the first, the researcher works within an explicit theoretical framework. Therefore, a theoretical framework becomes a researcher's first cut at making some explicit theoretical statements (Miles & Huberman, 1994). This approach is known as deduction. In the second, the researcher tries not to be constrained by prior theory and instead sees the development of relevant theory, propositions, and concepts as a purpose of the project. This approach is generally known as induction.

In this research example, both approaches were combined since the main intent was to study a relatively un-researched topic –

the decision-making process involving small businesses and training initiatives (the field of study), within the bounds of an already well-established research program (theory of socio-technical innovations). Hence, the author chose not to ignore previous work in the field. The author developed a conceptual model built on over ten years of research that was a conceptual advance on the literature, especially Australian work. The model of the participation context within which small IT firms operated was comprised of at least six sets of issues. These issues were then used to develop the initial coding scheme for the qualitative analysis of data. However, given that this study was aimed at theory building, not theory testing, the theoretical framework and conceptual model were used solely as a guide. It helped make sense of what occurred in the field, ensured that important issues were not overlooked, provided a set of provisional constructs to be investigated, and guided the author's interpretation and focus. This use of the theory accords with Klein & Myers' (2001) recommendation that the empirical research needs to be guided by (or at least informed by) one or more social theories.

Having developed a theoretical framework and a conceptualisation of the problem as a process of socio-technical innovation, the author was then in a position to specify the research procedures in more detail.

4. Methodological issues

This section justifies the use of a grounded theory approach when conducting process oriented research and describes a number of distinguishing features that characterise this approach – inductive, contextual, and processual – that fit with the primarily interpretive rather than positivist orientation of this research.

4.1 Reasons for using grounded theory techniques

The author chose grounded theory (GT) techniques to analyse case study interview text because, according to Strauss & Corbin (1990), grounded theorising is well suited to capturing the interpretive experiences of owner/managers and developing theoretical propositions from them. In the same line of thought, an application of GT is appropriate when the research focus is explanatory, contextual, and process oriented (Eisenhardt, 1989). Similarly, GT has been effectively used in recent IS research (Urquhart, 1997; Galal 2001; Kautz et al, 2004) to develop theory of IS practice. The *Theory Building* section provides more details of the 'how to' of coding and aspects of grounded theorising, while readers are encouraged to consult Urquhart (2001), Allan (2003), Douglas (2003) and Fernandez (2004) for specifics of some practical and philosophical issues associated with its application.

In brief, the methodology of grounded theory is iterative, requiring a steady movement between concept and data, as well as comparative, requiring a constant comparison across types of evidence to control the conceptual level and scope of the emerging theory. To facilitate this iteration and comparison, eight field sites were studied, with the research design described briefly in the next section.

4.2 The research design

The research design for theory building is illustrated in detail in Figure 1, an adaptation from Yin (2003) that follows Eisenhardt's (1989) replication approach to multiple case studies.

The design is divided into three phases: phase 1 defines the particulars of data collection, phase 2 involves within-case analysis, while phase three entails cross-case analysis.

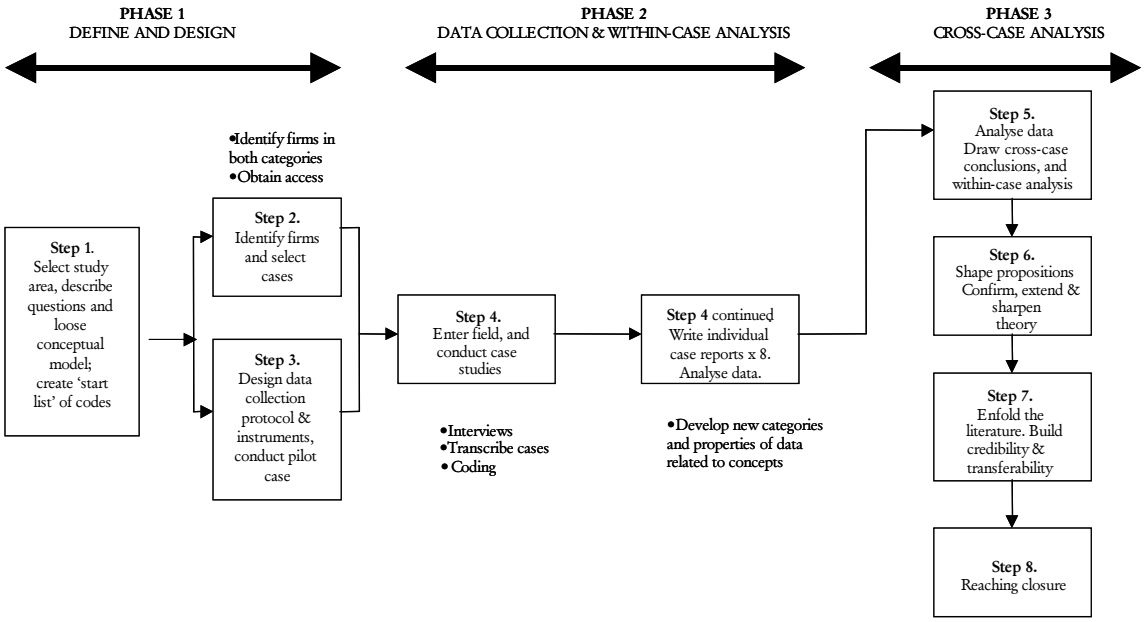

Figure 1: The specific research plan, adapted from Yin (2003) and Eisenhardt (1989)

4.3 Data analysis

Analysis commenced in *phase 1* by creating a provisional 'start list' of codes prior to fieldwork. Most of the initial coding categories were drawn from the conceptual model, the list of questions, and key concepts the researcher brought to the study. In *phase 2*, immediately after the transcripts were verified by the respondents they were again read carefully and relevant portions highlighted. The highlighted portions were then keyed into the database into the field called 'excerpt' as chunks of rich text. All of the transcripts, starting with the first interview, were coded using the preliminary set of codes developed from the pilot case. Records were labelled by case along with the identifying transcript page and question number. Occasionally, a segment of the transcript resulted in the creation of a new code, or the refinement of an existing code or even the amalgamation of codes with similar meaning. The development of the coding scheme was an on-going process throughout the transcription of each of the eight cases. In fact, the formal cataloguing of "instances" into conceptual codes and categories was undertaken concurrently while the data were being collected and entered into the database. Thirty-six resulting codes within six major categories emerged from the analysis of the entire eight cases. In addition to descriptive codes, the study identified and defined *pattern* or *inferential codes* during data analysis. *Pattern codes* are those that identify an emergent theme, pattern or explanation that the site suggests to the researcher. Pattern coding served two main functions in this study. First, it reduced large amounts of data into a smaller number of analytic units and, second, it helped the researcher build a cognitive map, an evolving schema for understanding what was happening in each case.

4.4 Theory building

The theory building process also commenced with the development and presentation of an initial conceptual model based on evidence from the literature, the coding scheme resulting from the pilot case, and the theoretical assumptions associated with *2nd Generation Process Theory*. The conceptual model then became a vehicle for generalising to the other eight cases. Second, the design of the research lent itself to cross-case analysis of data (*Phase 3*) and the search for patterns. Replication logic (which formed a basis for the selection of the cases) became the key to the rigorous analysis of the cross case data. Rowlands (2001) documents cross-case analysis of the four participating firms and made comparisons with the four non-participating firms. A number of analytic techniques suggested by Miles & Huberman (1994) were used to cross-

analyse the data. The most basic way of cross-analysing the data is with the *unordered descriptive meta-matrix*. This device assembles data from several cases in an efficient, manageable format providing 'inclusion' of all the relevant information. Secondly, the table tabulates the frequency of events and as such draws rapid attention to the dominant issues, keeping the researcher analytically honest while protecting against bias.

At the conclusion of documenting each individual case report (*phase 2*), the analysis then focused on developing *process codes* wholly grounded in the research data involving cross-case comparisons. A distinguishing characteristic of this cross-case analysis process (*phase 3*) was that, as more and more database transcripts became part of the analysis, fewer and fewer new categories emerged, and the existing ones become "saturated". The set of procedures used for text analysis, as advanced by Strauss & Corbin (1998), is known as open, axial, and selective coding. The first procedure (open coding) is a form of content analysis where chunks of text were read and categorised by researcher-constructed labels that were applied to the text best capturing the description of the phenomenon. This technique relies on an analytic technique of identifying possible categories and their properties and their dimensions. Once all text were collected and open coded, the concepts were organised by recurring theme. These themes became prime candidates for a set of stable and common categories, which linked a number of associated concepts. This second technique is known as 'axial coding' (Strauss & Corbin, 1998) and relies on a synthetic technique of making connections between sub-categories to construct a more central and comprehensive scheme. The eight cases were then re-examined and re-coded using this proposed scheme, the goal being to determine that set of categories and concepts that covered as much of the data as possible. This iterative examination yielded a framework comprising a set of broad categories (selective codes) and associated concepts that described the salient conditions, events, experiences, and consequences associated with the participation process.

The resulting coding framework is empirically valid as it accounted for the unique data of each site, as well as generalise patterns across the sites. That is, the categories describe the data, and they also interpret the data. This interpretation lead into step 6 of *phase 3*, involving making inferences from the selective codes and formulating propositions. Space limitations of the paper preclude a detailed description of step 7 (enfolding the literature) and step 8 (reaching closure). However, both steps involved discussing the propositions with the extant literature. They did so by returning to the literature to note consistencies with and departures from findings of earlier research. This involved asking what it is similar to, what does it contradict, and why? In pursuit of this objective, for each proposition, the research indicated the extent to which it was supported by previous research and the extent to which the research has added some new perspective or idea when thinking about the process of training participation.

5. Discussion of evaluative criteria and conclusion

Given that this is a paper about conducting interpretive research, the discussion now turns to principles used for evaluating interpretive research. By referring to the principles suggested by Klein & Myers (1999), the paper defends the research as being interpretive by reference to our definition and to the seven key principles. When applying Klein & Myers (1999) definition of interpretive research (as discussed in the paper's *Introduction*), the research is interpretive given that there was no use of formal propositions, quantifiable measures of variables, or drawing inferences from a representative sample to a population. Nor were any dependent or independent variables defined. The research approach instead was intent on understanding the phenomena through the meanings that the owner/managers assigned to them. This was achieved by the use of unstructured interviews for data collection and grounded theory techniques for data analysis. The GT techniques of open and axial coding are well suited to the supporting Klein & Myers' fundamental first principle for conducting interpretive field research, that of the *hermeneutic circle*.

This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of the parts (open codes) and the whole that they form (axial codes).

Klein & Myers' (1999) second principle of contextualisation requires critical reflection of the social and historical background. In this example, the research of Rowlands (2001) documented the context of the study and demonstrated how important it was to understand how training policy has evolved in terms of the emphasis successive governments have placed on promoting employment and training initiatives within small firms. The third principal — interaction between researcher and subjects, is demonstrated by the owner/managers explaining their decision-making and responding to the researcher's interpretations of this process. The fourth principle — abstraction and generalisation, was attained through the author's continuation of the analytic generalisation process by combining the findings with the innovation and organisational decision-making literature — step 6 & step 7 of the research design. The intellectual basis for the research was made explicit. The research was informed by social theory, however a subsequent cycle of revision catering for contradictions between data and theory was not undertaken. The sixth principle — multiple interpretations, was achieved by a research design based on replication logic and the deliberate intention of comparing and contrasting differences in interpretations by the participants and non-participants as expressed in their narratives and critical incidents. Finally, the seventh principal — suspicion or bias, is countered in that the views and actions of the various stakeholders was analysed in terms of their business and philanthropic interests and not those of the researcher. Table 1 provides a summary of the seven principles, their methodological emphasis, and how each principal was addressed in this study.

Table 1: Principles of interpretive methods used in this study

Principles	Its methodological emphasis	In this study …
1. Hermeneutic tradition	Explain the nature of socially constructed human meanings and the interdependent meaning of the parts and the whole that they form	This principle suggests that all human understanding is achieved by iterating between considering the shared meaning of adopters and non-adopters (the parts, represented as open codes) and the set of three interconnecting sub-processes – the whole – that they form (represented as axial codes).
2. Contextualisation	Explain the socio-historical context so that the intended audience can understand the emergence of the current situation	The analysis documented the context of the study and demonstrated how important it was to understand how policy evolved in terms of the emphasis successive governments have placed on promoting employment and training initiatives within small firms.
3. Interaction between researcher & subjects	Explain the mutual interactions of the researchers with the participants. It stresses that social facts are produced as parts of the social interaction of the researchers with the participants	The owner/managers helped the researcher to understand that their adoption / non-adoption decisions was influenced by the meanings ascribed to on-the-job training, which needs to be examined at the social level
4. Abstraction & generalisation	Explain how insights are derived through the use of a particular theoretical lens acting as a sensitising device to view the world in a certain way	The fourth principle was attained through the author's continuation of the analytic generalisation process by combining the findings with the innovation and organisational decision-making literature.
5. Dialogical reasoning	Explain possible contradictions between the theoretical preconceptions and the data gathered, allowing for a subsequent cycle of revision	The intellectual basis of the research was made explicit. The research was informed by social construction of technology & 2nd generation process theory; however the dialogical aspect was not discussed
6. Multiple interpretations	Explain possible variations in participant's interpretations. This principal asks researchers to present possible variations in	Multiple interpretations, was achieved by a research design based on replication logic and the deliberate intention of comparing and contrasting differences in interpretations by

Principles	Its methodological emphasis	In this study …
	interpretations among the participants	the participants and non-participants as expressed in their narratives and critical incidents
7. Suspicion	Explain possible bias in narratives collected from the participants and in finding alternative explanations to the problem under investigation	Examined the views and actions of various stakeholders in terms of their business and philanthropic interests, and not of the researcher.

Using the logical sequence of phases from theory exploration to theory refinement to theory testing, this research example is situated in the early ground, and sought to illustrate an inductive, interpretive approach to illuminate a phenomenon in new or better ways. In comparison with a theory exploration or discovery case, this research example possesses a more definitive theoretical starting point and focussed research objective. Nevertheless, the research remained open to the discovery of new constructs that may supplement or replace constructs making up the theory brought to this research.

To conclude, the research recognised the serious lack of established theory and prior empirical research on workplace based training within the IT industry in general. Therefore, at this stage of knowledge accrual about the decision-making process, the need for greater precision in research (theory refinement) was viewed in balance with the long-term benefits of first generating meaningful, and field-relevant theory. In this sense, the research circumstances of this investigation were clearly favourable for using an inductive, interpretive and grounded theory approach.

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