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Getting the most from NUD?IST/NVivo

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Abstract

Since the most problematic areas in applying NUD*IST and NVivo in management research are in using them for recording, collating, analysing and reporting interview data, this paper concentrates on the use of NUD*IST and NVivo for these purposes. It examines the problems that arise in their use at the different stages (Interviewing, Transcription, Structuring and Reporting) of three types of research project: a major research project, a specialist research project and a doctoral research project. Suggestions are made as to how these problems can be mitigated. Conclusions are drawn about good practice in the use of NUD*IST and NVivo and suggestions are made on some enhancements that might be made to them. Comments are made about Interpretivism and the use of NUD*IST and NVivo and on the role of supervisors in doctoral research involving the use of NUD*IST and NVivo.

Keywords

NUD*IST, NVivo, Interviewee Motivation, Transcription, Coding, Reporting

Introduction

The focus of this paper is on issues that arise in the application of QSR NUD? IST and NVivo (because of their common descent henceforth NNV) in management research. In recent years, NNV have become popular tools in management research especially amongst young researchers.

Objectively, NUD? IST and NVivo were devised to provide a logical way of structuring and enumerating qualitative data. From a computing perspective they are simply a Data Base Management System.

Superficially, NNV with their functions for correlating and counting the occurrence of different terms (Richards, T, 2002) might be seen as tools to bring a positivist approach to bear on qualitative data. They support qualitative analysis rather than perform any automated analysis themselves as is sometimes erroneously supposed (Richards, L, 2002).

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Uses Of NNV

Tesch (1991) gives a number of uses of software like NNV in Social Research. These uses are relevant to management research. More specifically, NNV are widely used in management research for the following purposes:

Organising and analysing literature reviews
Content analysis of secondary or archival sources
Recording, collating, analysing and reporting interview data

However, since Recording, collating, analysing and reporting interview data, we will concentrate in this paper on this use of NNV. Common objectives in organising and analysing data are:

To identify key concepts in newly emerging fields
Structuring an individual's world view from interview data
To construct a case study
As an aid to (grounded) theory construction

Although many of the problems of NNV analysis are related more to general issues in the use of interview data, e.g. ethical issues in interviewing, the effort required to learn how to handle data using NNV can cause researchers to forget these more general problems and the need to deal with them. This paper is not, however, concerned with the general problems of interviewing (cf. David and Sutton 2004); only those that can affect the final quality of the NNV analysis. Nor is it concerned with the detail of how NNV are used on the PC (an excellent guide to the application of NVivo in qualitative research, which also touches on a number of the issues considered later, is Gibbs, 2002). This paper is about the practical problems of interpretation that arise in applying NNV successfully in interviewing in a global context (with examples) and ways in which these problems can be mitigated by the adoption of particular practices in qualitative data collection or by using NNV in different ways. Its aim is to suggest ways in which NNV practice can be improved so that it leads to a reasonably transparent and consistent analysis which is seen to conform to accepted standards of management research.

The paper is based on experience of applying NNV in studies of:

Strategy of Manufacturing Firms
Nursing Management
Evolution of ecommerce
Logistics Industry
Knowledge management in legal firms
The place of IT in Design Curricula
International legal firms

Examples will be drawn from these as appropriate.

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As already noted, Gibbs (2002) discusses issues that are related to some of those that we consider, e.g. the "tidying up" of grammatical solecisms. On the whole, though, little appears to have been written about the problems with which we are concerned.

Layout of the paper

The remainder of the paper covers:

Criticisms of NNV
Types of users
Potential impact of interviewees' motivations on data quality

Specific problems that occur in the application of NNV: a particular focus will be on the fact that interviewing is increasingly being undertaken in a multinational or even global context.

Ways of dealing with these issues are then considered and conclusions drawn about good practice in the use of NNV and ways in which these might be encouraged through extensions to the software.

Criticisms Of NNV

NNV have been the focus of much criticism (cf. Crowley et al, 2002). One criticism is that they can cause the loss of the richness of qualitative data (Silverman,1993; Gilbert, 2002). At the opposite extreme, others complain that the effort of coming to grips with them drives researchers to pursue their qualitative research in stereotyped and unilluminating ways, or worse still to use a mechanistic approach to the analysis and presentation of their data (David & Sutton, 2004). This danger is perhaps most acute for new researchers such as doctoral students who are struggling to come to grips with the mechanics of applying the programs.

Types Of Users

In the remainder of the paper we will consider three, somewhat stylised, groups of users who can be expected to use NNV in somewhat different ways and to encounter rather different problems in doing so. The groups are shown in Table 1.

The three groups vary widely in resources available. However, in line with the existing situation in business research, we assume that none of the parties has more experience of NNV use than a relatively short course concentrating mainly on the mechanics of NNV use and, perhaps, their use in the analysis of mail surveys.

Major research projects are typically either funded through a research grant or as contract research. In either case there will be a "sponsor". Although with general research council grants the requirements of the "sponsor" may be little different from those of the academic business research community,

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there are likely to be rather more requirements placed on the researchers if the project has been funded under a research council initiative, e.g. to refer in published reports to the initiative's aims. In the major funded research project the RAs probably conduct most of the interviews and will have the major responsibility for the detail of NNV application.

Type of Application	Main Researchers	Support	Resources Available
Major funded research project	Principal Investigator(s) (experienced researchers, not experienced in NNV use)	RA(s) (inexperienced in research, inexperienced NNV users)	RA time, money, NNV training courses, mailing lists/ discussion groups
Specialist research project	Individual internationally recognised researcher	Possibly an RA or attached doctoral students (inexperienced NNV users)	Limited time and money, NNV training courses, mailing lists/ discussion groups
Doctoral research	Research student (inexperienced in research, inexperienced NNV user)	Supervisors (experienced researchers, not experienced in NNV use)	Research student + supervisor guidance, limited finance, NNV training courses, mailing lists/ discussion groups

Table 1 Stylised NNV User Groups

In the second type of project, we envisage someone with an international reputation in a relatively specialist area, e.g. Investment in Taiwan. Such specialists will sometimes have research assistants; they are more likely to have associated doctoral students.

For doctoral researchers the principal resource, as always, is themselves. Mastery of NNV analysis will be one of the objectives of their doctoral training.

Respondent Motivation

An important issue in interviewing is the motivation of respondents. It is by no means a universally acknowledged truth that managers and other senior figures in the world of organisations have a strong and disinterested commitment to the furtherance of business research. Accordingly, it is fruitful to consider why individuals participate in interviews. The different motivations for participating lead to different sets of associated problems with the neutrality, consistency, completeness and quality of interview

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data. There is a temptation, however, once the data have been transferred into NNV to cease to refer back to the recordings/transcripts of the interviews: NNV can, then, cause researchers to forget questionable aspects of their interview data such as the attitude of the interviewee. Of course, where RAs or doctoral students have undertaken the interviewers the PIs may have little idea of the motivation and attitudes of interviewees.

Reasons for being interviewed and issues associated with them

Common reasons for agreeing to participate in a research interview are:

Edict from on high. Access to the interviewee may have been granted by higher level managers. Often the interviewee has not been consulted and has had no explanation of the reasons for senior management's support of the research. Inclusion in the process can appear to the interviewee to have potential consequences for the existence/form of their job . This may lead to lack of cooperation, obfuscation or disinformation or parroting of "the party line", i.e. what it is believed that senior management wishes them to say.

Presentation of self. Many, perhaps most, managerial staff need to make project presentations. In a world of increasing employment mobility preparation for job interviews is important. Consultants, internal or external, are similarly continually involved in such presentations. An important component of most of these presentations is the ability to present oneself and one's experience positively and convincingly at a job interview. Participation in a research interview offers the chance to construct or revise the narrative of one's personal experience. Obvious dangers of such interviews are: the rewriting of the history of projects usually to emphasise the importance of the respondent's role or their managerial competence or the scapegoating of others for project failures (cf. Butler et al., 1991)

Presentation of organisation. Interviewees, especially at senior level, may wish to publicise through the research interview strategic initiatives by their organisation or discreetly lobby (government or stakeholder groups). Dangers in such interviews include sanitising of the organisation's behaviour for the public domain, e.g. pricing initiatives aimed at reducing competition, misrepresentation for competitive advantage, stockmarket impact.

Making Sense Of One's Own Experience. Respondents may simply wish to reflect on their own experience with the aid of an outside perspective offered by the researcher, e.g. in connection with some management development programme. Problems with such interviews include retrospective rationalisation and simplification of that experience.

Identifying Problems In The Application Of NNV

There are a number of other issues that arise in practical applications of NNV in Management Research that have received rather little attention.

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Many of these are well known problems in qualitative research that, nonetheless, are often forgotten by the novice NNV user. These problems are listed in Table 2 below. They have been split roughly by stage of NNV analysis but a number of problems may occur in more than one stage.

Stage	Problems associated with stage
Interviewing	Recording difficulties Organisational factors Temporal factors Individual differences in the ability to recall past events and to communicate them to the researcher Cultural issues about what may be discussed
Transcription	Jargon Correct transcription Understanding spoken English, especially When it is not the speaker's first language
Analysis	Compensating for interview deficiencies. Structuring: defining codes and assigning codes Different cultural norms/institutions Detecting and compensating for distortions
Reporting	Reporting problems

Table 2 Problems of NNV Use In Management Research

Interviewing Problems

As noted previously, in major research projects the interviewing is likely to be done mainly by the RAs; in specialist projects it is likely to be split between specialist researcher and any RAs attached to the project; and, in doctoral research the interviews will be carried out by the doctoral student.

Various generic factors, aside from those of individuals' motivation, influence interview data gathering and, in turn, impinge on NNV analysis. The most obvious are the problems of understanding recordings of spoken interviews because of, for example, the disjointed nature of ordinary speech, repetition, unfinished statements and often their poor structure. All these problems are exacerbated by the lack, in the recording, of the non-verbal cues provided in the interview situation.

There can be difficulties in recording data in the interview process. The unacceptability of tape recording of interviews in some countries is one instance. The more mundane difficulties of ensuring a good tape recording are well covered in standard research texts. There are, of course, ethical issues associated with the recording of interviews (cf. David and Sutton, 2002). In practice, there can be more difficulty with the recording of telephone interviews in that some of the cues available to the face to face interviewer are missing in a telephone interview.

Organisational factors are another significant source of difficulty. The most extreme example is perhaps the "our organisation does not participate in management research". However, the degree of "policing" of interviews,

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especially of lower level staff, exerted by the organisation can also pose problems. A frequently encountered difficulty is that of access to particular groups of staff, e.g. those in overseas subsidiaries. The sheer cost of setting up interviews in other countries may preclude carrying them out if the organisation is unwilling to facilitate consecutive interviews rather than piecemeal visits: telephone interviews, if feasible, do have a very different "flavour" from those conducted face to face.

Temporal factors - the effects of events, or opportunities and threats that are particularly salient at the time of interview - obviously play a role. Interviews are genuinely (rather than as an excuse) truncated or postponed because of unexpected initiatives by competitors, the need to prepare replies to parliamentary questions, unfolding strategic events, the need to present analyses to senior management and so on.

There are individual differences in the ability to recall past events and to communicate them to the researcher and, as already pointed out, these may be exacerbated by the motivation of the respondent. In our experience, this poses particular problems in strategy research which almost always involves a historical perspective.

A further complicating factor is cultural issues about what may be discussed. Different cultures have different "taboos" about what may be discussed and how. These may result from differences in professional culture, e.g. the high degree of circumspection that is natural to those operating in the legal field. They may arise form differences in national culture or religious culture, e.g. in discussions of Muslim banking. They may be a result of different attitudes to tax authorities or result from stock exchange restrictions on disclosure.

Some Solutions To Interviewing Problems

Table 3 gives some suggested solutions to problems of interviewing for each of our three project types. It presupposes that both RAs and doctoral students are familiar with the prescriptions of standard research methodology texts. A few comments on it are in order. We assume that PIs and specialist researchers have (inter)nationally recognised levels of expertise in the field; RAs and doctoral students do not. PIs and PhD supervisors need to ensure that doctoral students develop appropriate understanding of the relationships within the field of research and of its jargon. Access problems plague management research. It is often only possible to resolve these through the intervention of a PI or PhD supervisor. The need for such interventions can be reduced by the provision of training in setting up interviews which almost always requires arrangement by telephone. Such training is conveniently provided as an adjunct to a course on telephone interviewing, which is likely to be needed for securing supplementary material, if for no other reason.

Not all interviewees will agree to the interview being recorded. For this reason, RAs and PhD students need training in non-electronic means of note

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taking, e.g. "Mind Maps" (Buzan, 2004), that can be practised in the interview. Some of these methods could be used potentially to record non verbal cues arising during the interview.

In addition to the project specific recommendations of Table 3, there are some more general suggestions that can be made. In major or specialist research projects, we have found it convenient to record interviews using conventional cassette tape recorders. These can give at least 90 minutes of recording, the cassettes are easily copied using conventional equipment and all involved in the project can play back the interviews whilst stuck in traffic jams! Unfortunately, such equipment is becoming harder to find.

A further "wrinkle" is to play back the tape for transcription on the machine on which it was originally recorded. Playing it back on another machine will certainly not improve the quality; on some occasions it may be markedly worse.

Type of Project	Participant	Action
Major Project	RAs	Immersion in the field Testing of recording equipment Training in non-electronic recording methods , e.g. mind maps Careful listening to interview tapes Liaison with PIs over major points emerging
	PIs	Monitor access problems and mitigate them Listen to recordings of interviews Reorganise interviews as necessary
Specialist Research Project	RAs (if any)	Close liaison with lead researcher
	Lead researcher	Close liaison with RAs Monitoring of relationship between PhD students' work and overall project
Doctoral Research	Research student	Immersion in the field Training in non-electronic recording methods, e.g. mind maps Close liaison with supervisors over the setting up of and progress of interviews. Careful noting of parts of interview not understood.
	Supervisors	Facilitation of access Monitoring of transcription Checking of student's developing understanding of the field

Table 3: Some solutions to interview problems by project type

Transcription Problems

In the major funded research project the RAs will usually carry out the task of transcription of interviews. As noted by Fielding and Lee (1998) this is a key activity. Loxley (2001) discusses the importance of close liaison (which is sometimes difficult to achieve) between the PIs and the RAs at the early stage of formulation of the analysis.

Equally, there can be problems in understanding what respondents mean: jargon problems (the researcher may well not know what particular terms mean); language problems (in a global context, either interviewer or interviewee may be operating in their second language and the controls available through back translation in survey research are not possible in interviews).

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There is an increasing tendency in multinational research to employ RAs or use PhD students who can conduct interviews in languages other than English, which implies a need for translation of the material gathered. However, a need for "translation" also arises when the interview has been conducted in English when the interviewee is not completely fluent in that language. Consider, for example, the following quote from an interview:

> "We believe that we have a big impact on our industry itself. We are part in many organisations and give feedback of our ideas into this".

There would seem to be two obvious ways of dealing with such problems:

1. Code the text according to the researcher's interpretation, e.g. *Contribution to other companies' capabilities through working with them; Impact of the company on the industry;*
2. (Freely) translate the text and use that translation in the NNV analysis (with the original being attached as a memo).

Whichever approach is adopted, we believe that it should be explicitly recognised in the final research report that significant, and not necessarily, uncontroversial adaptation of the text has taken place. This, may, however, raise issues of confidentiality.

Similar problems arise in connection with transcripts generated from native English speakers. At the simplest level, these may involve 'er's missing verbs, incoherent tenses, and so on. We would endorse Gibb's (2002) view that these should be simply tidied up for the purpose of analysis with the original attached as a memo. We would advocate that the same approach should also be applied to pronouns, which may be ambiguous to conceal prejudice (cf. Fielding and Lee, 1998), or simply ambiguous because of inevitable ellipsis in a lively interview. Because of the potential impact of motivation we would also suggest that, at least where the motivation appears unusual or potentially problematic, that a suitable memo should be attached to the transcript.

Implicit in the above suggestions is that they need to be implemented by the interviewer as soon as possible after the interview. In our experience, there are usually gaps in interview programmes that will allow RAs or PhD students to do this. Ideally transcription ought to be done by the RAs, though in major research projects at least the first transcription may be done by a specialist transcriber. In such cases the aim should be to get the "first cut" transcriptions back to interviewer as soon as possible.

There are, however, problems that arise in transcription that are not easily dealt with by relatively inexperienced RAs or PhD students. There can be jargon problems; the researcher may well not know what particular terms mean and indeed they may mean different things in different contexts, e.g. Internet Marketing or Information Management for IM. Homophones may be difficult to interpret, e.g. the UK information systems quality system 'TickIt'

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being transcribed as 'ticket', 'ASEAN' being mistranscribed as 'Asian'. PIs and single researchers can be expected to know such terms, RAs not. Our suggestions for avoiding transcription problems for the 3 types of project are given in Table 4 below.

Type of Project	Participant	Action
Major Project	Professional transcriber	PI and RA review first few "first cut" transcripts RAs raise transcription problems with PIs PIs review transcripts
	RAs	RAs should ideally be trained in audio typing and transcribe RAs raise transcription problems with PIs "Translate" and document problematic "first cut" transcriptions Revise/correct transcripts
	PIs	PIs review transcripts PIs review "translations"
Specialist Research Project	RAs (if any)	Close liaison with lead researcher
	Lead researcher	Close interaction with RAs, PhD students
Doctoral Research	Research student	Transcribe interviews as soon as possible Refer problems to supervisors Feed transcriptions to supervisors asap Carry out "translations"
	Supervisors	Monitor quality of transcripts Identify need for "translations"/revisions in the early stage of the research Identify need for follow up interviews.

Table 4: Some solutions to transcription problems by project type

Problems of NNV Analysis Of Interview Data

Compensating for interview deficiencies.

The problems of gathering data through interview, listed above, can translate into problems of NNV analysis. The interviews may have produced "one respondent" views. Imperfect recall can have resulted in conflicting accounts of past events by respondents. The interviews may have reproduced biased or inadequate world views of respondents combine these.

These, of course, are not problems that can be remedied at the analysis stage; some reinterviewing (to amplify respondents' views) or additional interviewing (to provide another's perspective) can be essential.

Structuring: defining codes and assigning codes

The issue of how to define codes and the extent to which they should emerge from the data is a longstanding question in NNV analysis (cf. Gibbs 2002). Our contention is, however, that efficient NNV analysis and the growing professionalisation of management research, as evidenced by the AIM initiative, require (pace Glaser & Strauss, 1967) that the researcher bring to bear some preliminary structuring of the research area at the start of the NNV analysis. It is extremely rare that no worthwhile concepts can be derived from the literature to address what almost by definition will be a relatively new subject. Indeed the requirements for literature reviews in research grant proposals and PhD theses and ever more extensive sections

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dealing with the literature in leading management journal papers suggest that this is taken for granted. In our experience, the assumption by research students that their NNV coding has to be derived completely from the data because the field is "so new" leads to poorly structured NNV analyses.

Of course, the fact that the analysis commences with a node tree derived from the literature does not mean that that tree is sacrosanct. It must be regularly reviewed.

A further aspect of the structuring of the data is the assignment of codes. Two principles should, we suggest guide practice here: 1) to submit coding to crosschecking by others; 2) coding should be continuously checked (Loxley 2001; Silverman 1993).

Different cultural norms/institutions

A factor that adds considerably to the problems of coding, especially in international research are different cultural norms/different institutional roles in different countries. An examples is the Code Napoléon which underpins very different legal forms and practices from those of the anglo saxon common law tradition in the many countries whose legal system is based upon it. The solution again has to be thorough immersion in the context within which the research is embedded.

Detecting and compensating for distortions

We noted earlier that the differing motivations of respondents can lead to suppression of certain issues or a sanitised account of them. This deliberate distortion is different, in principle, from the inadvertent distortion that occurs when a respondent simply forgets or cannot realistically provide information on something that happened in the past. Signs of the latter problem include: the respondent is only willing to talk about their own function (this can be used often as a lever to enable the researcher to talk to other functions); the respondent has no hands on experience of the subject; the respondent is recounting projects for which they took over responsibility late on. Interviewing several people about, say, different aspects of a decision can help to reduce this problem. A similar effect can be achieved in some types of research by interviewing both client and consultant (cf. Butler et al., 1993).

Both types of distortion obviously affect the integrity of the NNV data. It is, therefore, good practice to check individuals' accounts against sources such as databases of company information, the quality press or the relevant professional trade journals. The two latter sources are also very useful in dealing with deliberate distortion but, in this case, they need to be supplemented by "gossip" within the industry concerned. Because this type of investigation is more time consuming, it is useful to have produced memos indicating that it is needed at the transcription stage.

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Our suggestions as to how some of the problems of analysis can be mitigated are given in Table 5 below.

Type of Project	Participant	Action
Major Project	RAs	Immersion in the field Identify where reinterviews/extra interviews needed Supplementation of PI's initial structuring based on literature Agree as part of team (PIs dominant) preliminary structure Report by email problems during pilot to PIs Report to full team /suggest revisions after first analysis RAs compare codings between themselves Document revisions to the node tree Check transcripts against "alternative evidence" where possible paying special attention to interviews that may have involved deliberate distortion
	PIs	Preliminary structuring of research area to generate initial node tree. Team (PIs dominant) agrees preliminary structure. Sample checks on RA codings.
Specialist Research Project	RAs (if any)	Immersion in the field Review transcripts of interviews to ascertain where reinterviews/extra interviews needed Agree preliminary structure and revisions with lead researcher. Agree codings with lead researcher. Agree with lead researcher "alternative evidence" to be gathered and gather it.
	Lead researcher	Preliminary structure of node tree. Agree revisions with RAs Monitoring of relationship between PhD students' work and overall project
Doctoral Research	Research student	Immersion in the field Carry out reinterviews/extra interviews if necessary Production of preliminary node tree based on the literature Revision of initial node tree in the light of supervisors' comments Documentation of revisions made to the node tree Arrange independent verification of codings Gather alternative evidence where feasible
	Supervisors	Checking of student's developing understanding of the field Review gaps in interview findings Critical review of initial node tree Random checks on codings Monitor provision by the student of alternative evidence

Table 5: Some solutions to analysis problems by project type

Reporting Problems

NNV analysis can produce in the final research report extraordinarily boring quotes, devoid of insight. This problem is exacerbated where quotations from interviews are used as a substitute for analysis (Gibbs, 2002). There is a real danger, especially in doctoral theses, that the research report becomes large slabs of quotation interspersed with relatively unilluminating comment. Although if our recommendations on translation are followed such texts should at least be presented in reasonable English, this is far from guaranteeing that they will be found particularly interesting to the reader. The interviewer, of course, may see them differently because they can

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judge the importance of the comment in its context. A quote such as: 'We need to understand our customers better and find out what it is they find of value and what it is they don't and what other kinds of things we can do to make their life better and easier' may in fact capture a moment where the interview was able to launch into an illuminating discussion of marketing strategy; to someone unconnected with the research it merely appears banal. If any worthwhile meaning can be extracted from it, it will only be because the importance of the quote to understanding the phenomenon under discussion has been explained.

The above discussion really relates to the "illuminating quotes" that are usually much more apparent to the researcher than the dispassionate observer! There is, however, another, in principle, deeper reason for providing them: they document way the researchers have analysed their qualitative data. Of course, the problem here is that only a small, and probably unrepresentative, fraction of the material can be cited.
In short, our view is that quotations should be used only sparingly and appositely. It is usually better provide a synoptic view that brings out the commonalities between, say, different cases and to note any significant differences between cases.

Table 6 gives our suggestions as to how the quality of the reporting of NNV analysis can be prepared. In this case there are a number of recommendations that apply to any type of research project.

Type of Project	Participant	Action
All projects	All involved in writing the research report	Base the report on a "frozen" version of the NNV database Formulate a clear "house style" (section headings, etc) for the report Devise, and revise as necessary, a clear outline structure for the research report that relates to the research questions to be addressed Continually ask which parts of the NNV analysis relate to this aspect f the outline? Continually ask the questions is this the logical place for this passage? Have I provided the target reader by this point with enough information to understand what I have written? Try drafts sections out on others involved in the project Try later drafts out on researchers not involved in the project. Unless the topic is extraordinarily arcane, try out report sections on friends who know nothing of the subject Carefully check the final report for spelling and grammatical errors and adherence to the "house style"
Major Project	RAs	Agree as part of team (PIs dominant) the structure of the report and who takes responsibility for which sections Check and correct penultimate version
	PIs	Define the structure of the report and who takes responsibility for which sections Check individual sections as written and penultimate version of entire report
Specialist Research Project	RAs (if any)	Agree with lead researcher the structure of the report and who takes responsibility for which sections
	Lead researcher	Agree with RAs the structure of the report and who takes responsibility for which sections
Doctoral Research	Research student	Devising a structure for the thesis Preparing the thesis
	Supervisors	Commenting on thesis structure Read individual chapters (and revisions) and entire thesis Checking student has displayed in the thesis understanding of the wider field within which the research is located Critical review of the structure and argument of the thesis

Table 6: Some solutions to analysis reporting by project type

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Conclusions

A number of considerations arise from the arguments above. We organise our conclusions under the headings:

Generic good practice in applying NNV
Some desirable extensions to the NNV software to facilitate better analysis
Interpretivism and NNV research
Specialist research projects
Supervisors' duties.

Generic good practice in applying NNV

Gibbs' (2002: p13) points to the danger that NNV are used to impart a 'gloss of rigour' to research. We would contend that this danger is receding as more management researchers become familiar with the pitfalls that can occur in the application of NNV and with how these can be avoided. Since NNV, however, beguilingly apparently offer the chance to analyse many more data far more rapidly, there is a real danger that their use can lead to significantly poorer quality analysis of what, ostensibly, are more firmly grounded research findings.

Many of the problems of applying NNV successfully are, of course, more general problems of qualitative business research but the practical difficulties of coming to grips with the technical side of NNV and translating the interview data into NNV often exacerbate and conceal the need to consider, and mitigate these problems.

We presented above in some detail approaches that can be employed to improve the effectiveness of NNV use. These can be summarised in the more general precepts below.

Understand the research field thoroughly. Especially in international research, researchers need to have a thorough understanding of their field. This has clear implications for the formation of research assistants and PhD students.

Pay attention to the actual data at all stages. It is crucial to listen to the interviews, read the transcripts, etc. This has clear implications for the size of research project that individual or small groups of researchers can deal with and for division of labour within major research projects.

Face up to the fact that interviews are rarely complete. Newer researchers, in particular, therefore need training to set up going back to respondent if necessary. In larger projects, it is helpful to work on a snowball sampling basis; with further interviews being set up if preliminary analysis suggests this is warranted. For doctoral students with limited time

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it is worth enquiring whether there is anyone else who can be interviewed in the same visit (often a measure of successful interviews).

Start with a structure and continually revise it. A good initial node tree based on the literature will lead to a more rapid and deeper NNV analysis provided that it is continuously revised and reviewed. In larger projects, this should be done by formal sessions of the entire team as well as adaptation in periods between such sessions.

Continually check the coding. As suggested by Loxley (2001) and Silverman (1993) coding should be kept under continuous review. It is essential that coding be reviewed by others. This has implications for resource allocation in major research projects (where often different aspects of the research will be allocated to different RAs for first cut coding) and for doctoral researchers who can perhaps negotiate peer review of coding on a quid pro quo basis. Both PIs and supervisors need carefully to monitor the quality of coding.

Some desirable extensions to the NNV software to facilitate better analysis

The importance of non verbal cues during the interview was discussed earlier. It would be useful if NNV provided a way of recording these non verbal cues explicitly rather than doing so through memos.

The emphasis placed above on continual revision of NNV model structure and codings implies that the NNV model undergoes continuous change. There is a need to keep track of such changes, at least of a more major nature such as the transfer of node subtrees from one node to another (in case they turn out not to be a good idea). This implies that rather than update the existing model thus losing the details of its past form that a new, revised model should be created from it. Eventually, the final report will need to be based on an agreed NNV model, though additions may still be made to another model with an eye to future research. It is difficult for the individual student researcher to observe this requirement. In team research it is clearly more difficult; the team need to be clear which is the most up-to-date version of the NNV model. This would be helped if NNV supported more directly versioning in the way that is embodied in software for supporting software development projects.

We argued that the amount of quotation from NNV documents even after "translation" ought to be severely limited. One way of doing this would be to allow hyperlinking to relevant documents in NNV databases so that readers interested in the detail of a specific analysis could pursue it in depth. Of course, considerations of confidentiality may limit the universal applicability of this idea.

Interpretivism and NNV research

NNV would probably be viewed by most management researchers as essentially based in a positivist philosophy. However we would argue that

good NNV analysis is more interpretivist than might be thought. There can be a need to interpret much of the raw data before it is manipulated within NNV. This is more likely when research is being conducted on a transnational basis since additional complications arise through differences in language and culture.

What we have dubbed "translation" essentially involves trying to understand what interviewees meant. Likewise, we have pointed to the importance of understanding respondent motivations in interpreting their statements and judging the need for supplementary research. As researchers become more familiar with NNV it is to hoped that they will be seen as potentially beneficial in interpretivist research also.

Specialist research projects

A notable feature in the discussions above, is the relatively good performance of specialist research projects where an RA is attached. This is because of the close collaboration of RA and lead researcher that is possible (Loxley, 2001). This, of course, is only feasible if the lead researcher has the time to devote to the research. It would seem worth examining the potential for strengthening this type of management research by the provision of relatively modest funds for a research assistant and for teaching relief for the lead researcher.

Supervisors' duties

It will not have escaped the notice of PhD supervisors that in our discussion of their role it is considerably expanded beyond what may have been the case in the past. This, in part, reflects the growing importance being attached to quality assurance in doctoral studies. More importantly, however, effective qualitative analysis using NNV requires that supervisors pay even greater attention than in the past to the extent to which their students are developing understanding of their field. The downside of NNV analysis for supervisors is that they must monitor carefully how students develop and analyse their NNV model. And, of course, they need to encourage students not only to develop a good thesis structure and sound argumentation but also to try to ensure that the student reports the NNV analysis in a way that enhances, rather than detracts from, the thesis.

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