Experiences From Sequential Use of Mixed Methods

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Abstract: The discussion of qualitative or quantitative approaches has been going on for many years. One way to reduce the most dogmatic standings is to use mixed methods consisting of combinations of qualitative and quantitative approaches. In this paper, we have analysed usage experiences from combining qualitative and quantitative approaches in different ways. We refer to these combinations as method configurations. Our findings point out that a researcher should commence with a qualitative approach when: 1) the researcher has a lower pre-knowledge of phenomenon to be studied, 2) the phenomenon to be studied is abstract and 3) there is an uncertainty if the questions asked are the right questions. On the contrary, there is a tendency in our results that the researcher should start with a quantitative study when 1) the researcher has a good pre-knowledge of the phenomenon or 2) the phenomenon is more concrete.

Keywords: mixed methods, method combinations, mixed approaches, qualitative methods, quantitative methods

1. Introduction

Over the years there has been an on-going debate regarding qualitative approaches and quantitative approaches. Often this debate has been controversial (cf. Bryman, 1988). Followers of quantitative approaches are often characterised as positivists, while the followers of qualitative approaches are often characterized as hermeneutists. Followers of quantitative approaches often criticise qualitative approaches for: 1) results are hard or impossible to generalise (ibid), 2) results are not objective and hard to replicate and 3) there is a lack of transparency (Bryman, 2009). We agree with this criticism since qualitative studies are often based on one or a few case studies and many times data can be hard to interpret.

Vice versa, followers of qualitative approaches criticise quantitative approaches for 1) using irrelevant hypothesis (Blumer, 1956) and 2) descriptions are too superficial (Schutz, 1962). We concur with this criticism. In our opinion, hypothesis stemming from qualitative research are more grounded than hypothesis stemming from quantitative research. We also agree that the qualitative approaches have a better opportunity to achieve “richer” descriptions. One basic difference between these two approaches is that the aim of a quantitative approach is to suggest a hypothesis that should be verified or falsified while the aim of a qualitative approach is to generate a hypothesis. Simplified, it seems as the primary interest of the qualitative approaches is to justify “Is this the right question to ask?” while the quantitative approaches are more concerned with “Is this answer trustworthy?”.

Many scholars have brought forward the idea of combining qualitative and quantitative approaches (e.g. Bryman 1988, Bryman, 2009, Creswell, 2009). The objective of combining the two approaches is to preserve the strengths and reduce the weaknesses in both approaches (Bergman 2009b). The preferred term for combining these approaches is “mixed methods” (Bryman, 2009). The aim of this paper is to present usage experiences in terms of strengths and problems from combinations of qualitative and quantitative approaches. According to Bergman (2009a) mixed methods have experienced a tremendous increase in popularity. Creswell (2009), identifies that there is not much written about experiences from certain types of combinations of qualitative and quantitative approaches which hamper the practical use of mixed methods in research. In this paper, we are presenting experiences from real use of combinations of qualitative and quantitative approaches. This introductory section is followed by a description of our theoretical bases and in section 3 we outline our research approach. In section 4, we present our findings. Finally, in section 5 the conclusions are presented.
2. Theoretical basis

According to Creswell (2009) a mixed method is more than simply collecting and analyzing data from a qualitative and quantitative approach. The mixed method approach provides a specific perspective of the world. Besides, it also incorporates a combined qualitative and a quantitative approach. That is, the overall strength should be more beneficial than using qualitative or quantitative research individually. One aim of using a mixed method is to increase the possibility to achieve findings that are more trustworthy and relevant than using the approaches separately.

A key design component in mixed method research is whether the research methods are implemented in a parallel manner or in a sequential manner (Teddlie & Tashakkori 2009). Sequential mixed method research refers to an investigation in which the phases of the research occur in a consecutive order, with one phase emerging from or are following the other. The research questions addressed as well as the procedures used in one phase depend on the previous phase. In parallel mixed method research the research includes phases that occur either simultaneously or with some time lapse. These phases address related parts of the same research questions.

Greene & Caracelli (1997) presents another typology how mixed methods may be implemented. It includes two broad classes of designs (component, integrated), with a total of seven separate forms of mixed methods: component (triangulation, complementarity, expansion) and integrated design (iterative, embedded or nested, holistic, transformative). Based on Greene & Caracelli (1997) a brief description of these designs follows. In component mixed method research the data collection procedures are implemented as separate aspects and remain distinct throughout the research. Findings derived from one method are in triangulated mixed methods research used to corroborate findings generated with other methods. In complementary research findings from one dominant method are strengthen and improved through findings from another method. In expansive mixed method research different methods are implemented to generate results for separate parts of the study; results are presented “side-by-side” In integrated mixed method research the methods used are integrated throughout the evaluation. In iterative research this means that a dynamic interplay of findings has been developed through the use of different methods throughout the evaluation stage of the study. In embedded or nested mixed method research one method is utilized and “located” within another method in order to stimulate a creative tension during the study. Holistic integrated mixed method research means the simultaneous integration of methods throughout the study, building towards one integrated explanation of results. In transformative mixed method research the methods are used to capture differing value commitments in order to facilitate transformation (Greene & Caracelli 1997).

Johnson & Onwuegbuzie (2004) present strengths and weaknesses of mixed method research. As strengths, they point out that words, pictures and narratives can be used to add meaning to numbers; i.e. how qualitative research could facilitate 1) the analysis of quantitative data, and 2) the design of hypothesis, scales and indices for quantitative research (Bryman 1988). Vice versa, numbers could be used to add precision to words, pictures and narratives; i.e. how quantitative research could facilitate qualitative research (Johnson & Onwuegbuzie 2004) such as verifying or falsifying an empirical grounded hypothesis. Furthermore, a mixed method approach can also manage a broader and more complete range of research questions because the researcher is not solely confined to a single research approach or method. The use of a mixed method can also provide stronger evidence for a conclusion through convergence and corroboration of findings. By combining qualitative and quantitative approaches, or triangulate, the researcher's claim for validity of his or her conclusions are enhanced if they could be shown to provide mutual confirmation (Bryman 1988). Mixed methods can also add insights and understanding that might be missed when only a single method is used (Johnson & Onwuegbuzie, 2004) and a combination of methods could also increase the ability to generalise the results compared to a qualitative study (Bryman 1998). Qualitative and quantitative approaches used together produce more complete knowledge necessary to inform theory and practice (Johnson & Onwuegbuzie 2004).

Johnson & Onwuegbuzie (2004) also point out several weaknesses regarding mixed methods. One weakness is that it could be difficult for one researcher alone to carry out both qualitative and quantitative research. This especially is the case if two should be used concurrently. A design embracing concurrency might require a research team. Concurrency involves more participants and more activities, which calls for more expenses. Moreover, a concurrent design is time consuming.
Other barriers to the mixing of methods is that the researcher has to learn about multiple methods and their internal logic in order to mix them accordantly, defend the use of them and also be able to use them in a professional manner. It is often more simple to focus on a single method or approach. Another weakness pointed out both by Johnson & Onwuegbuzie (2004) and Bryman (1988) is that methodological purists contend that a researcher always should work within either a qualitative or a quantitative paradigm and not mix the two.

According to Bryman (2009), there are at least two arguments against mixed methods. The first argument is that research methods carry epistemological commitments and the second argument is that the two approaches represent separate paradigms. The argument concerning epistemological commitments is based on that every research method is embedded in a specific way of perceiving the world. That is, to use a questionnaire, to be an observer or to measure something is to be involved in conceptions of the world which allow these methods to be used for their purposes (Hughes, 1990). The argument concerning separate paradigms views qualitative and quantitative research methods are incompatible (Guba, 1985; Morgan 1998).

We respect these views but we do not agree with the understanding that these two approaches represent two different "worlds" that cannot be integrated. Our view is supported by Teddlie & Tashakkori (2009). They claim that mixed method is an alternative to the dichotomy of qualitative and quantitative approaches. Of course, we realise that this integration could not be done in a naive way resulting in eclectically obscurities. Our belief is that there exist knowledge that could be shared between the "worlds"; but the sharing has to be carefully done in order to reduce undesired connotations that could emerge from an unreflect transfer of concepts from one specific context to another context. It is important that the original meaning of concepts is preserved. We definitely believe that both "worlds" would benefit from integration. The researcher has to be aware of that different underlying worldviews exist. Instead of viewing the two approaches as an either-or-position we believe it is more productive to perceive them as complements. They can support each other either as a sequential or as a parallel process. Another similarity is that both approaches are interested in answering how- and why-questions (Casebeer & Verhoef, 1997).

3. Research approach

The aim of this paper is to present experiences based on real use of sequential combinations of qualitative and quantitative approaches. In order to present experiences based on sequential combinations we have used two knowledge sources; empirical data and theory. The empirical data sources have consisted of two types of sequential use. The configuration of the first type commenced with a qualitative method followed by a quantitative method. The configuration of the second type commenced with a quantitative method followed by a qualitative method. The reason for analyzing both these configuration types is that we wanted to understand possible differences related to order. Both configuration types consisted of two cases (= four cases in total). These four cases represent three bachelor theses and one PhD thesis. In order to support our analysis we have used existing theory about mixed theory (see section 2). The four cases and existing theory have formed a based for presenting experiences (see figure 1).

![Figure 1: Data sources](image-url)
components as analysis units (see figure 2). The first component “Aim and description has been analysed for understanding the context of the study, the second component “Research design considerations” has been analysed for findings arguments for planning the study in a specific way, the interface between the third and fourth component “Research part 1” and “Research part 2” has been analysed in order to identify problems and strengths that can appear in the interface between the two research parts. That is, experiences from the first research part can be seen as conditions that may affect the second research part. We have not been looking for problems or strengths that uniquely can be related to one of the approaches. At last, we have analysed the final results. In particular, we have analysed the results generalisabilty, if the result can be traced back to the empirical data and if the two research parts complemented each other

Figure 2: Generic components in the four cases

Experiences have been gathered by interviewing the scholars that have carried out the four cases. In order to avoid confusion we refer to these scholars as informants and we use the term respondent when we refer to the people the informants have interviewed. The interviews consisted of semi-structured questions (Patton, 1990). In order to better understand the informants’ experiences we have asked questions such as: “what is the pre-knowledge of the informants?” , “can the studied phenomenon be characterised as abstract or concrete?” , “what is the character of the output from the first part and how can the following part benefit from this?” , “is there a need for adjustment before entering the second part or is it a straight forward process?” , “can any type of data be transferred from part 1 to part 2 or are there any limitations?”. The role of the theory (literature) has been to explain and complement the experiences.

4. Findings

4.1 Configuration type 1 (part one qualitative, part two quantitative)

4.1.1 Case 1A

Aim and description: In the first case (case 1A) the informants has investigated how a new idea was transferred from the original innovators, via requirements specification, through systems development and finally to implementation. Before the study, the informants had a low pre-knowledge of the studied phenomenon and they were not experts on the research methods used. The study commenced with face-to-face interviews based on semi-structured interview questions. The results from the interviews were followed up by a broad survey.

Research design considerations: The informants utilized a sequential mixed method design in which the qualitative and quantitative parts were viewed as separate components and used to improve the result in steps, hence similar to a triangulated design (Greene & Caracelli, 1997). The reason for the selected order is that the informants considered it as being too hard to commence with a quantitative study since the studied phenomenon was perceived as being too complicated. The categories used in the succeeding quantitative part would probably not have been identified without a preceding qualitative study.

Problems and strengths in the interface between the two approaches: An overall experienced strength is that all the categories identified in the qualitative part could be tested in the quantitative part. However, the transfer to the quantitative part was not a straightforward process. Some categories in the qualitative part were too widely formulated. These categories had to be reformulated into more
concrete sub-questions since the answers to the questions in the quantitative part consisted of mutually exclusive choices. Another problem in the qualitative part was that sometimes there existed case-specific concepts used. These concepts were understandable within the studied organisation but they would probably not be understandable in other contexts. That is, the informants had to find more abstract concepts before sending the questionnaire to a larger population. The informants perceived this process as hard since it was important to preserve the original meaning of the concepts.

The quality of the final results: It is possible to trace the final results all the way back to the respondents' utterances. That is, the traceability from empirical data to conclusions is high which also supports the credibility of the results. However, necessary specifications of concepts have been made along the process. These specifications have contributed to a precision in the final results. Furthermore, thanks to the succeeding quantitative part, there is no doubt that the final results are easier to generalise.

4.1.2 Case 1B

Aim and description: The second case (case 1B) analysed whether available web based information resources for higher education are suitable and easy to use (e.g. structure and content). User behaviour concerning information search was especially studied. One aim was to identify young persons’ information behaviour related to existing functionality of a web-based e-service. The informant had a high pre-knowledge concerning qualitative methods but a lower pre-knowledge about quantitative methods. The study started with a qualitative text analysis and the aim was generate categories. This part was succeeded by a questionnaire that was sent to first year students and to last year students at upper secondary school. A pilot study was carried out before sending out the final questionnaire.

Research design considerations: The idea of using an introductory text analysis was to get an initial understanding of the problem area and to get an understanding of what categories are more interesting to study in a succeeding quantitative analysis. That is, the study was design as 1) an introductory open and broad approach, 2) a selection of interesting categories was made and 3) more information was selected regarding the selected categories. The main idea of a succeeding quantitative study to confirm initially generated categories making the mixed method research design applied in this study similar the complementarity mixed method design (Greene & Caracelli, 1997).

Problems and strengths in the interface between the two approaches: The output from the qualitative text analysis consisted of a list of categories that were considered for further analysis. The aim of the succeeding quantitative analysis was to get a deeper knowledge about the categories. A perceived strength is that the introductory text analysis worked as a good base for formulating the quantitative questions. The informant did not perceive any problem in using the categories as a base for formulating quantitative questions. The informant mentioned the problem of avoiding formulation of leading questions. According to the informant, questions consisting of valuations are to a certain extent always leading. The informant thought that it would be possible to collect the respondents’ values through less leading questions; but to proceed with less leading questions would be time consuming. One idea of using a sequential mixed method is to be able to formulate more specific questions in “part 2”. We agree that formulation of “leading” questions should be avoided. However, specific formulations that are based on experiences from “part 1” and should not be confused with “leading” questions. To be able to formulate specific questions is an opportunity provided in sequential mixed methods.

The quality of the final results: The quantitative and the qualitative questions complemented each other since they illuminated different perspectives of the problem area. One example is that the quantitative analysis provided a nuanced picture of how important the applicants perceived each category. That is, new attributes were identified in the succeeding quantitative part.

The qualitative analysis also informed about similarities and differences between groups of applicants. The combination of quantitative and the qualitative questions contributed to a clearer picture of wholeness. According to the informant, the results provided a good understanding of the problem area. Despite that the informant has carried out a combined qualitative and a quantitative study, she is very careful regarding the ability to generalize the results.
4.2 Configuration type 2 (part one quantitative – part two qualitative)

4.2.1 Case 2A

Aim and description: The third case included a study of the usability of computer support in systems development. The aim of the study was to suggest attributes of the computer support in order to improve the usability. The study embraced three steps: 1) a survey, 2) interviews and 3) observations. The informant considered himself as being very comfortable with qualitative methods and he had also a good idea of how to use quantitative methods.

Research design considerations: A condition of this study was that the studied phenomenon was not well researched. Only a few scientific studies existed which meant that there was not much knowledge that could be used as a platform for the study. Thus, the informant decided to commence with a broad survey. The aim of this survey was to get an overview, to become familiar with the studied area and to identify common existing problems. This survey was followed up by interviews in order to get a deepened knowledge. A selection of the most common identified problems from the survey was made. Finally, as a third step the informant used observations. The aim of these observations was to further deepen the study. Again, a selection of observations was made among the respondents. In this way, the research design can be pictured as a funnel where the interesting data from the introductory survey were selected and further deepened in the continuing expanding steps.

Problems and strengths in the interface between the two approaches: The informant experienced several strengths. One of the strengths was that uncertainties concerning interpretations from the introductory study could be reduced in the following interviews and observations. Another strength was that the identified problems in a natural way could be transferred to questions in the interview. Before the interviews were carried out similar problems had to be categorised in order to form suitable question areas. Not every problem was transferred to the interview for a deeper understanding; a selection was made. The selection criteria used was frequency (many respondents expressed the same problem) and articulation (fewer respondents articulated the problem well). The interview respondents were selected among the respondents of the survey. The selection criteria used in this case were: engagement in the survey, complexity in the information systems project carried out, the size of the information system project and the respondents own practical experience from use of the computer based tools studied. In the same way, users to observe were selected among the respondents that were interviewed. A third experience in the interface between the interviews and the observations was that new categories were identified which showed that the original problem categorisation was invalid. A new structure of categories had to be made according to the new findings. The third step (observations), can thus be viewed as quality insurance procedure.

The foremost problem was to interpret answers from the survey. An over-interpretation could lead to a wrongly drawn conclusion as well as an under-interpretation could lead to an unnecessary weak conclusion. Thus, the informant was happy that the research design embraced opportunities to reduce uncertainties in the interpretation process. The informant claimed that the degree of precision could be lost if not more detailed questions were asked.

The quality of the final results: The quality of the final result is high since the data collection embraced three distinct steps with three separated data analysis. Clearly, the description of the problems discovered in the first step was richer in the second and third step. Thus, the knowledge about the studied phenomenon was successively deepened. New data was discovered along the study that affected the initial formulation of the research question. The research question was adjusted and refined according to new insights. Attempts to claim generalisation was made. The informant used the concept of “generalisation levels” and stressed that the findings should be valid in other context with the conditions.

4.2.2 Case 2B

Aim and description: The fourth case embraced an investigation of a web based text design on small screen devices (7-9 inches PC). The first quantitative part was designed as an experiment consisting of 1) texts that were read and 2) a questionnaire using the Likert scale. The informant has examined how variables such as length of a row and font size affect readability and legibility. A statistical test was used to measure the respondents’ answers in order to identify significant relationships between
reading speed and how the text was designed. The quantitative part was followed up by a qualitative part consisting of interviews. The aim of the interviews was to further investigate preferences in relation to the variables used. An interview protocol was designed enabling semi-structured data collection. The interview respondents were selected among the respondents of the questionnaire. The informant considered herself to have a high pre-knowledge about quantitative methods but felt pretty uncomfortable in qualitative methods.

Research design considerations: The informant's knowledge about the studied phenomenon was considered as high. Therefore, she decided to start with an experiment consisting of well-developed hypotheses. Another consideration was that the informant chose not to plan the succeeding interviews in detail. The reason was that the informant's experience of performing interviews was low. The informant's attitude towards qualitative studies was also a bit sceptical; still the informant realised that her study would benefit from a mixed method design and she consequently applied a complementarity design.

Problems and strengths in the interface between the two approaches: A strength experienced was that the quantitative study provided a good base for the succeeding interviews. Several of themes (hypotheses) from the quantitative part were transferred to the semi-structured interviews. The informant did not experience any particular problems in the interface between the quantitative and qualitative part. A problem not specifically addressed was that there were no explicit criteria used for which themes to transfer. A subjective selection was made.

The quality of the final results: It is possible to trace the final results all the way back to the questionnaire. The qualitative study was merely used to confirm some of the findings in the quantitative study. That is, the full potential of the qualitative study was not utilised. Besides, the qualitative study provided some insights in how the respondents experienced the quantitative questionnaire. That is, the informant got feedback concerning how the experiment was interpreted and could use this feedback in relation to interpreting the final results.

4.3 Comparison of configuration type 1 and configuration type 2

The model we have used for comparing the two configuration types are pictured in figure 3. The picture consists of a generic situation including a researcher using a tool (a method) in order to study a phenomenon.

![Figure 3](image)

**Figure 3:** A generic model for analysing the characteristics of the four cases

Based on this model we have analysed the cases in order to understand similarities and differences (see Table 1). The categories presented in the first column to the left are induced from the findings.

Based on the information in table 1, there are at least two tendencies;

- Informants having a lower pre-knowledge of the studied phenomenon or the studied phenomenon is more abstract then it might be a good idea to use configuration type 1.
Informants having a higher pre-knowledge of the studied phenomenon or when the character of the phenomenon is more concrete then it might be a good idea to select configuration type 2.

Table 1: Comparison of the cases

<table>
<thead>
<tr>
<th>Categories</th>
<th>Configuration type 1 (qual. -&gt; quant.)</th>
<th>Configuration type 2 (quant. -&gt; quant.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case 1A</td>
<td>Case 1B</td>
</tr>
<tr>
<td>Pre-knowledge of the studied phenomenon</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Pre-knowledge of the used methods</td>
<td>Qualitative: Low</td>
<td>Quantitative: Low</td>
</tr>
<tr>
<td></td>
<td>Qualitative: Low</td>
<td>Quantitative: Low</td>
</tr>
<tr>
<td>Character of the studied phenomenon</td>
<td>More abstract</td>
<td>Pretty abstract</td>
</tr>
</tbody>
</table>

We have also compared experienced problems and strengths in the interfaces between part 1 and part 2 regarding the two configuration types (see figure 2). One result regarding configuration type 1 is that the generated categories from the qualitative approach provided a good base for a succeeding quantitative approach but the process of transferring the generated categories from the qualitative approach was not a routine-like process and could not be done automatically. This process needed reflection since the concepts used in the categories were sometimes too wide or too contextual in order to fit in the succeeding qualitative part.

The major strengths regarding configuration type 2 are that: the quantitative study provided a good base for the succeeding interviews, uncertainties concerning interpretations from the quantitative approach could be reduced in the following qualitative study and interesting answers from respondents could easily be deepened in the succeeding interviews and observations. A succeeding deepened qualitative study meant that a selection of interesting areas was chosen. The possibility of making a selection allows the researcher to modify or refine the research question during the study. The major problem in configuration type 2 is the same as for configuration type 1; the results from the quantitative part could not automatically be transferred to the qualitative part.

In the final results, one strength for configuration type 1 is that it was possible to trace the final results all the way back to the informants’ utterances. That is, the traceability is high. Not surprisingly, the final results are also easier to generalise when a succeeding quantitative approach was performed. The traceability is also considered to be high for configuration type 2. However, the generalisation ability is considered to be lower since the succeeding qualitative approach embraced fewer respondents.

5. Conclusions

The knowledge contribution of this study is experiences from use of mixed methods. We can conclude that the users’ experiences concerning both the configuration types embraced similar and different strengths and problems (see section 5.3). One way to interpret the results is to use them as a guide for a research design of a mixed method. In summary, the tendency in our results shows that the researcher should commence with a qualitative approach when: the researcher has a low pre-knowledge of phenomenon to be studied, when the phenomenon is more abstract and when there is an uncertainty if the questions asked are the right questions. On the contrary, there is a tendency in our results that the researcher should start with a quantitative study when the researcher has a good pre-knowledge of the phenomenon or when the phenomenon is more concrete.

According to Creswell & Plano Clarce (2011), there are three categories that are important to consider in relation to mixed methods. These categories are: time and resources, pre-knowledge of the methods and the question of convincing researchers of the value with mixed methods. These categories can be viewed as arguments for or against using mixed methods. Besides Creswell & Plano Clarces’ categories we have identified the two categories “pre-knowledge of the phenomenon to be studied” and “character of the phenomenon to be studied”. These categories do not represent arguments for or against using a mixed method; rather they represent arguments for how to design (configure) a mixed method.
In section 2, we challenged the view that qualitative and quantitative approaches are incompatible. Our findings show that the informants have mixed the qualitative and quantitative approaches in a pragmatic way. They have not been obstructed by a worldview consisting of two approaches representing totally separated paradigms (cf. Kuhn, 1970). Mixed methods are not a technique; it is an attitude (Fielding, 2009). It is a conscious approach to get research quality and adequate explanations of social phenomena.

Our results are based on four cases; thus we cannot claim that they are valid for every research design situation. However, we do think that the results could work as inspiration for research design considerations of mixed methods.

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Mixed Methods Research: The Five Ps Framework

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Abstract: Mixed methods research (MMR) is often referred to as the third methodological movement and has witnessed a rapid rise in popularity in the last 10 years. Prominent authorities in the field now refer to the MM research community which has developed its own philosophical, theoretical, methodological, analytical and practical foundations and constructs for the conduct of MMR. This paper provides a brief overview of some of the more common definitions of mixed methods research and methodology before introducing the conceptual framework of the Five Ps of mixed methods research. The Five P framework will be used to structure an exploration of some of the key challenges facing those who choose the innovative path of mixed methods research and some of the key areas for capacity building. The Five Ps include: Paradigms; Pragmatism; Praxis; Proficiency; and Publishing. This Five Ps framework will be mapped against the contemporary landscape of the MMR movement as developed by some of the most prominent mixed methodologists within the MMR community. These include: the overlapping components of an emerging map of MMR (Teddlie and Tashakkori 2010) and the domains of MMR (Creswell 2010). The Five Ps framework can provide those wishing to embark into mixed methods research with the essential components of a mixed methods starter kit, inclusive of a contemporary checklist of contentious issues, risks and traps that require consideration. Tashakkori and Teddlie (2010b: 29) refer to the need for MM researchers to become “methodological connoisseur[s]” whilst Cameron (2011: 263) calls for the need to build “methodological trilingualism” in those wishing to engage in MMR. Both these capacities require advanced research skill levels and competencies. As a consequence the framework also offers higher degree supervisors and educators with a pedagogic tool for guiding and teaching mixed methods.

Keywords: mixed methods research; paradigms; pragmatism; publishing; teaching research methods

1. Introduction

Mixed method research is a growing area of methodological choice for many academics and researchers from across a variety of discipline areas. Tashakkori and Teddlie (2010b: 803-804) refers to the MM community which has:

... gone through a relatively rapid growth spurt...it has acquired a formal methodology that did not exist before and is subscribed to by an emerging community of practitioners and methodologists across the disciplines. In the process of developing a distinct identity, as compared with other major research communities of researchers in the social and human sciences, mixed methods has been adopted as the de facto third alternative, or “third methodological movement”.

The definition of MMR remains contested area. Johnson, Onwuegbuzie and Turner (2007) asked 21 researchers for a definition of MM and received 19 responses. These definitions were diverse and were differentiated in terms of what was being mixed, the stage in the research process were the mixing occurred, the extend of the mixing, the purpose of the mixing and the drive behind the research. There are limitations as to the extent at which this paper can delve into these definitional debates and as a result definitions utilised by prominent mixed methodologists have been chosen for this paper.

The Journal of Mixed Methods (2006), in its call for papers defines mixed methods as ‘research in which the investigator collects, analyses, mixes, and draws inferences from both quantitative and qualitative data in a single study or a program of inquiry’. A more comprehensive definition is provided by Creswell and Plano Clark (2007: 5) who define mixed methods as follows:

Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems that either approach alone.

Teddlie and Tashakkori (2010: 5) define the methodology of MM as: “The broad inquiry logic that guides the selection of specific methods and that is informed by conceptual positions common to mixed methods practitioners (e.g., the rejection of “either-or” choices at all levels of the research
process). For us, this definition of methodology distinguishes the MMR approach to conducting research from that practiced in either the QUAN or QUAL approach”.

This paper will explore the challenges of undertaking mixed methods research through a conceptual framework referred to as the Five Ps of mixed methods research. The Five Ps tend to cover the key categories of challenges that arise from mixed methods research designs. They include philosophical considerations and approaches, as well as methodological choices and processes, competencies, practicalities and political considerations. The Five Ps are aligned against two frameworks for mapping the contemporary MMR landscape before a more detailed discussion on each of the Five Ps is progressed. The paper concludes with options for developing research capacity in MMR.

The five Ps of mixed methods research
Several mixed methods proponents acknowledge the controversies/crises/challenges that face those embarking on mixed methods research (Mingers 2001; Tashakkori and Teddlie 2003; Onwuegbuzie and Collins 2007). Mingers (2001) described in detail four types of barriers to multimethod research however he also argues these are not insurmountable. The barriers identified are: philosophical; cultural; psychological (cognitive); and practical. Tashakkori and Teddlie (2003: 672) identified six continuing points of controversy in mixed methods design and expanded this in 2010 to nine important issues or controversies in contemporary MMR (Tashakkori and Teddlie 2010a). Onwuegbuzie and Collins (2007: 304) refer to four major crises to mixed methods research and indicate how each of these crises can inform considerations of sampling design. The four crises are: representation; legitimation; integration; and politics. This paper acknowledges these issues and seeks to provide a practical framework for addressing aspects of these issues that can be utilised as a pedagogic tool to guide mixed method practitioners especially the novice mixed methods researcher.

Brannen (2005) referred to the ‘three Ps’ when she detailed the rationales behind the choice of research method in general. The Brannen three Ps include: paradigms; pragmatics and; politics. This paper has built on from this by expanding the Ps and by focusing upon mixed methods research as opposed to research methods in general. The conceptual framework of the Five Ps will now be explored as a means by which to tease out some of the challenges mixed methods research provides for those wishing to be more comprehensive and innovative in their approaches to research through the adoption of mixed methods. The Five Ps framework includes; Paradigms; Pragmatism; Praxis; Proficiency and; Publishing. Table 1 below overviews the framework in terms of the key issues and challenges that arise from the Five Ps and aligns these with the learning objectives for teaching mixed methods developed by Bazeley (2003).

Table 1: The five Ps of Mixed Methods Research (MMR)

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<tr>
<td>Paradigms P1</td>
<td>Criticism: From paradigmic purists and claims of eclecticism.</td>
<td>· Have sufficient understanding of the philosophical bases of research to determine if and how apparent paradigmatic differences in approach might influence their work and be resolved.</td>
</tr>
<tr>
<td></td>
<td>Challenge: Need to document and argue paradigmatic stance in MMR.</td>
<td></td>
</tr>
<tr>
<td>Pragmatism P2</td>
<td>Criticism: Epistemological relativism and short-sighted practicalism.</td>
<td>· Be familiar with key literature and debates in mixed methods, and with exemplars of a variety of mixed methods approaches to research;</td>
</tr>
<tr>
<td></td>
<td>Challenge: Become informed about the key debates and source MMR literature in the chosen field. Rigorously defend the stance and choices made at the interface between philosophy and methods.</td>
<td>· Learn to take risks, but also to justify choices made.</td>
</tr>
<tr>
<td>Praxis P3</td>
<td>Criticism: Problems related to methodological and data integration.</td>
<td>· Be able to determine the appropriateness of a selected method or methods, based on the question(s) being asked (be question-driven in their choice of methods), and be able to determine whether mixing methods provides a cost-effective advantage over use of a single method;</td>
</tr>
</tbody>
</table>
application of MMR designs, methods and data analysis.

- Have knowledge of the variety, rules and implications of different sampling methods, and of alternative approaches to dealing with ‘error’ or deviance from the norm;
- Be prepared to recognise and admit what is not known, and seek advice
- Develop skills in working collaboratively with researchers using different approaches or methods.

<table>
<thead>
<tr>
<th>Five Ps</th>
<th>Issues &amp; Challenges</th>
<th>Bazeley’s (2003) Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proficiency</td>
<td>Criticism: Superficial claims of utilising MM and the need to be proficient in both QUAL and QUANT methods.</td>
<td>Have well developed skills in carrying out research using at least one major methodological approach, but also a comprehensive understanding of a range of approaches and methods (if they didn’t already), particularly to understand the principles underlying those methods;</td>
</tr>
<tr>
<td></td>
<td>Challenge: Become skilled and competent in both chosen QUAL and QUANT methods and data analysis, as well as skilled and competent in mixed methods and integrated data analysis.</td>
<td>Have an ability to interpret data meaningfully, and to ask questions of the data, rather than to simply follow a formula;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Know and understand how software can be used to assist analysis tasks.</td>
</tr>
<tr>
<td>Publishing</td>
<td>Issues &amp; challenges: Political nature of reporting and publishing MMR in academic and discipline based literature such as: disciplinary traditions; levels of acceptance of MMR within disciplines and; reporting MMR in its entirety given word length limitations.</td>
<td>Develop new ways of thinking about the presentation of research results, especially where the methods used and information gained does not neatly fit a conventional format.</td>
</tr>
</tbody>
</table>

In describing the structure of the second edition of the seminal work on MMR, the *Handbook of Mixed Methods in Social & Behavioral Research*, Tashakkori and Teddlie (2010a) describe the contemporary MMR landscape through components of an emerging map of MMR. This map is made up of three overlapping areas: conceptual orientations; issues regarding methods and methodology; and contemporary applications of MMR. Key issues and developments in the MMR field can be grouped under one of these three areas. The Five Ps have been mapped against these three main areas and are depicted in Figure 1.

![Figure 1: Aligning the five Ps with the map of MMR (Source: Adapted from Teddlie and Tashakkori (2010: 3))](image-url)
In addition to this emerging map of MMR, Creswell (2010) has also developed a framework for analysing the key developments, issues and priorities of the MMR movement. The framework is a series of five MMR domains which include: the essence of MMR; the philosophical domain; the procedural domain; adoption and use of MMR domain; and the political domain. Again the Five Ps have been aligned and mapped across these domains as presented in Table 2.

**Table 2: Aligning the 5 Ps with the domains of MMR**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Domain Description</th>
<th>Five Ps Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essence of MMR</td>
<td>Nature of MM: Definitions, Bilingual language, Incorporating MM into existing designs</td>
<td>P3: Praxis</td>
</tr>
<tr>
<td>Philosophical</td>
<td>Philosophical and theoretical issues: Combining philosophical positions, worldviews &amp; paradigms, Philosophical foundations of MM, Use of qualitative theoretical lens in MM, False distinction between QUAL and QUANT, Thinking in a MM way- mental models</td>
<td>P1: Paradigms, P2: Pragmatism</td>
</tr>
<tr>
<td>Procedures</td>
<td>Techniques of MM: Unusual method blends, Joint QUAL &amp; QUANT displays, Transforming QUAL data into counts, Notation for designs, Visual diagrams for designs, Software applications, Integration &amp; mixing issues, Rationale for MMR, Validity, Ethics</td>
<td>P4: Proficiency</td>
</tr>
<tr>
<td>Adoption and use</td>
<td>Adoption and use of MM: Fields &amp; disciplines using it, Team approaches, Linking mixed methods to discipline techniques, Teaching MM to students, Writing up &amp; reporting</td>
<td>P3: Praxis</td>
</tr>
<tr>
<td>Political</td>
<td>Politicization of MM: Funding of MMR, Deconstructing MM, Justifying MM</td>
<td>P5: Politics (of publishing MMR)</td>
</tr>
</tbody>
</table>

Source: Adapted from Creswell (2010: 47-9).

Novice MM researchers and those more experienced researchers wishing to utilise MM in their respective research studies will not be expected to be fully versed in all aspects of the MMR landscape as depicted in Figure 1 and Table 2, however the Five Ps will provide a very sound “starting block”.

The following discussion provides an overview of each of the Five Ps and the key criticisms and challenges each presents to those wishing to engage in fully informed MMR.

### 1.1 Paradigms

Methodological choice does not exist within a philosophical void and Brannen (2005: 7) views the choice of method/s as being driven by philosophical (ontological and epistemological) assumptions. One of the first tasks a researcher needs to undertake is to position themselves paradigmatically. This in itself presents the mixed method researcher with some challenges. This section of the paper will examine the sets of assumptions that make up a paradigm followed by an overview of the paradigm wars and the history of mixed methods. This provides the philosophical background and a historical context to the Five P framework for mixed methods research being presented.
There are many definitions of a paradigm and three are offered here. ‘A paradigm is a way of looking at the world. It is composed of certain philosophical assumptions that guide and direct thinking and action’ (Mertens 2005: 7). Neuman (2006:81) refers to paradigm as ‘A general organizing framework for theory and research that includes basic assumptions, key issues, models of quality research, and methods for seeking answers’. Denzin and Lincoln (2008: 22) describe paradigm as follows, “The net that contains the researcher’s epistemological, ontological, and methodological premises may be termed a paradigm...All research is interpretive; it is guided by the researcher’s set of beliefs and feelings about the world and how it should be understood and studied”.

Inconsistency is evident across the literature on how paradigms are dichotomised, polarised, labelled, and at what level of abstraction they are discussed. Nonetheless, there are sufficient levels of common ground to enable the drawing of parallels and connections between these, and the labels assigned to them. It is very important that the paradigm(s) upon which a research proposal and design is based are fully understood and made explicit in the research itself (Maxwell 2005: 36; Mertens 2005: 7; Neuman 2006: 81). This is not necessarily a matter of free choice and may require the researcher to examine some previously unexamined assumptions or personal theories (Maxwell 2005: 37; Mertens 2005: 7).

The debates surrounding research paradigms have a long history and were particularly active in the 1980s. Some commentaries on the debate contend that the struggle for primacy of one paradigm over others is irrelevant as each paradigm is an alternate offering with its own merits (Guba 1990: 27). Creswell (1994: 176) identifies several schools of thought in the paradigm debate or so-called ‘paradigm wars’. At one end of the debate are the ‘purists’ who assert paradigms and methods should not be mixed. Another school of thought is identified as the ‘situationists’ who contend that certain methods can be used in specific situations. In direct opposition to the ‘purists’ are the pragmatists who argued against a false dichotomy between the qualitative and quantitative research paradigms and advocate for the efficient use of both approaches.

It is interesting to note the language that has been expressed around this evolution of mixed methods. For example Buchanan & Bryman (2007: 486) in reference to organisational research, conclude that:

_The paradigm wars of the 1980s have thus turned to paradigm soup, and organisational research today reflects the paradigm diversity of the social sciences in general. It is not surprising that this epistemological eclecticism has involved the development of novel terminology; innovative research methods; non traditional forms of evidence; and fresh approaches to conceptualization, analysis, and theory building._

Tashakkori and Teddlie call mixed methods the ‘third methodological movement’ (2003: ix) whilst Mingers (2003) refers to the ceasefire of the paradigm wars being announced. Johnson and Onwuegbuzie (2004: 14) state that mixed methods research is a ‘research paradigm whose time has come’, while Cameron and Miller (2007) use the metaphor of the phoenix to illustrate the emergence of mixed methods as the third methodological movement, arising from the ashes of the paradigm wars. Cameron (2008) takes this analogy further by asking whether the phoenix has landed in terms of research conducted within management research.

Teddlie and Tashakkori (2010) have produced an expansive list of paradigmatic stances taken within MMR. These include the; a-paradigmatic stance; substantive theory stance; complementary strengths stance; multiple paradigms; dialectic stance; and single paradigm stance. A brief description of each of these stances in listed in Table 3.

Another perspective on paradigmatic choice in MMR has been devised by Greene and Caracelli (2003) who refer to the interface between philosophy and methodology and attempt to advance the conceptual mixed methods paradigm debate. The authors have delineated between several different stances on the mixing of paradigms in mixed methods research. The four stances exist along two dimensions, the first dimension takes the position that: paradigms do matter significantly when making inquiry decisions. There are two stances related to this dimension: dialectic and the new paradigm. The second dimension takes the position that: paradigms are not critically important in the making of inquiry decisions. The two stances related to this are: pragmatic or context driven and concept driven (Greene and Caracelli 2003: 96).
Table 3: Paradigmatic stances in MMR

<table>
<thead>
<tr>
<th>Paradigmatic Stances</th>
<th>Position taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>a-paradigmatic stance</td>
<td>For many applied studies in real world settings, paradigms are unimportant</td>
</tr>
<tr>
<td>Substantive theory stance</td>
<td>Theoretical orientations relevant to the research being undertaken (eg critical race theory, attribution theory) are more important than philosophical paradigms</td>
</tr>
<tr>
<td>Complementary strengths stance</td>
<td>MMR is possible only if the different methods are kept as separate as feasibly possible so that the strength of each paradigm is maintained</td>
</tr>
<tr>
<td>Multiple paradigms</td>
<td>Multiple paradigms may serve as the foundation for MMR. In some MMR designs a single paradigm does not apply</td>
</tr>
<tr>
<td>Dialectic stance</td>
<td>Assumes all paradigms offer something and that multiple paradigms in a single study contributes to a better understanding of the phenomenon being studied</td>
</tr>
<tr>
<td>Single paradigm stance</td>
<td>Initially formulated to provide the philosophical foundation for MMR-sometimes referred to as the “alternate paradigm stance” (Greene 2007). Examples include: pragmatism; critical realism and; transformative paradigm</td>
</tr>
</tbody>
</table>

Source: Adapted from Teddlie and Tashakkori (2010: 14-16).

The Greene and Caracelli (2003) and Teddlie and Tashakkori (2010) frameworks for paradigm stances in mixed methods research provide an excellent starting point and launch pad for those choosing to engage in mixed methods research and needing to position their research approach paradigmatically. Whatever the approach taken, mixed methods researchers need to acknowledge the paradigm debate and rigorously defend their paradigmatic choices/stance.

A common stance taken in MMR is that of pragmatism or what Teddlie and Tashakkori (2010) have referred to as an example of a single paradigm stance. The second P in the Five Ps framework is pragmatism however the framework does not advocate an either-or approach to paradigmatic positioning. Pragmatism here in the Five Ps framework refers to becoming informed about the key debates in the MMR literature in the chosen field and rigorously defending the stance and choices made at the interface between philosophy and methods. Pragmatism here refers to the interface/bridge between philosophy and methods.

1.2 Pragmatism

The second of the Five Ps of mixed methods research is pragmatism. Pragmatism in its simplest sense is a practical approach to a problem and has strong associations with mixed methods research. Pragmatism can be considered a bridge between paradigm and methodology or what Greene and Caracelli (2003) refer to as a particular stance at the interface between philosophy and methodology.

Historically, pragmatism can be traced to an early period from 1860-1930 and the neopragmatic era from 1960 to present (Maxcy 2003). Many mixed methods researchers and theorists draw strong associations with mixed methodology and pragmatism (Bazeley 2003; Greene & Caracelli 1997 & 2003; Maxcy 2003; Tashakkori & Teddlie 2003; Johnson and Onwuegbuzie 2004). Johnson and Onwuegbuzie (2004: 17) summarise the philosophical position of mixed method researchers when they make the following statement:

"We agree with others in the mixed methods research movement that consideration and discussion of pragmatism by research methodologists and empirical researchers will be productive because it offers an immediate and useful middle position philosophically and methodologically; it offers a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further action and the elimination of doubt; and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions."

Patton (2002) identifies as a pragmatist, stating the aims of doing so as a means to sensitising researchers and evaluators to methodological biases that accumulate from their own socialisation experiences within their respective discipline areas. He offers a pragmatic approach as a means of promoting methodological appropriateness to enable researchers to increase their methodological flexibility and adaptability. This position is epitomised in the following:
My pragmatic stance aims to supersede one-sided paradigm allegiance by increasing the concrete and practical methodological options available to researchers and evaluators. Such pragmatism means judging the quality of a study by its intended purposes, available resources, procedures followed, and results obtained, all within a particular context and for a specific audience (Patton 2002: 71-2).

Pragmatism has a strong philosophical foothold in the mixed methods or methodological pluralism camps. This can present challenges for the mixed methods researcher in terms of claims that pragmatism is eclectic. It is very important for the mixed methods researcher to acknowledge these criticisms and rigourously defend pragmatic approaches and choices. The work of Rossman and Wilson (1994) and Morgan (1996) may be useful in this respect. Work by Greene and Caracelli (2003) referred to in the previous section of this paper makes a good starting point as well. They state that there are two very important considerations for mixed methods researchers. The first refers to a concern by Greene and Caracelli (2003: 107) that by attending too little to philosophical ideas and traditions will mean that mixed methods researchers will be ‘insufficiently reflective and their practice is insufficiently unproblematized’. These authors acknowledge and clearly state that ‘paradigms, mental models, or some other representations of philosophical beliefs and values should matter in mixed methods inquiry’ (Greene and Caracelli 2003: 107). The second implication is framed as a suggestion by the authors that it is time to reframe the key issues from the role of paradigms in mixed methods research to issues about the legitimacy of practical inquiry decisions. They conclude by advocating for:

The importance of context, substantive theory, practical resource constraints and opportunities, and political dimensions of social research as equally important bases for practice decisions…it is time to balance the philosophical, conceptual, practical, and political considerations so relevant to our inquiry (Greene & Caracelli 2003: 108).

The second edition of the Handbook of Mixed Methods in Social & Behavioral Research (Tashakkori and Teddlie 2010a) has several chapters dedicated to philosophical issues of MMR and in particular pragmatism (Biesta 2010; Greene and Hall 2010; Johnson and Gray 2010). Biesta (2010: 114) argues after a careful analysis of pragmatism and the philosophical foundations of MMR that “although pragmatism is unable to provide the philosophical foundation for mixed methods research, it has some important things to offer particularly in helping mixed methods researchers to ask better and more precise questions about the philosophical implications and justifications of their designs”. Biesta concludes that Deweyan pragmatism has made a major contribution through eradicating the epistemological dualism of objectivity/subjectivity (2010: 113). Johnson and Gray (2010: 87) in their exploration of the history of philosophical and theoretical issues in MMR make the following statement, “During the emergence of MM as a third methodological paradigm (along with QUAN and QUAL), MM has struggled somewhat with to develop a corresponding philosophical paradigm. Many or perhaps most leaders in the field are advocating some form of philosophical pragmatism”. For Greene and Hall (2010) pragmatism results in a problem solving, action- oriented inquiry process based on commitment to democratic values and progress.

Tashakkori and Teddlie (2010b: 16) pose a question “What are the methodological principles that bind practitioners of MMR together regardless of differences on other issues?” In answering this question they believe there are 2 methodological principles to MMR that distinguish it from other research approaches:

- Rejection of the either-or at all levels of the research process
- Subscription to the iterative, cyclical approach to research

This embodies the discussion of pragmatism as the bridge between philosophy and methodology and also brings us to the third of the Five Ps, praxis.

1.3 Praxis

Once a researcher has positioned themselves paradigmatically and entered the interface between philosophy and methodology then process issues come into play. Praxis is the practical application of theory and represents the third P of the Five Ps framework of mixed methods research. The mixed methods researcher needs to be knowledgeable, informed and familiar with the growing body of literature that forms mixed methods as a third methodological movement. They must also become familiar with discipline based mixed methods research and literature. The most important issues in this respect is the praxis related to methodological and data integration in mixed methods research.
Kelle and Erzberger (2004:172) advocate for the frontier between qualitative and quantitative research as not needing to be so impenetrable, asserting that models that integrate quantitative and qualitative methods are developed mostly at an abstract methodological level. These authors see this as a fundamental shortcoming of these models, in that ‘...they frequently attempt to formulate methodological rules for methodological integration without formulating a relation to any theoretical ideas about the nature of the subject area under investigation.’ (Kelle & Erzberger 2004: 176). Flick (2002: 261) supports this argument, claiming problems that arise due to combining quantitative and qualitative methods are yet to be satisfactorily resolved. He views this attempt at integration as problematic, as it is restricted to the level of research design, or what Kelle and Erzberger (2004:176) refer to as methodological rules for integration.

Natasi, Hitchcock and Brown (2010: 318) refer to integration in reference to MMR research designs and research design typologies. They identify themes which reflect an integrated perspective in relation to “precursors and basic design criteria: types of methods/data mixed, timing of mixing, breadth of mixing, rationale for mixing, and researcher orientation”. Greene (2007: 125) describes integrated MMR designs as those in which “methods intentionally interact with one another during the course of the study [and as a result] offer more varied and differentiated design possibilities”.

Bazeley (2010: 432) focuses upon the challenge of integration in MMR and argues for the assumption that the integration of data and data analysis is acceptable and necessary. Nonetheless, she goes on to assert that the level of this integration in many MM studies still remains underdeveloped. Bazeley (2010: 432) defines integration in MMR:

Integration can be said to occur to the extent that different data elements and various strategies for analysis of those elements are combined throughout a study in such a way as to become interdependent in reaching a common theoretical or research goal, thereby producing findings that are greater than the sum of the parts.

In terms of Praxis the challenges for MM researchers is the tackling of the issue of integration in terms of research designs, methods and data analysis. Tashakkori and Teddlie (2003: 672) have identified six continuing points of controversy in mixed methods research. One of these is design issues in mixed methods research. The methodological and analytical issues related to the praxis of mixed methods involves choices the mixed methods researcher needs to make in reference to:

- Research design and typology
- Sampling
- Data collection strategies
- Data analysis
- Inferences and inference quality.

One of the main concerns Bryman (2008) has of mixed methods research is that it is often insufficiently justified. This remains one of the key challenges for mixed methods researchers. These methodological choices are important and need to be justified and demonstrate methodological congruence. To aid this process Morse (2010: 351) advocates 5 checks when presenting a MMR design or the writing up of a MMR study along with what she refers to as an “armchair walkthrough” to ensure that the MM researcher has considered all optional designs and methodological choices. The five checks include stating the following in terms of the chosen MMR design:

- Theoretical drive: Inductive or deductive
- Core component: QUAL or QUAN
- Supplemental component(s); qual or quan
- Pacing: Simultaneous or sequential
- Point of interface: Analytical or results narrative

For the researcher who is embarking on mixed methods research the key issues here are in relation to the praxis of mixed methods approaches and research designs. This involves: consideration about how to apply a mixed method research design; choosing the right mixed method research design or typology; formulating the integration of methodologies; designing the integration of data and data analysis and; attention to inferences and inference quality. Once these very important praxis issues have been made then it is the proficiency or competence of the researcher that comes to the fore.
1.4 Proficiency

Research competency and proficiency also becomes a challenge for those utilising mixed methods as mixed methods researchers not only need to be competent in both qualitative and quantitative methods but must be informed and practiced in mixed methodologies. This represents the fourth P in the Five P mixed methods framework. Bazeley (2003) refers to the skills required of the mixed methods practitioner:

Assuming a goal of developing proficiency in carrying out a mixed methods study, students should have background knowledge of, and ideally experience in, gathering both text and numeric data, and in working analytically with both text and numeric data (i.e. both statistical methods and interpretive analysis of unstructured data). While it is necessary for those coming into mixed methods to have a background in both qualitative and quantitative approaches, it is important that they gain that background in a non-prejudicial way, i.e. that they do not see each of these approaches as exclusive and opposed.

Teddlie & Tashakkori (2003: 45) referred to the need for mixed methods researchers to be ‘methodologically bilingual’: skilled in both quantitative and qualitative research methods. Cameron (2011: 263-4) calls for the need to teach for “methodological trilingualism” in future MM researchers:

Not only do they need strong grounding in their chosen quantitative and qualitative methodologies and associated paradigms but they also need to be cognisant, knowledgeable and fluent in the theoretical foundations of mixed methods, the specific mixed method methodological issues (research designs and typologies, mixed methods sampling, data priority, implementation and integration,) and the quality frameworks that have been developed for mixed methods.

In a discussion on the practical issues related to current MMR, Tashakkori and Teddlie (2010b: 29) refer to the notion of a “connoisseur of methods” which they determine is usually developed through “the process of applying research tools, which individuals had acquired from a patchwork of graduate and undergraduate coursework and prior experiences, to answer complex questions or problems that could not be addressed properly within the QUAN or QUAL traditions alone”.

McMillan and Schumacher (2006: 401) draw attention to both the advantages and disadvantages of using mixed methods, listing three disadvantages. The first of these disadvantages is the researcher’s need to be proficient and competent in both qualitative and quantitative methods (note the discussion above in reference to “methodologically bilingual”; “methodological trilingualism”; and “connoisseur of methods”). The second disadvantage is the extensive data collection and resources needed to undertake a mixed method study. The last refers to a tendency to use mixed methods labels liberally to studies that only mix methods superficially.

The study by Bryman (2008) of published social science journal articles from 1994-2003 that utilised mixed methods found that just under half of those that used mixed methods did so by presenting the qualitative and quantitative data in parallel and only 18% of the articles genuinely integrated the two sets of findings. The studies by Hurmerinta-Peltomaki and Nummela (2006) and Cameron (2008) found similar findings. Hurmerinta-Peltomaki and Nummela (2006) analysed mixed methods in International Business journal articles from 2000-2003 and found that the majority of these (60%) used both qualitative and quantitative data collection but analysed these within their own tradition (i.e. quantitative data analysed using quantitative methods and qualitative data analysed using qualitative methods). Cameron (2008) reviewed conference papers from the 2007 conference of the Australian and New Zealand Academy of Management (ANZAM) (n=281). The majority of mixed method type papers were in the classification (n=22 or 78%) that analysed qualitative data qualitatively and analysed quantitative data quantitatively. The results of these studies points to an over reliance of mixed methods research types which maintain the quantitative qualitative divide and the non use of more integrated mixed method designs.

A major challenge for mixed methods researchers relates to the levels of integration between qualitative and quantitative methods that such research achieves or claims to achieve. Integration at the level of data analysis is an important aspect of becoming proficient in MMR. Tashakkori and Teddlie (2010b: 25-26) identified three trends in relation to analysis issues in MMR: MMR data analysis as a separate and distinct issue; a dramatic increase in data analysis processes unique to MMR; and new MMR analyses that borrow/adapt existing procedures in the QUANT and QUAL
traditions. In terms of the second trend Tashakkori and Teddlie (2010b: 820) have identified distinct new analytical techniques

1.5 Publishing

The publishing of mixed methods research is also an issue that needs attention. Despite a small but growing section of academic publishing that is focused on mixed methods the publishing of mixed methods represents the last P of the Five Ps of mixed methods and includes its own set of challenges and issues.

Brannen (2005: 10-11) refers to politics in her three Ps that describes the political researcher and identifies feminist, social justice, disability and new childhood studies as areas of research that she considers political. Brannen (2005: 26) does however refer to issues in mixed methods and in reference to publishing makes the salient point that:

…academic journals tend to be organized around disciplines and may favour particular types of research….Some researchers using mixed methods may for such reasons report their qualitative and quantitative data separately. Researchers presenting evidence based on both qualitative and quantitative methods but drawing upon one set of evidence and under reporting the other may risk criticism for not fully exploiting the possibilities for the analysis of both sets of data.

Tashakkori and Teddlie (2010b: 820) noted the link between the MMR and qualitative research communities in terms of their respective positions outside the mainstream in certain disciplines:

Undoubtedly, the MMR and QUAL communities are both outside the mainstream in certain fields still dominated by postpositivism, such as psychology in the United States…in these highly QUAN-oriented journals, the only way that QUAL research was introduced has been through mixed methods research. Politically, there is an assumed kinship between the QUAL and MMR communities in trying to introduce methodological diversity into highly traditional QUAN disciplines.

This paper argues that the last of the Five Ps is related to politics but not as Brannen has described it. Here the last of the Five Ps refers to the politics of publishing mixed methods and represents the last challenge to those engaged in mixed methods research.

Studies that utilise mixed methods approaches may face problems in being published due to dominant paradigmatic views expressed within discipline fields (Welch & Welch 2004; Hurmerinta-Peltomaki and Nummela 2006). Some journals explicitly exclude certain methodological approaches, whereas others imply methodological preferences. In a lot of respects decisions about where to submit mixed methods research for publication is determined by the level of acceptance within disciplines and specific publications themselves.

Stange, Crabtree and Miller (2006: 29) note the progress being made in the field of family medicine towards the acceptance, use and benefits of using mixed methods research. Even so they conclude that:

…the dramatic advances in the scope and sophistication of conducting mixed methods research have not been met with parallel progress in ways of disseminating the results of mixed methods studies. From our point of view, a major dilemma is that the results of multimethod studies often are segregated in different publications that reach limited and often nonclinical audiences.… Thus, different fields only come to know part of the research—reminiscent of the story of the 4 blind men each feeling a different part of the elephant and thus unable to develop a coherent idea of the whole.

They go on to offer a set of five solutions to this problem:

1. Publish quantitative and qualitative papers in separate journals, but with clear references and links to the other article(s).

2. Publish concurrent or sequential quantitative and qualitative papers in the same journal.

3. Publish an integrated single article that describes both methods and findings and draws overarching lessons, with or without appendices that provide study details.
4. Copublish separate qualitative and quantitative papers accompanied by a third paper that draws overarching lessons from analyses across the 2 methods.

5. Develop an online discussion of readers and invited commentators to foster cross-disciplinary communities of knowledge (Stange, Crabtree and Miller 2006).

Dahlberg, Wittnik and Gallo (2010) also provide a very practical and detailed account of how MM researchers can write for funding and publication and provide structural advice on the distinct task of writing up MMR and MM research proposals.

2. Conclusion

Mixed methods researchers need to be versatile and innovative with a repertoire of research skills that exceeds those needed for single mode research. They need to explicitly state their philosophical foundations and paradigmatic stance before rigorously defending their methodological choices and demonstrate a sound knowledge base of mixed methods research designs and methodological considerations. They need to demonstrate proficiency and competence in both the quantitative and qualitative methods chosen as well as proficiency and competency in applying the rules of integration to methods and data analysis. They are also required to become cognisant of the politics of publishing in a new and emerging methodological movement without debasing or underreporting the essence of their mixed methods studies. The Five Ps framework can provide those wishing to embark into mixed methods research with the essential components of a mixed methods starter kit, inclusive of a contemporary checklist of contentious issues, risks and traps that require consideration. Tashakkori and Teddlie (2010b: 29) refer to the need for MM researchers to become “methodological connoisseur[s]” whilst Cameron (2011: 263) calls for the need for “methodological trilingualism” in those wishing to engage in MMR. Both these capacities require advanced research skill levels and competencies. As a consequence the framework also offers higher degree supervisors and educators with a guiding framework for building mixed methods research capacity. It is hoped the Five Ps framework for mixed methods research will provide a pedagogic tool for guiding the teaching of mixed methods research and will continue to be developed. It is envisaged this development may lead to a more comprehensive framework and supplementary curriculum development for higher degree research students.

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http://www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf


Design Science Research: The Case of the IT Capability Maturity Framework (IT CMF)

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Abstract: Design science (DS) is a problem solving paradigm that involves building and evaluating innovative artifacts in a rigorous manner to solve complex, real world problems, make research contributions that extend the boundaries of what is already known, and communicate the results to appropriate audiences. The importance of this paradigm in the Information Systems (IS) field has been recognised since the early 1990’s with the publication of seminal articles by for example Nunamaker et al (1991), Walls et al (1992) and March and Smith (1995). However, over the past 15 years, DS research in IS has been sparse. In more recent times this has begun to change, with an increasing number of research contributions considering DS research. DS research in IS is important as the dominant behavioural science paradigm is not sufficient for addressing the types of problems that call for human creativity and innovative and novel solutions. One widely debated problem in the IS field that calls for such novel solutions centres on how organisations manage, deliver and optimise value from their IT investments. This paper presents a DS research project in the IS field that aims to improve organisational ability in managing and optimizing value realised from IT investments through increasing maturity in critical areas. This research involves development of an IT Capability Maturity Framework (IT CMF). The IT CMF project is centered at the Innovation Value Institute (IVI) at the National University of Ireland Maynooth (NUIM). The IVI is a joint venture between NUIM, Intel and the Boston Consulting Group and seeks to drive innovation in the management and use of IT in order to optimise business value. The IT CMF represents an emerging blueprint of key IT capability processes, and at a high level consists of four integrated IT management strategies or macro processes: managing IT like a business, managing the IT budget, managing the IT capability, and managing IT for business value. The IT CMF represents a blueprint for incrementally improving these four macro processes across five maturity levels: initial, basic, intermediate, advanced, and optimized. These four macro processes are further broken into 32 critical processes (CPs), which are the key activities that an IT organisation needs to manage in order to deliver IT solutions and measure the business value generated. The content development and review for the IT CMF is performed by the IVI development community, which comprises academic researchers, industry based practitioner-researchers and consultants based in over 55 global companies. This paper discusses its development in terms of key DS principles and presents reflections on the challenges and value associated with adopting a DS approach. The paper adds to the growing body of DS literature in the IS field, and enables other researchers and practitioners to judge the rigor with which the IT CMF artifact was created and evaluated, and its utility in practical application.

Keywords: design science, IT CMF, IS, case study, maturity models

1. Introduction

“What is design? Its where you stand with a foot in two worlds – the world of technology and the world of people and human purposes – and you try to bring the two together” (Kapor (1990) in Hevner and Chatterjee, 2010).

Design Science research is centered on building and evaluating artifacts in order to solve organisational problems. Much has been written about the research paradigm in other disciplines - its roots lie in engineering and the “sciences of the artificial” (Simon, 1996). Since the early 1990’s, DS has been recognised as important in the Information Systems (IS) field in increasing an IT artifact’s utility and effectiveness for solving complex business problems (Hevner and Chatterjee, 2010; Peffers et al, 2007). Over the past 15 years, IS DS research has been at best sporadic (Peffers et al, 2007; Walls et al, 2004) and publication in IS journals remains problematic (March and Storey, 2008). Despite this, Hevner and Chatterjee (2010) state that the IS field has witnessed a “flurry of recent activity” on the use of DS research.

This paper adds to the body of DS research in the IS field. It aims to establish the value of using a DS approach in the development of an IT Capability Maturity Framework (IT CMF) that seeks to help organisations to better manage and deliver value from their IT investments. The IT CMF focuses on four integrated strategies and 32 associated critical processes against which the IT organisation’s level of maturity can be assessed according to five levels. The project has followed the DS research paradigm; this paper discusses its development in terms of key DS principles and concludes with a discussion of how this research approach has been of benefit.
The structure of this paper is as follows: Section two discusses the need for DS research in IS to complement the currently predominant behavioral science paradigm, so that the type of organisational problems that demand innovative and creative solutions can be addressed. Section Three summarises key principles drawn from seminal DS articles that underpin DS research projects. Section four provides an overview of the IT CMF project and discusses the DS approach to its content development in terms of Hevner’s (2007) three DS cycles. Section five discusses the challenges and benefits associated with DS and draws conclusions to the research.

2. The need for design science research in IS

Both behavioural science and design science research paradigms are foundational to the IS discipline, which is positioned “at the confluence of people, organisations and technology” (Hevner et al, 2004). However, the prevalent research paradigm in the IS field to date has been behavioral science research (Hevner and Chatterjee, 2010). The objective of the behavioral science paradigm, which has its roots in natural science research methods, is problem understanding through developing and verifying theories on human and/or organisational phenomena that explain what happened, why it happened, and perhaps what will happen in a given context (March and Smith, 1995; March and Storey, 2008; Pries-Heje and Baskerville, 2008). March and Storey (2008) suggest that a typical question in this stream of IS research is “Why do investments in IT artifacts often not result in an increase in firm’s value?” Its two key activities are regarded as discovery (i.e. generating new scientific claims such as theories or laws) and justification (i.e. testing such claims for validity) (March and Smith, 1995); the research output in such studies is often explanatory in nature (Peffers et al, 2007). March and Smith (1995) provide the following explanation:

“Natural scientists develop sets of concepts, or specialized language, with which to characterize phenomena. These are used in higher order constructions - laws, models, and theories - that make claims about the nature of reality. Theories - deep, principled explanations of phenomena - are the crowning achievements of natural science research. Products of natural science research are evaluated against norms of truth, or explanatory power. Claims must be consistent with observed facts, the ability to predict future observations being a mark of explanatory success. Progress is achieved as new theories provide deeper, more encompassing, and more accurate explanations”.

Behavioural science often involves the development of a hypothesis, which is either proved or disproved with the collection and analysis of data by the researcher. Resulting theories provide insights pertaining to the interactions among people, organisations and technology that need to be managed. While this research paradigm is appropriate for studying existing and emerging organisational phenomena, there is a danger of over emphasising contextual theories at the expense of failing to anticipate new technological capabilities. This may result in behavioural science theories referring to out-dated or ineffective technologies. Further, the behavioural science paradigm is not sufficient for addressing the types of problems that call for human creativity and innovative and novel solutions (Hevner and Chatterjee, 2010; Peffers et al, 2007), for example, “What IT artifacts will increase firm value?” (March and Storey, 2008). In other words “science, the process of understanding "what is," may be insufficient for design, the process of understanding "what can be."” (Hevner and Chatterjee, 2010). These types of problems that require innovative solutions are regarded by Pries-Heje and Baskerville (2008), as ill-structured or “wicked problems”, where requirements may be unstable, there may be complex interactions between problem subcomponents, and human cognitive and social abilities may be important in developing solutions (Hevner et al, 2004). Addressing these types of problems is the remit of DS research (March and Smith, 1995; March and Storey, 2008) and many such problems exist in the IS field.

While the behavioural science paradigm seeks to identify what is “true”, the DS paradigm aims to create what is effective. DS is a problem solving paradigm that involves building and evaluating innovative artifacts in a rigorous manner to solve complex, real world problems, make research contributions that extend the boundaries of what is already known, and communicate the results to appropriate audiences (Adomavicius et al, 2008; Gregor and Jones, 2007; Hevner et al, 2004; March and Smith, 1995; March and Storey, 2008; Pries-Heje and Baskerville, 2008; Purao, 2002; Vaishnavi and Kuechler, 2004/5; Venable, 2006). Knowledge and understanding of the problem domain is achieved through artifact construction (Hevner et al, 2004), which must have novelty and utility in the application environment (Hevner and Chatterjee, 2010; March and Storey, 2008; Simon, 1996). Analysis of the utility and performance of the developed artifacts provide improved understanding and identification of further improvements that enable the business problem/need to be addressed more
effectively. According to Peffer et al (2007) the “design and the proof of its usefulness is the central component”. DS research in the IS field is not limited to IT artifacts in the form of computer based systems. Artifacts or solution technologies may include IS development methods, tools and techniques, IS security and risk management practices, and IS planning and management methods (Venable, 2006).

It should be noted that because technology and behavior are inseparable in IS research (Hevner et al, 2004), both behavioral science and DS research paradigms are increasingly recognised as “complementary partners” (Hevner et al, 2004) or “equal companions” (March and Storey, 2008) in addressing important IS problems. Behavioural science theories are influenced by IS design decisions; similarly the outputs from DS are influenced by behavioural theories. In fact DS artifacts “creation relies on existing kernel theories that are applied, tested, modified, and extended through the experience, creativity, intuition, and problem solving capabilities of the researcher” (Hevner et al, 2004). In other words “truth informs design and utility informs theory”. These researchers argue for the need to engage in the complementary research cycle between behavioural science and design science in order to address important IS problems, as both are needed to ensure IS research is effective and relevant. They state that “IS research must be both proactive and reactive with respect to technology. It needs a complete research cycle where design science creates artifacts for specific information problems based on relevant behavioural science theory and behavioural science anticipates and engages the created technology artifacts”.

3. Design science principles

DS research is underpinned by a number of principles, which are summarised in this section.

**Principle One - Design Artifact:** IS design science research involves developing useful artifacts that address relevant business/IT problems (March and Smith, 1995; Hevner et al, 2004; Hevner, 2007, Iivari, 2007; Baskerville, 2008; Peffers et al, 2007). These IT artifacts include constructs (vocabulary, symbols, or conceptualizations used to describe problems or solution components); models (abstractions and representations of the problem and its solution space); methods (algorithms, practices and processes providing guidelines in performing tasks or searching the solution space); and instantiations (implemented or prototype systems demonstrating utility of the IT artifact in addressing specific tasks) (March and Smith, 1995).

**Principle Two – Design Problem Relevance:** Benbasat and Zmud (1999) in the MIS Quarterly paper “Empirical Research in Information Systems: The Practice of Relevance” highlight a strong need for more relevance in IS research. They argue that to date an over emphasis has been placed on rigor over relevance, often resulting in research outputs that are not prescribed in a manner that can be easily used by practitioners to address a problem or opportunity. DS research is problem driven (Baskerville, 2008). As stated by Hevner et al (2004), “research must address the problems faced and the opportunities afforded by the intersection of people, organisations, and information technology”. The DS Relevance Cycle proposed by Hevner (2007) connects the research project’s contextual environment with DS activities. This contextual environment sets out the problem space which includes the phenomena of interest i.e. the problems, opportunities, goals and tasks defining business needs of the organisation as perceived by individuals and their positioning relative to existing technological architecture and capabilities. Together these set out the problem or business need that needs to be addressed. Problems or opportunities identified in the application domain (i.e. the research requirements) initiate DS research. The problem addressed, i.e. the difference between the goal state and current state of a system, needs to be relevant to the community of practitioners involved in planning, designing, managing, implementing, operating and evaluating IS and technologies. Field testing of the built artifact in the application domain based on predefined acceptance criteria determines if further iterations of this relevance cycle are needed.

**Principle Three – Design Cycle:** DS activities iterate between building design artifacts and processes and evaluating them in order to provide feedback for further refinement (March and Smith, 1995; Hevner et al, 2004; Hevner, 2007). These design cycle activities are based on both relevance and rigor, focused on addressing specific application domain requirements, while drawing on existing theoretical foundations and methodologies in the knowledge base (Hevner and Chatterjee, 2010).

**Principle Four – Design Research Rigor:** Rigor refers to “the correct use of methods and analyses appropriate to the tasks at hand” (Benbasat and Zmud, 1999); in DS terms it is determined by the
researcher’s ability to select suitable techniques to build and evaluate the artifact (Hevner et al, 2004). The DS Rigor Cycle (Hevner, 2007) links DS build and evaluate activities with the knowledge base that informs the research project. This knowledge base includes existing foundational/kernal theories, frameworks, artifacts, processes, methodologies, experiences and expertise within the application domain; and the DS research is grounded in these existing ideas. A challenge of DS is the fact that the existing knowledge base is often insufficient as some theories in the knowledge base may be undeveloped or incomplete. Further, there is an insufficient set of tools, constructs, models and methods to represent the business/technology environment accurately, with abstract representations often regarded as having poor relationships with the real world environment. Finding representational techniques that balance rigor and relevance is difficult (Hevner et al, 2004). Inspiration for design activities may also come from creative insights, gut instinct, or “imaginative jumps to future possibilities” (Purao, 2002), and the very process of building the IT artifact may enhance understanding and development of those theories (Hevner and Chatterjee, 2010). Because no knowledge base is complete for every situation, the design process contributes important knowledge to the incomplete theories that motivated the design project in the first place.

**Principle Five – Design Artifact Evaluation:** “The essence of Information Systems as design science lies in the scientific evaluation of artifacts” (Iivari, 2007). Rigorous evaluation methods are required to demonstrate the design artifact’s utility, quality and efficacy. The evaluation process helps researchers to understand the nuances in their design and contribute to the body of knowledge to facilitate learning by future researchers (Hevner and Chatterjee, 2010). Applying rigorous evaluation represents one of the key DS challenges (Hevner et al, 2004; Iivari and Venable, 2009; March and Vogus, 2010). Evaluation episodes include artifact evaluation to refine its design during the build-evaluate cycle and field testing of the artifact in its application environment (Hevner, 2007). Similarly, Pries-Heje et al (2008) suggest two distinct evaluation episodes: design-evaluate and construct-evaluate. Two key steps involved in artifact evaluation involve selecting the evaluation technique and evaluation metrics (Hevner and Chatterjee, 2010). Metrics are used in comparing the performance of constructs, models, methods and instantiations for specific tasks. For example, constructs may be evaluated in terms of completeness, simplicity, ease of use; models may be examined with respect to their fidelity with real world phenomena, level of detail, robustness, and practical utility; methods may be evaluated in terms of operationality, efficiency, generality and ease of use, while instantiations evaluation considers artifact efficiency and effectiveness and its impact on the application domain’s end users (March and Smith, 1995). The evaluation method selected from the knowledge base must be appropriate for the artifact in question. Evaluation approaches may include observational methods (case studies, field studies); analytical methods (static analysis, dynamic analysis); experimental methods (controlled experiments, simulations); testing (functional, structural); or descriptive methods (informed arguments, scenarios) (Hevner et al, 2004). These mirror closely with the naturalistic and artificial evaluation approaches proposed by Pries-Heje et al (2008).

**Principle Six – Design Research Contributions:** Contributions of DS research include an artifact that adds to the existing knowledge base or uses existing knowledge in innovative ways (Hevner et al, 2004; March and Smith, 1995); design construction knowledge extending/improving existing foundations in the knowledge base; and/or design evaluation knowledge enhancing existing methodologies (Hevner et al, 2004). Experience gained from the iterative design and artifact evaluation are also valuable contributions.

4. The case: Development of the IT CMF using DS principles

4.1 IT CMF introduced

The IT CMF project is centred at the Innovation Value Institute (IVI), at the National University of Ireland Maynooth. IVI is a research centre seeking to drive innovation in the management and use of IT. The IT CMF (Figure 1) is an innovative and systematic framework, enabling CIO’s/CEO’s to understand and improve their organisation’s maturity and enable optimal business value realisation from IT investments (Curley, 2004; 2007). The framework represents an emerging blueprint of key IT capability processes and acts as an assessment tool and a management system with improvement maps that help organisations to continually improve their IT capability over five levels of maturity – initial, basic, intermediate, advanced, and optimised (Table 1). The meta-elements of the IT-CMF can be depicted in three interlinked layers, namely strategy, macro and micro layers.
The strategy layer underpins the primary elements of the IT-CMF that support an approach to strategic thinking comprising business context driven by the organisation’s vision of its future; business strategy; IT capability; business operations; and, business value (Curley, 2004).

The Macro layer consists of both the content and context of application of the IT-CMF. The content segments the activities of an organisation’s IT function into four macro-processes (MPs) namely: Managing IT like a business, Managing the IT budget, Managing the IT capability and Managing IT for business value. These four integrated IT management strategies underpin value oriented IT management.

The Micro-layer comprises 32 critical processes (CPs) assigned to the four individual macro processes. These represent key activities of the IT organisation in delivering IT solutions and optimising the associated business value generated. Each CP encompasses a number of categories and capability building blocks (CBBs), which reflect the CPs content and assumptions associated with each of the five maturity levels (Curley 2004). Understanding an organisation’s current and desired maturity levels helps set improvement initiatives that drive value delivery. Improving maturity across these CPs reflects organisational progress over time.

![Figure 1: IT CMF (source: Innovation value institute)](image)

<table>
<thead>
<tr>
<th>Maturity Level</th>
<th>Maturity Level Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>5- Optimising</td>
<td>Value centric IT management State of the art practices and outcomes</td>
</tr>
<tr>
<td>4- Advanced</td>
<td>Benefits from IT investments quantified and communicated Practices and outcomes well above industry average</td>
</tr>
<tr>
<td>3- Intermediate</td>
<td>IT/business interaction formalised for all critical processes Transparent investment decisions</td>
</tr>
<tr>
<td>2- Basic</td>
<td>Delivering basic IT services Some IT/business interactions formalised</td>
</tr>
<tr>
<td>1- Initial</td>
<td>No formal processes Ad hoc management of IT</td>
</tr>
</tbody>
</table>

4.2 Overview of IT CMF development

The content development and review process for the IT CMF is performed by the IVI consortium. A work group is formed for each of the 32 CPs, which consists of a mix of Subject Matters Experts
(SMEs) and Key Opinion Leaders (KOLs) on a specific topic, including academic researchers, industry-based practitioners, and consultants. The work groups are led by an individual, who acts as a facilitator for the group in achieving its goals and objectives. Development work involves creating detailed content for each of the CPs based on a standard template or blueprint. Such content includes for example:

- An industry standard process definition,
- In scope and out of scope aspects,
- Definition of categories and capability building blocks (CBBs) for each CP,
- Definition of relations between CPs,
- Differentiation with industry IT management frameworks,
- A five level maturity curve framework representing the maturity underpinning the scope of the categories and CBBs defined for each CP,
- A detailed assessment tool comprising maturity level questions for each CBB,
- A set of practices, outcomes and metrics associated with each CBB at each level of maturity,
- A collection of other reference documents, such as quick scan cards, illustrative examples, marketing booklets, interview guides etc.

Work group output evolves through a series of four stages (Table 2) and is reviewed at the end of each stage by a technical committee (TC). This TC may approve progression to the next stage or request further development work before progression status is granted. As development work progresses through the various stages, more in-depth content is required and the CP material is subject to more rigorous reviews and validation processes.

**Table 2: IT CMF development stages (source: Innovation value institute)**

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP Blue Print content</td>
<td>Goal of the CP; theoretical scope in line with macro process objectives. Overview and definition of CP CBB categories Key terms CP inputs/outputs Maturity profile (draft)</td>
<td>Stage 1 requirements Key insights &amp; lessons learned Differentiation (detailed) Maturity profile (detailed) Practice-outcome-metrics (draft) Illustrative examples (draft) Detailed references</td>
<td>All items in CP blueprint complete Practice-outcome-metrics (detailed) Illustrative examples (detailed)</td>
</tr>
<tr>
<td>Assessment</td>
<td>Assessment questions (draft)</td>
<td>Questions complete List of potential organisations to be assessed Auxiliary assessment documents (draft)</td>
<td>Updated with learnings from assessments and inventoried</td>
</tr>
<tr>
<td>Validation of Materials</td>
<td>SMEs &amp; KOLs 1:1s Desktop research WG peer review prior to TC submission</td>
<td>Reviewed and validated with WG participants Comparison with industry framework scan References consulted and expanded with input from KOLs, SMEs, industry and academic literature, business press WG peer review prior to TC submission</td>
<td>Peer reviewed with 3-5 external organisations and KOLs WG peer review prior to TC submission</td>
</tr>
<tr>
<td></td>
<td>Formally assess at least three organisations WG peer review prior to TC submission</td>
<td>Updated with learnings from assessments Assessment tool and auxiliary files inventoried</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Adopting a design science approach

As outlined in section 3, DS is centered on developing useful artifacts, which take the forms of constructs, models, methods and instantiations \([\text{Principle One -- Design Artifact}]\). In DS research, maturity models are located between models and methods in the sense that a) they offer state descriptions on the current maturity level assessment and b) guidelines with respect to how organisations can achieve higher maturity. The first aspect can be considered a model perspective; the second outlines guidelines in the form of method components \((\text{Donnellan and Helfert, 2010})\). The DS process followed in developing the IT CMF artifact over the four stages of content development can be examined in terms of the three DS research cycles (Figure 2) proposed by Hevner \((2007)\).

![Figure 2: Design science research cycles (Hevner and Chatterjee, 2010)](image)

The development of the IT CMF is underpinned by both relevance and rigor. As outlined in Section 3, DS research is problem oriented \([\text{Principle Two -- Design Problem Relevance}]\). The DS relevance cycle acts as the link between the research projects context and the initiation of DS activities, through identification of a relevant Business/IT problem. The relevance of the IT CMF project is driven by the problems experienced by organisations in optimizing how they currently manage and measure the business value of their IT investments. IT value has been a subject of debate for many years. Linked to the productivity paradox literature \((\text{e.g. Brynjolfsson, 1993})\) that emerged in the 1980’s, Robert Solow \((1987: 36)\) is well cited for stating “you can see computers everywhere, except in the productivity statistics”. The concept of value in use, which refers to the net benefit stream derived through IT usage, is quite complex to quantify and realise and a significant component of IT value comes from the ability to leverage associated processes and work practices to differentiate from competitors \((\text{Markus, 2004; Ranganathan and Brown, 2006})\). At present, there are approximately 30 IT management frameworks, for example Information Technology Infrastructure Library (ITIL), Control Objectives for Information and related Technology (COBIT), Capability Maturity Model Integration (CMMI), IT Balanced Scorecard, PRINCE2, ValIT and so on. While offering best practices and guidance in several areas, these IT management frameworks do not address the full scope of the IT CMF framework and have not resolved the issue of enabling organisations to optimise the value delivered from their IT investments. Hence, the problem of managing and delivering business value from IT remains of significant relevance as annual IT spend \((\text{currently estimated at £1.6 trillion (Gartner, 2010)})\) continues to grow, as the pace of technology intensifies and as organisations become more and more reliant on IT. The issue of optimizing IT enabled business value is therefore a problem requiring an innovative solution and is suited to a DS research approach.

The DS rigor cycle \([\text{Principle Four -- Design Research Rigor}]\) acts as the link between the knowledge base that informs the project and the design activities. The IT CMF development is grounded in existing artifacts, methodologies, foundational theories and expertise. The research has theoretical foundations in the field of IT management and draws from an extensive base of industry and academic literature. The artifact leverages existing IT standards and frameworks, which have widespread application by organisations in their IT management.
Grounded in both relevance and rigor, the design cycle [Principle Three – Design Cycle] of the IT CMF focuses on iterative build and evaluate activities by the CP work groups across the four stages of its development. As illustrated in Figure 2, each stage of development is a refinement of the previous stage, adding greater depth of detail. Within the design cycle, the build process is evolved and refined through feedback provided from evaluation activities [Principle Five – Design Artifact Evaluation] using methodologies existing in the knowledge base. Evaluation activities for the IT CMF include the use of the informed argument method by the workgroup members, technical committee stage gate reviews; and field testing of the artifact with organisations.

- The use of the informed argument evaluation method (Hevner et al, 2004), where information from the knowledge base is used to build convincing arguments for the artifacts utility, is appropriate for the IT CMF. During content development by the workgroup, the IT CMF is compared with several IT management frameworks; for each CP the degree of fit/match between it’s CBBs and relevant IT management frameworks and industry standards is visually depicted. An examination of this industry framework scan highlights the gaps existing in current IT management standards, many of which are addressed by the IT CMF. This model also differs from existing IT management frameworks in that it adopts a holistic organisational approach and provides guidelines to contextualize maturity models to take into consideration organisational size, sector, structure, IS decision making structure, communication structure, and task structure. Informed arguments of this nature are one means of iteratively evolving the IT CMF design.

- Further, within the design cycle, the evaluation and stage gate reviews by a technical committee serve as important feedback on learnings from the review process and refinements required by the workgroup before the CP can advance to the following stage. Such feedback incorporates the fresh insights of IVI consortium members who have not been closely involved in the CP’s development.

- As outlined in Section 3, design artifact evaluation is not limited to the design cycle. Field testing of the artifact in its application environment is necessary to demonstrate its utility, quality and efficacy and the feasibility of the approach to solving the problem. This again links together the DS activities and the application environment via the relevance cycle. From an observational evaluation approach (Hevner et al, 2004) perspective, instantiations of the IT CMF are evaluated in contextually diverse organisations using the case study method. As outlined in Table 2, in order for a critical process to progress from development stage 3 to stage 4, the CP material is formally assessed in at least three organisations. This typically involves conducting CP pilot assessments within organisations; the assessors who lead this activity capture feedback from the organisations via a standard CP Pilot assessment report template. This report captures insights on the CP’s ability to assess the organisation’s process maturity; the scope of the CP definition; capability building blocks, maturity levels, POMs, and questionnaire; and any other insights on how the CP material could be improved. Such field testing based on predefined acceptance criteria determines if further iterations of the relevance cycle are needed and provides valuable feedback on the utility of the maturity level assessment approach, its comprehensiveness, its understandability, and its value in assessing current and setting target maturity levels. Incorporating such feedback into the relevant CP material becomes a further important build activity within the design cycle for the IVI workgroups.

The output of a DS research activity is a contribution to the knowledge base informing the project [Principle Six – Design Research Contributions]; thereby linking the design activities and the knowledge base via the rigor cycle. Such contributions may be in the form of an artefact, an extension to an existing foundational theory and/or new design evaluation knowledge. Novel contributions from this project included the IT CMF artifact providing a detailed framework that helps drive innovation and change in how organisations manage and use their IT investments to optimise business value. Application of this artifact in the business environment helps organisations to determine their current CP maturity levels, and identify improvement initiative priorities to increase their IT capabilities efficiency and effectiveness in delivering value. This helps address a perennial business IT problem. Contributions further extend existing foundational theories by addressing the gaps in existing IT management frameworks and standards and recognising that the IT CMF can defer to other frameworks in the knowledge base for additional actionable practices.

5. Discussion and conclusions

DS has provided a useful methodological approach to development of the IT CMF. While the prevalent behavioural science research paradigm facilitates explanations and development of theories
on the problem of realising business value from IT investments, DS enables the development of novel, innovative ways to address the problem. The value of the DS approach in this project lies in the insights gained through the iterative build-evaluate activities. The build-evaluate cycle enhanced understanding of the business/IT problem and the complex interactions of problem subcomponents. This level of understanding could only be gained through the specific act of building and testing an artifact iteratively. The approach resulted in improved understanding by the IVI research team regarding the utility of the developed CP material in assessing organisational maturity in a specific process. It offered inherent flexibility to change and evolve the artifact until it was useful and effective in addressing the problem of how organisations can optimise value delivery from IT investments.

The iterative design process, incorporating input from WG participants, TC members, and case study organisations, provides diverse perspectives that enhance the IT CMF artefact’s quality and utility. Grounding the research in existing theoretical and methodological foundations and expertise ensures that the research avoids the risk of “reinventing the wheel”, builds on an already established knowledge base, and offers a contribution that addresses the deficiencies of existing IT management frameworks. This in-depth approach to content development is essential in demonstrating the rigor with which the IT CMF was created, and ultimately in gaining buy-in for the framework as a novel and holistic approach to IT management. Its utility is evident in the following exemplar results from applying IT CMF practices: a 25% improvement in IT capability for 10% reduction in IT spend at Intel; 96% reduction in set up working time for new servers at Axa-Tech; and an 8% saving in total operating budget for Technology Innovation and 20% saving of total budget for experiment execution at Merck (Grant, 2010).

It is important to note that the DS approach to development of the IT CMF is not without its difficulties. Within the design cycle, challenges exist in aligning the input and feedback of a diverse range of researchers and practitioners during the build-evaluate activities and as such the design process is reliant on the human cognitive and social abilities of the workgroup participants. An aligned understanding and definition of the problem relevance for each CP is required. Ensuring rigor in the content development throughout the various stages requires iterative refinement through ongoing literature search to incorporate up-to-date methods, frameworks, practices etc. Validation of material within and between stages, results in a longer development time for some CPs, with the need in some cases to revise material content and conduct further research prior to the technical committee granting approval for material to progress to the next stage. This longer development time results in the CPs of the IT CMF reflecting different stages of development at a specific point in time. Despite these challenges the DS approach ultimately results in a higher quality artifact.

Overall, DS research provides a robust approach towards addressing the type of ill-structured business/IT problems faced in the IT CMF research project. It complements behavioural science research oriented towards problem understanding and providing explanations, by developing in a rigorous manner novel solutions that extend the boundaries of organisational capabilities. These novel solutions or artifacts serve as the basis of future behavioural science theories, which will inform the underlying knowledge base for future DS activities. The complementarity between these two paradigms enables relevant IS problems to be more effectively addressed. The more recent surge of interest in DS as a research paradigm in IS is of significant importance in advancing the IS field in innovative and novel ways. This paper calls for the more widespread publication of DS oriented research in mainstream IS and research methods journals.

References


Incorporating Design Science Research and Critical Research Into an Introductory Business Research Methods Course

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Abstract: Research in business can address a variety of goals, including explanation or evaluation of extant business practices, development of new business practices, critiquing business practice, and examining business goals other than profit. Empirical research about extant business practices is conducted in one or both of the positivist and interpretive research paradigms. Development of new business practices, rather than simply examining existing ones, is conducted by research within the Design Science Research (DSR) paradigm. The DSR paradigm emphasises the invention, design, and development of new technologies, techniques, and methods, yet still achieving research rigour. Critically examining organisational practices and goals other than profit, such as business ethics, sustainability, and the triple bottom line, is much better conducted within the Critical Research (CR) paradigm, which critically examines the purpose, goals, and social and societal impacts of business and other practices. Unfortunately, the Introduction to Business Research Methods courses and textbooks that develop the business research community’s fledgling members’ ability to conduct, interpret, and critique and develop high quality research typically place heavy if not exclusive emphasis on positivist and interpretive research paradigms and methods at the expense of other research paradigms and methods. Such exclusive emphasis on positivist and interpretive research at the expense of other paradigms handicaps new researchers and severely limits their future ability to conduct, interpret, critique, and develop high quality research. To address this problem, this paper describes how DSR and CR have been successfully incorporated within an introductory business research methods course, which introduces students, regardless of their specific business discipline, to business research. The paper describes how it (1) deals with textbooks that have a limited perspective on business research paradigms and methods and (2) provides a needed, holistic perspective on business research, regardless of the specific discipline. To accomplish the above, the new course does four specific things. First, it situates business research as an applied discipline, along with other applied disciplines, such as medicine and engineering, and in contrast to non-applied disciplines, such as physics or psychology. Second, it includes a key new framework that contrasts the assumptions and perspectives of different research paradigms, including business research knowledge goals, the role of values in research, and epistemological issues. Third, it modifies and extends frameworks and figures from a popular business research methods textbook to supplement the limited perspective of the textbook with alternative research goals and paradigms. Fourth, the new course adds relevant introductory readings. The paper presents these extensions to the course, including how and where they are included within the course presentation, materials, and assessments, as a model for others wishing to enhance their introductory business research methods courses.

Keywords: business research, research methods, design science research, critical research, curriculum design, teaching

1. Introduction

University courses teaching research methods are a key element in the development of a research community through developing its fledgling members’ ability to conduct, interpret, critique and develop high quality research. In today’s business research environment, a diverse range of research paradigms are available and used by researchers; these need to be understood and familiar to business researchers today. New members of the research community typically receive their initial grounding in an introductory research methods course. Such a course should cover the broad range of methods used for business research. Otherwise, fledgling members of our community would be significantly handicapped by not understanding the role or even the existence of other research paradigms or how they contribute to the improvement of business and our understanding of it.

Unfortunately, the introductory Business Research Methods courses taught at many universities and the textbook they use usually place heavy if not exclusive emphasis on positivist and interpretive research paradigms and methods. They typically emphasise quantitative and qualitative empirical research techniques for research to identify, describe, explain or evaluate existing business practices. However, research in applied disciplines, such as those in business (accounting, finance, marketing, etc.), has other relevant goals besides explanation or evaluation of extant phenomena. Such other goals are more adequately addressed by research paradigms other than (or in addition to) positivism and interpretivism as described below.

Another important goal of business research is the invention and development of new business practices, rather than simply examining existing ones. Such research is better supported by the Design Science Research (DSR) paradigm (Hevner et al, 2004; March & Smith, 1995), which has recently received extensive attention in the Information Systems (IS) discipline. The DSR paradigm emphasises the invention, design, and development of new technologies, techniques, and methods, yet still achieving research rigour. Venable (2010) has suggested that all business research disciplines could benefit from considering the DSR paradigm and the discussions about it in the IS discipline, particularly developments re. DSR methods, design theory, and DSR standards. Van Aken (2004, 2005, 2007) in particular has advocated its relevance to the Management discipline.

Still another important goal of (some areas of) business research is to examine goals of businesses (and other organisations) other than profit. Many organisations that benefit from business research are not businesses, but are government or not-for-profit organisations. Furthermore, many researchers within business are concerned with the relationship of business organisations to local communities and society. Other goals, such as those incorporated into the triple bottom line (i.e. achievement of social and environmental good), are also very relevant. Understanding how existing business practices impact upon people and communities, or development of new business practices as above that improve upon that impact, is much better supported by the Critical Research (CR) paradigm (Cecez-Kecmanovic et al, 2008; Stahl, 2008b; Myers and Klein, 2011).

An Introduction to Business Research Methods course would benefit significantly from incorporating the DSR and CR research paradigms into the course, in such a way that new business research students can get a more holistic perspective and see a broader range of legitimate research perspectives.

While Critical Research and Design Science Research both have a rich literature, no research has discussed how they can be taught or included in the introductory research methods curriculum. This paper motivates and addresses that gap, with a new framework and practical methods and suggestions. Unfortunately, space limitations prevent a full introduction to CR and DSR; those unfamiliar are referred to the papers cited in the brief introductions included below.

This paper describes how DSR and CR have been successfully incorporated within a new research methods course at Curtin University of Technology in the hope that others may find the ideas useful for teaching their introductory research methods courses. The new course at Curtin introduces students to business research, regardless of their specific discipline. The cross-disciplinary course arose out of the desire to rationalise the different offerings of research methods units by six different discipline-based schools within the Curtin Business School – Accounting, Business Law, Economics & Finance, IS, Management, and Marketing – as well as the Curtin Graduate School of Business, which offers the MBA. The curriculum reported in this paper was developed and taught by the author to a cohort of students who were primarily studying Information Systems or Logistics and Supply Chain Management, but also included students from Accounting, Management, and Marketing. I hypothesise that the approach would also be useful in introductory courses specific to research in individual business disciplines although this has not been researched.

This paper describes how the new course (1) overcomes the limited perspective on business research paradigms and methods typical in textbooks and (2) provides a needed, holistic perspective on business research, regardless of the specific discipline. To achieve these goals, the new course includes four new pedagogical (or more accurately ‘andrological’ for adult learners) elements.

- The new course situates business research as an applied discipline, along with other applied disciplines, such as medicine and engineering, and in contrast to non-applied disciplines, such as physics or psychology.

- It includes a key new framework that contrasts the assumptions and perspectives of different research paradigms, including business research knowledge goals, the role of values in research, and epistemological issues.

- It modifies and extends frameworks and figures found within a popular business research methods textbook to supplement the limited perspective of the textbook with alternative research goals and paradigms.

- The new course adds relevant introductory readings.
The paper presents these extensions to the course, including how and where they are included within the course presentation, materials, and assessments. Each of these four course enhancements is discussed in turn in sections two through five. Section six then summarises the course and the experience of the students from student evaluations of the course.

2. Understanding business as an applied discipline

Business is an applied field, in that researchers working in its various sub-disciplines are (often) concerned with helping to improve how business is conducted and to provide guidance to practitioners on how to do what they do to achieve certain goals. For example, the results of marketing research should help guide marketers in how to conduct more effective or less costly marketing. In these regards, business is similar to other applied fields, such as medicine and engineering, which ultimately provide guidance to doctors and engineers on how to better diagnose and treat patients or better engineer new artefacts.

While it is useful to study what business practitioners and organisations actually do, as well as how effective what they do is for achieving business goals (typically using positivist or interpretive empirical research approaches and methods), such research is not the only potential topic for business research.

Importantly, the methods, approaches, tools, techniques, practices, procedures, and technologies (we’ll call them collectively technologies here in the sense of the Greek root technē), which are used to do what businesses and practitioners do, need to come from somewhere, otherwise there is little or no progress. The creation, invention, and development of such new technologies and practices is itself a legitimate topic of research. It is not reasonable to rely on business practitioners to invent (all) new technologies and practices.

The new course communicates this perspective that business is an applied discipline and therefore similar to other applied disciplines such as medicine to students early in the new Introduction to Business Research course. Of course there are several ways in which this can be done.

One way is through simply lecturing and presenting an overall perspective of classification of different research types (e.g. contrasting basic and applied research). This can be backed up with literature on the topic, such as Herbert Simon’s idea of a Science of Design in his seminal The Sciences of the Artificial (1996) and the idea of a Practical Science in Strasser (1985). This can be supplemented with key papers that adopt the Design Science Research paradigm, such as March and Smith (1995) or Hevner et al (2004) from the IS discipline, which build on Simon (1996).

However, another, more memorable way is to conduct a Socratic discussion that elicits and analyses the analogy by asking the students questions that lead the students to formulate the perspective for themselves. One can start with basic questions such as “What is the purpose of business research?” or “Why do we conduct business research?” as well as “Who are the beneficiaries (stakeholders) of business research?” Alternatively (or additionally), one can explicitly ask how business is similar to medicine or engineering by asking what business practitioners actually do and what doctors (e.g.) actually do and in what ways they are similar. One can also ask what technologies and practices business people and doctors use and then follow up by asking where those technologies and practices come from, as well as how we know whether they work (well) or not. Similarly, one can also ask how specific basic disciplines, such as physics or psychology, are different from applied (but related) disciplines, such as engineering or psychiatry respectively. All of these questions force the students to think for themselves about what the goals of business research are, why they are appropriate, and what implications they have for what we do in business research.

Following on from this, we should consider the implication that all applied disciplines may be considered from a critical perspective. If practitioners are trying to achieve goals, we need to ask several key questions: “Whose goals?”, “Are those goals appropriate and just?”, “What happens to those who are not the intended beneficiaries of those goals?”, and “What ethical constraints should there be on practice in this discipline?”. These are also appropriate questions for research, regardless of what applied discipline we may consider. They are well established in medicine, with debate on them well developed and ongoing as new technologies arise. For such questions a critical research paradigm is appropriate.
As above, these critical issues can be developed through lecturing and providing a classification and framework (see next section) that highlights the different paradigms and methods, or can be motivated through Socratic discussion in which students identify the issues themselves. Asking and discussing questions such as “Whose interests are (or should be) served by business?” and “Whose interests are (or should be) served by business research?” can lead to key issues from a critical perspective and the need for a critical perspective in research. Of course assigning selected readings on the area (e.g. Stahl (2008b), Cecez-Kecmanovic et al (2008), or Myers and Klein (2011)) and discussing them can also be fruitful.

In practice, both a structured presentation and a Socratic discussion are used in the Introduction to Research Methods course and mutually reinforce the student’s understanding and retention.

3. A framework of research paradigms

If we take an approach of providing conceptual scaffolding for understanding the possible choices of research paradigms and methods, we need a way of conceptually organising that clarifies the issues for students. There is already extensive material that contrasts positivist and interpretive research paradigms in terms of their ontological and epistemological assumptions, as well as the kinds of questions that they are most suited to answering. However, bringing critical research and design science research into the picture is more complicated. Furthermore, in our experience, it is also complex and confronting for students to understand. To address these issues, the author developed a framework (see Figures 1-7 below) to support understanding how different research paradigms. The framework is presented to the students early in the course to help them to conceptualise later parts of the course.

The framework shown in Figure 1 can be used to classify either individual research projects or whole research paradigms according to its three dimensions. The first dimension (shown on the left side) is whether the paradigm is empirical or non-empirical (or both). The second dimension (shown on the right side) concerns whether the research is descriptive, evaluative, or normative. Descriptive research might be making a classification or developing a theory that is purely factual in nature. Evaluative research would place a value on something or possibly compare whether one thing is better or more effective than another at achieving some goal. Normative research concerns what should be done or whether something is the best for achieving some goal (i.e. state of the art). For purposes of the framework, evaluative research and normative research are equivalent. Finally, the third dimension (shown on the top) concerns the position taken by the researcher with respect to values. The first position, value naïve, (the left-most one) assumes that values are irrelevant to research and should be ignored. This is termed value naïve because it is naively borrowed from the physical sciences and ignores issues of goals, who has them, and their relevance to applied research. The second position, value aware, acknowledges that values are relevant to research concerning people and goals, but attempts to take a ‘neutral’ position about them and minimise their influence. The third position, value critical, is one in which the researcher explicitly takes a value position on what is right and moral and what is wrong and immoral. It further examines the motives of research and whose interests are served by the research and the goals to be fulfilled by the research. Generally, it takes a value position of equality, justice, freedom, and self direction, without undue exercise of control by those in power.

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Figure 1: A framework for characterising and comparing research projects and paradigms
These three dimensions are combined into a matrix with $2 \times 2 \times 3 = 12$ cells, one for each combination of the three dimensions. Onto this matrix, five research paradigms, including interpretive, positivist, theoretical-argumentative, critical, and design science, are placed. It is possible to position all the paradigms on the same the figure, but the paradigms overlap and this can be confusing. When taught, animations of the following figures are used.

Interpretive and positivist research and their differences are well covered in the research literature and not presented further here. From the perspective of the framework, as shown in figure 2, they are identical, always being empirical, but being applied in any of descriptive, evaluative, or normative fashions and from value positions that are value naïve, value aware, or value critical.

**Figure 2:** Positivist, interpretive, and theoretico-argumentative research paradigms in the framework

Theoretical-Argumentative research (also shown on figure 2) is research that makes a reasoned argument, typically using a deductive approach. It is strictly non-empirical, because it does not collect or analyse data, but works instead from concepts or possibly ‘common knowledge’. This is the approach typically used in philosophy. The result is sometimes called a ‘research essay’.

Design Science Research (DSR, see figure 3) invents and develops new technologies (including practice, methods, etc. as discussed above) and should include an evaluation activity to verify or provide evidence that the new technological artefact achieves its purpose, possibly that it achieves its purpose better than other extant artefacts. Such research always starts from a value position consistent with a goal that is held by one or more stakeholders, although the value position may be ignored or implicit (i.e. value naïve) or not reflected upon and treated uncritically (i.e. value aware, but not value critical).

**Figure 3:** The design science research paradigm in the framework

The technology development (or solution technology invention (Venable, 2006a)) part of DSRs is inherently conceptual and non-empirical, as shown in figure 4. Formulating designs and making decisions about how to achieve the goals is a conceptual reasoning activity. The design researcher uses abductive reasoning (Vaishnavi and Kuechler, 2004) to link design elements to goals by hypothesising a relationship based on similar or analogous artefacts’ relationships with similar or analogous goals. Reasoning continues by deductively fleshing out the details (components and how they can fit together) of the artefacts, often with other cycles of abductive reasoning and design to revisit the high level goal or to address more detailed design goals at lower levels of granularity in the
artefact(s) designed. The output is a detailed design together with a design theory hypothesising the effectiveness of the artefact(s) to achieve the goal(s). Output may also include a realisation (or ‘instantiation’ (March and Smith, 1995, Hevner et al., 2004) of the design that can be used for evaluation.

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**Figure 4:** The solution technology invention part of design science research in the framework

Following (and possibly also during design) evaluation should be done to provide evidence of the effectiveness or efficacy of the new technology in addressing its purpose. Evaluation may be either empirical or non-empirical, but is always evaluative or normative, never descriptive. As distinguished in Venable (2006a, b), evaluation can be either artificial or naturalistic. Artificial evaluation can be either empirical (e.g. with a lab experiment) or non-empirical (e.g. with a mathematical proof or a simulation), as shown in figure 5. Naturalistic evaluation is evaluation in real use, i.e. with real users using a real technology to do a real task. To the extent that the technology is a toy prototype, the users aren’t the real users (e.g. they’re students or the technology developers) or the task is contrived rather than real with real consequences, the evaluation is unrealistic and artificial rather than naturalistic. Naturalistic evaluation is therefore always empirical, as shown in figure 6. While naturalistic evaluation is important in terms of showing the real efficacy of a technology in use, artificial evaluation can have key advantages in terms of cost and the control of confounding variables when establishing that benefits observed are due to the new technology rather than some other variable.

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**Figure 5:** The artificial evaluation part of design science research in the framework

Finally, critical research is always value critical and always evaluative or normative, but may be empirical or non-empirical (or both) as shown in figure 7. Reasoning about goals and what is right, moral, or ethical is a non-empirical activity, but always value critical. This is consistent with Myers’s and Klein’s (2011) second principle of critical research – taking a value position. Goals considered appropriate in critical research include individual emancipation and improvements in society (the 3rd and 4th principles for critical research in Myers and Klein, 2011). Reasoning whether activities (e.g. business activities) are consistent with the goals and value position espoused is also non-empirical and value critical. Critical research can also be empirical if data is collected and analysed (according to the value critical and evaluative or normative perspective adopted). Whether a critical research paper takes an evaluative or a normative perspective is up to the researcher, but a normative position is common and appropriate.
4. Extending the perspective of a business research methods textbook

The textbook used in the new course is *Research Methods for Business Students (5th ed.)* by Saunders, Lewis, and Thornhill (2009). This textbook, like many others, largely takes an empirical approach to business research, focussing on the interpretive and positivist paradigms and methods. Critical Research (CR) and Design Science Research (DSR) are not mentioned.

Nonetheless, basic and applied research are contrasted, with the stated purposes of applied research including “results in solution to problem” and “findings of practical relevance and value to manager(s) in organisation(s)” (Saunders et al., 2009, p. 27). In dealing with the former without developing DSR as a method or paradigm, one either draws on existing solution possibilities (not developed by the researcher) or the development of new technologies or practices is not considered from a design perspective and DSR remains implicit rather than being explicitly treated. In dealing with the latter, note that manager(s) are explicitly the stakeholders. Other stakeholders’ interests are not at issue and are certainly not critically examined. Such a perspective on applied research promotes a naïve conceptualisation of the role of values in applied research and does not allow for the possibility of CR.

Saunders et al (2009) further develop a main overview framework to guide the research student readers – the “research onion”. The research onion has multiple layers with each layer becoming more detailed from the outside in. It starts with “philosophies” at the outermost layer, progressing through “approaches”, “strategies”, “choices”, and “time horizons”, and with “techniques and procedures” at the centre. The only approaches covered in the textbook are the deductive (theory testing) approach and the inductive (theory building) approach, roughly correlated with positivism and interpretivism respectively. A constructivist, DSR approach is not discussed. Similarly, under strategies, individual research methods such as experiments and grounded theory are discussed, but they all focus on empirical research. No mention is made of rhetorical argumentation, problem solution/technology design, or critical examination of values.

In order to address this, in the new course, the figure is supplemented with additional concepts that correspond to DSR and CR being added to the different layers of the onion. In the new course, at the philosophy layer/level, ontological, epistemological, and axiological issues are explicitly discussed.
Interestingly, the version of the research onion existing in Saunders et al (2009) does include pragmatism as an epistemological perspective, which is relevant to Design Science Research in particular. At the approach layer/level, a creative design/inventive (i.e. abductive/analogical) reasoning approach is added to deductive and inductive reasoning approaches. Furthermore, at the strategy layer/level, problem analysis and technology invention, design, development, and construction are mentioned as methods relevant to DSR, while stakeholder and assumption analysis are discussed as strategies/methods appropriate for CR.

Interestingly, the Saunders et al (2009) textbook includes the research paradigm framework by Burrell and Morgan (1979). The Radical Change vs. Regulation dimension of their framework is very relevant to Critical Research, with the Radical Humanist and Radical Structuralist paradigms (Burrell & Morgan, 1979) aligning well with Critical Research, although the textbook doesn’t discuss this. In the new course, this is explicitly presented and discussed – i.e. that research advocating radical change does not align with meeting the needs of manager(s), as was developed as the focus earlier in the textbook.

5. Introductory treatments of design science research and critical research

The new course addresses Critical Research and Design Science Research by giving each paradigm a week’s introductory treatment in the syllabus. The new and augmented frameworks described above, which are covered early in the course, are revisited to set the context for more detailed (but still introductory) treatment.

5.1 Design science research introduction

The introductory treatment of DSR is provided fairly late in the unit, after empirical positivist and interpretive paradigms and methods are presented in some detail. The introduction begins and is motivated with discussion of the artificial (built by humans) nature of most of the world we live in, how human problems and goals are often achieved through creation of new technologies and/or practices to solve/meet them, and how empirical research doesn’t create such new artefacts.

The week’s instruction then revisits the frameworks developed earlier in the unit, including the applied nature of business research, the framework described in section 3, and the augmented research onion framework described in section 4.

Next, since there is no reading in the textbook on DSR per se, key literature is identified and introduced to help the student get an overall perspective. Literature highlighted includes Simon (1996) and Checkland (1981), as motivation and introduction. Other readings introduced focus on process views of DSR and the form and role of theory on DSR. The process view is concerned with what steps and activities there are (or should be) in conducting DSR. It is emphasised that there are different models (e.g. Nunamaker, Chen, & Purdin, 1991; Peffers, Tuunanen, Rothenberger, & Chatterjee, 2008; Vaishnavi & Kuechler, 2004; John R. Venable, 2006a) and that there is an inherently iterative nature in much DSR work. In particular as part of the process perspective, the need for evaluation and different forms of evaluations (artificial vs. naturalistic, John R. Venable, 2006a) in order to obtain appropriate research rigour are emphasised. The theory aspect develops the idea of design theory (Walls, Widmeyer, & El Sawy, 1992) and different ideas and variations on how and when design theory should be developed (John R. Venable, 2006a, 2006b) and the content and structure of a design theory (Gregor & Jones, 2007; John R. Venable, 2006b; Walls et al., 1992).

Hevner et al (2004) is highlighted as the “received view” of DSR, with its seven guidelines for conducting DSR, although the fact that there is on-going debate is also discussed. This above literature is primarily drawn from the IS discipline, but it could be augmented to also draw on the Management discipline literature, e.g. that by van Aken (2004, 2005, 2007).

Finally, a template structure for a thesis using a DSR approach is given and discussed.

5.2 Critical research introduction

Critical Research is introduced the following week. The introductory treatment follows a similar pattern to that of DSR in the preceding week, beginning with a review of overview frameworks and concepts to contextualise CR. Instead of emphasising the artificial nature of the world, discussion centres on whose goals are served by the research and whose interests are affected by research.
The presentation and discussion of Critical Research primarily draws on the work of Stahl (2008b) and Cecez-Kecmanovic in the IS field, but also on Jürgen Habermas and his Theory of Communicative Action (Habermas, 1984) more generally. Myers’s and Klein’s (2011) recent paper - “A Set of Principles for Conducting Critical Research in Information Systems” – will also be a useful reading, but this was not available when the course was offered.

Drawing on Stahl (2008b), the week’s presentation and discussion covers the critical intention, critical topics (e.g. social control and domination, dysfunctional problem reduction in IS, and the digital divide(s)), critical theory (e.g. Habermas, 1984), and critical methods. Several areas of Habermas’s work are covered, including his “action types” (instrumental, strategic, normatively regulated, and communicative actions) and particularly his “ideal speech situation”. This is in line with Myers’s and Klein’s (2011) first principle of using core concepts from critical social theorists.

If there were more time in the unit (and the material is not covered elsewhere in a program of study), stakeholder analysis methods could be covered as well as the relationship of CR to DSR, e.g. as discussed by Venable (2009) and Stahl (2008a).

6. Student perceptions

The new Introduction to Research Methods (in business) course was taught for the first time in the first half of 2010. There were three sections of the course, one of which was taught by the author. The other two sections were taught by instructors from other disciplines with students mostly from those other disciplines. Each section was allowed to bring out the emphasis that the instructor wanted. These other sections did not include the material on and integrating DSR and CR into the course, instead focussing on empirical research as it is traditionally taught in other business disciplines.

The new course was well received by the students in the section taught by the author. Naturally, they were concerned that the textbook did not bring the DSR and CR perspectives into its content and wondered why this was the case. This lead to good discussions about the diversity of research and research methods, the difficulty of developing and keeping a holistic perspective, and particularly on the on-going development of and debate about research and research methods.

The final item of assessment of the course is to develop a 10 page (maximum, excluding references) research proposal. Several of the students developed their proposals for research employing DSR. None developed a proposal for research using the CR paradigm. The DSR proposals were generally equally good as or better than the more traditional empirical proposals (whether positivist or interpretive in research paradigm).

Student evaluations of the course overall were positive, but separate figures for the three different sections are not available. Teaching evaluations for the author in particular were very positive, perhaps partly due to the way the new course was organised and the way the DSR and CR material was integrated, presented, and discussed. Difficulties with differences between figures in the text and the way they were augmented in the course didn’t seem to detract from the course and teaching evaluations. In particular, 100% of the students agreed that the teacher communicated well, some of which is undoubtedly due to the new and additional DSR and CR material.

7. Summary, limitations, and future research

This paper has presented a description of the initial offering of an Introduction to Business Research Methods course that integrates both Design Science Research and Critical Research into the course. The description is offered in the hope that others teaching introductory research methods courses may find the ideas useful. Features of the new course to facilitate this integration included (1) development of an over-arching perspective on business research as applied research and considering its implications, (2) development of a new framework to allow comparison of different research paradigms, including DSR and CR, (3) modification and extension of existing frameworks from the textbook used in the course to include DSR and CR perspectives and methods, and (4) development of instruction and discussion for one week each on DSR and CR. The approach to the last of these included Socratic discussion to highlight issues why DSR and CR are relevant, revisiting frameworks that integrated different research paradigms and methods, presentation and discussion of key literature in the DSR and CR areas to highlight key issues.
The current paper reports on only one offering of the course by one teacher (the author). Student feedback did not address the design of the course per se and especially not the ways in which material was integrated on DSR and CR. Therefore, evidence of the success of the course is rather weak. However, the success of the students who developed DSR research proposals and the general satisfaction reported by the students does provide some evidence of the success and usefulness of the approach.

The course tended to focus more on the IS discipline and not draw on the literature across other business disciplines. This is partly due to the lack of a Design Science perspective across other business disciplines, but could be augmented as discussed in sections 5.1 and 5.2.

The design of an introductory research methods course integrating all these paradigms would benefit substantially from further research, both by more rigorously assessing and measuring the outcomes in terms of student success and adoption, as well as by exploring alternative designs for the course.

References


Demystifying the Arduous Doctoral Journey: The Eagle Vision of a Research Proposal

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Abstract: In fast-paced business organisations, there is critical need for conducting systematic research in order to explain and solve recurring problems in the industry. However, we find many building professionals losing their patience over the unknown end of a doctoral study as most of them practise problem-solving in their jobs since they were so trained. The purpose of this article is to present a visualisation tool developed by a built environment faculty to explain a typical three-year journey that mature building professionals are required to take for solving their own research inquiries. We claim that if these mature students are given a quick overview on how and what their doctoral journey would involve at the start of their studies, they will be less fearful of uncertainties and will accordingly fulfil the requirements of their doctoral studies successfully. The Eagle Research Design Table (Eagle Table) is a self-filled tool guided by three research question’s constructs. The key to expanding the Eagle Table is identifying these constructs in a research inquiry first. We have established three constructs—“WHO”, “WHAT” and “HOW”—through prolonged participatory experience in teaching research methodology to building professionals. The “WHO” construct refers to the element or subject being used in, or impacted by, the study while the “WHAT” construct refers to the body of knowledge that is required to solve the research inquiry. The final “HOW” construct refers to the action to be taken on the element or subject during the study. In this article, we present how these three research question’s constructs, when presented in a table form, proved to be successful in providing a quick overview of a doctoral study’s journey. Hence, enabling many mature building professionals to persevere in their studies. Consequently, the academic community would benefit from the rich experience and wisdom of their industry partners in handling and tackling recurring problems in the built environment.

Keywords: research proposal design, research methodology, eagle table, dissertation, research framework, graduate study

1. Introduction

Many doctoral students in the field of environmental design join graduate studies with several years of professional practice and experience. Due to the obscurity in creating their individual new knowledge contribution, we found many doctoral students concentrating much on the research methodology instead of enjoying the journey of knowledge discovery. This vague and rather confusing start of a graduate life is risky when some students realise that graduate study is a challenging feat. As a result, many opted deferring their studies for a semester or more, or dropping from a programme after encountering a number of setbacks. This issue is critical since fast-paced business organisations have growing needs for conducting systematic research so as to explain and solve recurring problems in the industry. Despite the need for inoculating research into professional practices through formal graduate programmes, we have noticed over the years that many building professionals—who tend to be mature students—are losing their patience over the unknown end of a doctoral study as most of them act as problem-solvers in their jobs since they were formerly so trained. In teaching new graduate students how to prepare their research proposals, we realised in due time that if these mature professional students were provided from the beginning a quick overview of what their doctoral journey will involve, they will be less fearful of uncertainties and will accordingly fulfil the requirements of their doctoral studies successfully. In this article, we will first present the issues and concerns by graduate students, the background foundations of the Eagle Research Design Table (Eagle Table) and the step-by-step development of an Eagle Table. These are followed by steps on how to illustrate the design of an Eagle Research Workflow Framework and scheduling in the necessary time for each step within a typical three-year journey that mature building professionals will undergo to answer their research inquiries.

2. Issues and concerns of matured professional students

Here are several recurring issues and concerns voiced by our students during class discussions. Among them include:
2.1 What is my research problem?

“I want to do a survey about how people perceived their garden” or “I want to conduct an in-depth interview with the Malays to find out about their socio-cultural practices”. For experienced supervisors, we know that these statements do not provide explanations why students want to use either inquiry strategy to answer their research problems. In fact, supervisors should become concerned because instead of problem seeking at the initial research stage, graduate students concentrated much on how they should collect and analyse their data. Of course, the graduate students would become very defensive when their supervisors instructed them to change their inquiry strategies later.

2.2 What is the best topic to research?

“I am proposing a new system to improve a building’s sustainability in my field of study”. During class discussions, we often hear students aspiring to solve the world’s problems. At our faculty, sustainable themes are common in the last decade due to global warming issue. Each sustainable theme has multiple sub-topics for doctoral students to uncover. Novice researchers tend to “feel confident that this topic is big enough to get me a degree” and have misconceptions that the more complex a topic is, the better the guarantee for obtaining a doctoral degree.

2.3 What do I need to read?

“When I started my research, my supervisor told me to read about engineering technologies. When I asked how many articles and he/she told me as many as I can”. “How do I know what to read because each time I gave my supervisor my reading summary, he/she kept telling me to read more!” “When can I stop reading?” “I had spent so many weeks reading this topic and it is not fair for my supervisor to ask me to read another topic after telling me what I had just read was irrelevant! Why didn’t he/she tell me about this new topic in the first place!” “I have read so many articles and now I am so confused about what to use in my research!” Many doctoral students complained about being asked by their supervisors to read so many types of literature and topics before they could embark on their field work.

2.4 What inquiry strategy is best for my research?

Experienced supervisors would know that certain inquiry strategies are not suitable to support the data collection and analysis of data to answer certain research inquiries. It is very common to hear doctoral students say “I want to use survey because I was told it is the easiest way to finish my study on time”. “My supervisor cannot explain why this is not a good strategy” because it is always hard and wasteful of time to explain to graduate students on some matters they have yet to read and understand. Thus, we found students very upset when told to change their inquiry strategies.

2.5 When can I start my field work?

“My friends have gone to collect data. I am worried because my supervisor wants me to review more literature”. “How come my friends have started data collection and I haven’t started mine yet?” For some reason, we found many graduate students under pressure to “show” to their peers that they were progressing well on their theses when they are seen collecting data. Consequently, we have seen a number of studies where the research inquiries were changed to suit the results. We attribute this phenomenon to premature data collection when the research inquiry and its inquiry strategies were not well developed to allow meaningful data collection based on theoretical guidance.

2.6 Is this a doctoral work?

Often doctoral students ask supervisors “Are these materials enough for a doctoral degree?” “How, do I know it is enough?” “Are you sure?” “What are the differences between a Masters and doctoral studies?” “What is the new knowledge I will develop at the end of my doctoral study?” “Is it possible not to obtain any new knowledge?” Many supervisors have also been frequently asked how they could differentiate a masters’ research question from a doctoral one.

2.7 What am I going to do?

“I talked to many people and everyone gave me different answers to the same question!” “I am so confused and don’t know where to start”. “Where should I start first?” “Why is there many different ways of doing what I would like to do?” “There is too much reading. Why can’t I just provide the design
solutions like I did in my practice?" We found many graduate students very confused about what to do next when they had so much information.

2.8 Can I finish on time?

"Research is a very difficult process”. “I am scared to fail”. “I cannot find sufficient literature on the subject. Where do I get them?” “I am on a 3-year scholarship study leave. I have to finish on time because I have to return to work afterwards”. We found many students very worried whether they could complete their studies within their stipulated time table.

3. The Eagle Research Design Table

The above common issues are typical challenges supervisors have to deal with their respective students at the start of their doctoral studies. The article now describes how the Eagle Research Design Table (Eagle Table) is used to provide an eagle’s view of the overall research framework and process by linking all the necessary research ingredients for that three-year journey. The table was initially developed by Ibrahim (2008) based on continuous feedbacks from teaching of, and learning about, designing a doctoral research proposal. It was collected over nine semesters involving more than 100 graduate students in the environmental design fields at Universiti Putra Malaysia. Using the visual communication method which is common to design researchers, the Eagle Table presents an approach to design a doctoral research proposal by documenting major components of a research proposal by first determining its main research question. We describe below the main components of the Eagle Table. They include definitions of the research questions’ (RQs) constructs, description of a construct, sub-research questions (Sub-RQs), research objectives (ROs), strategies of inquiry, expected research outputs and expected knowledge contributions.

3.1 Definition of constructs of a research question

In the original work of Ibrahim (2008), she defined the research question (RQ) as an inquiry that leads towards obtaining a solution through systematic and verifiable steps conducted by a researcher. Therefore, we further define theory as a statement of rule regarding a phenomenon obtained through a systematic and verifiable inquiry. For this instance, an inquiry leading to a “yes” or “no” answer is not recommended as such inquiry will not need any systematic or verifiable steps. Before explaining how we design the research framework, we will first describe these earlier constructs as defined by Ibrahim (2008) as follows:

1) “WHO” is the “element” used in or impacted by the study.

2) “WHAT” is the “body of knowledge” which the researcher must know in order to solve the problem.

3) “HOW” is the “action” taken or the “impact” that will take place on the “element” or the “body of knowledge” in the study.

In this article, we would like to continue demonstrating how these constructs will guide design researchers in formulating their research sub-questions, research objectives and appropriate strategies of inquiry by using the Eagle Table. As a rule of thumb, Ibrahim (2008) recommended one of each construct for an acceptable Masters’ RQ. Since there is a need to develop an inquiry that will lead to new knowledge contribution, an approach that warrants such discovery in a doctoral study is when two bodies of knowledge merge to form an ontological solution to the research problem. Another approach is when two different actions or impacts are integrated to form an axiological solution to a research problem. Hence, Ibrahim suggested that an acceptable doctoral RQ should consist of at least two “WHATs”, one “WHO” and one “HOW” respectively. Another alternative is having two “HOWs”, one “WHAT” and one “WHO”. We support Ibrahim’s (2008) notion in that there should only be one “WHO” in any research inquiry in order for design researchers to have a focused “element” or “body of knowledge” being used or impacted by the study. We restate the example of a doctoral RQ from Ibrahim (2008) using this approach:

How can 3D sketching [WHAT1] be utilised in VR tools [WHAT2] for enhancing collaboration [HOW] among non-collocated design team members [WHO]? or,

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How can 3D sketching be utilised in VR tools for enhancing collaboration among non-collocated design team members?

3.2 Construct description

We have established the description of each construct in the research inquiry that is useful for directing design researchers as to where to head for their preliminary literature surveys. For example, “3D sketching” will require the design researcher to review literature on the architectural design process, sketching methods and tools, etc. Another instance, “enhancing collaboration” will require the design researcher to review literature on methods or tools for enhancing collaboration during the design process. Table 1 demonstrates—using Ibrahim’s (2008) first example on a doctoral RQ presented above—how we identify and describe a construct. Then, we show how research sub-questions can be formulated using the Eagle Table approach.

Table 1: Identifying constructs, formulating research sub-questions and determining research objectives (adapted from Ibrahim (2008))

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description of Construct</th>
<th>Research Sub-Questions (Sub-RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[WHAT1] 3D Sketching</td>
<td>SUB-RQ1: How do designers conduct 3D sketching during collaborative meetings?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RQ1: To document how designers are currently sketching during collaborative meetings.</td>
<td></td>
</tr>
<tr>
<td>[WHAT2] VR Tools</td>
<td>Sub-RQ2: What are the virtual reality (VR) operating characteristics of non-collocated project teams?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RQ2: To understand the operating characteristics of non-collocated collaboration using VR tools.</td>
<td></td>
</tr>
<tr>
<td>[HOW] Enhancing Collaboration</td>
<td>SUB-RQ3: What are the key enablers for using 3D sketching collaboration in VR?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RO3: To recommend how a non-collocated design team can use VR tools to support their collaboration meetings.</td>
<td></td>
</tr>
<tr>
<td>[WHO] Non-Collocated Design Team Members</td>
<td>Note: This sub-RQ has a secondary priority when the design researcher has experienced such collaborative design experience. Therefore, it suffices to cover this aspect when discussing the problem statement.</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Research sub-questions (sub-RQ)

Moving further to the right side of the Eagle Table (see Table 1), we posit that at least one “thinking” or “active” research sub-question (sub-RQ) should be developed for each construct. These sub-RQs would lead to the intended output in the next few steps. For example, the sub-RQ for the first construct must relate on “3D sketching”. Here, the design researcher would phrase his first sub-RQ1 as “How do designers conduct 3D sketching during collaborative meetings?” By answering sub-RQ1, the design researcher is guided to seek information about the method and process of sketching during collaborative design sessions.

3.4 Research objectives

We posit that a better control over the limitation of a doctoral study is achievable if the design researcher determines his/her research objectives later after he/she has the sub-RQs. Using the same sub-RQ1 example of “How do designers conduct 3D sketching during collaborative meetings?”, the graduate student can limit his/her doctoral study to documenting how designers are currently sketching during collaborative meeting sessions. Using the Eagle Table, the student will state the research objective(s) for each sub-RQ he/she has developed by placing its objective(s) below the respective sub-RQ(s).
3.5 Strategy of inquiry

As per Ibrahim (2008), we followed Yin’s approach (Yin, 2003) as a reference for specifying an inquiry strategy as we found this approach provides a quick reference for design researchers to identify an inquiry strategy. The summary from Yin (2003) is reproduced in Table 2 below for quick reference purposes.

Table 2: Relevant situations for different research strategies (source: Yin (2003))

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of RQ</th>
<th>Requires Control of Behavioural Events</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>how, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>how, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>how, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Referring to one of the examples taken from Ibrahim (2008), the main RQ starts with a “How.” Therefore, Yin (2003) advised his reader to either use experiment or case study as his/her inquiry strategy. If there is more than one option, the supervisor would then advise design researchers to evaluate their Sub-RQs for guidance on which specific methodology to utilise. Sub-RQ1 starts with a “How” while Sub-RQ2 and Sub-RQ3 start with a “What.” For Sub-RQ1, the design researcher is better off to choose conducting a case study of an architectural design studio where ethnography is the dominant data collection procedure. The design researcher would use ethnography to know how designers conduct 3D sketching during collaborative meetings. This strategy is supported by the fact that he/she cannot control the behavioural events during data collection. On the other hand, the second Sub-RQ allows the design researcher to choose a controlled experiment in a laboratory since it will be difficult to collect data on non-collocated project teams in Malaysia. Additionally, this option is recommended in order to reduce the design researcher’s risk since there are not many architectural firms in the country which have virtual reality tools in their offices. For the final Sub-RQ (Sub-RQ3), the design researcher could conduct an analysis that integrates results obtained from the ethnography case study and the controlled experiment (Ibrahim, 2008). The main strategy of inquiry for each Sub-RQ is recorded in the cell on the right side of each Sub-RQ as illustrated in Table 3.

Table 3: Determining inquiry strategies, identifying research outputs and knowledge contributions

<table>
<thead>
<tr>
<th>Research Sub-Question (Sub-RQ)</th>
<th>Strategy of Inquiry</th>
<th>Expected Output</th>
<th>Expected Knowledge Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub-RQ1:</strong> How do designers conduct 3D sketching during collaborative meetings?</td>
<td>Literature survey/ Ethnography</td>
<td>Output 1: Method and process of sketching during collaborative design sessions</td>
<td>Knowledge 1: Theory on sketching preferences among local design professionals</td>
</tr>
<tr>
<td>RO1: To document how designers are currently sketching during collaborative meetings.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-RQ2:</strong> What are the virtual reality (VR) operating characteristics of non-collocated project teams?</td>
<td>Experiment</td>
<td>Output 2: VR operating characteristics of non-collocated project teams</td>
<td>Knowledge 2: Theory on VR operation for non-collocated local design professionals</td>
</tr>
<tr>
<td>RO2: To understand the operating characteristics of non-collocated collaboration using VR tools.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-RQ3:</strong> What are the key enablers for using 3D sketching collaboration in VR?</td>
<td>Experimental data analysis</td>
<td>Output 3: Recommendations on key enablers for non-collocated design teams to use VR tools.</td>
<td>Knowledge 3: Recommendations on key enablers for non-collocated design teams to use VR tools.</td>
</tr>
<tr>
<td>RO3: To recommend how a non-collocated design team can use VR tools to support their collaboration meetings.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.6 Expected research outputs

Once a design researcher has identified his/her main inquiry strategy, he/she should determine what would be the ultimate inquiry results. Using the same example from Ibrahim (2008), the design researcher would be expected to document the method and process of sketching during collaborative design sessions from his/her literature survey and ethnography activities. According to the final inquiry strategy, the same design researcher would be expected to make several recommendations on key enablers for non-collocated design teams to use VR tools based on the conducted experiment(s).

3.7 Knowledge contributions

We should notice that when using an ethnography methodology—a constructivist’s qualitative method of inquiry—a design researcher is expected to develop a theory as a conclusion of his/her analysis (Creswell, 2009). Therefore, we expect the respective design researcher to develop a theory on sketching preferences among local design professionals that would be his/her first doctoral knowledge contribution. Additionally, the design researcher would be able to reaffirm the earlier ethnography theoretical proposition when he/she conducts his/her experiment following the Sub-RQ2 requirement. On the contrary, the design researcher would then use a post-positivist’s approach to validate his/her ethnography-based theory through confirmation of the hypothesis/es which he/she had to develop for the experiment.

4. Summarising the ingredients of a doctoral research

Table 4 combines information from Tables 1 and 3 to form a complete Eagle Table example. At this point of preparing the Eagle Table, design researchers are advised to review the expected sequential steps they have to conduct to complete their research. For instance, if the inquiry strategy for construct [WHAT2] has to be completed first as opposed to construct [WHAT1], then design researchers are advised to relocate the row for construct [WHAT2] above the row of construct [WHAT1]. Another instance, if construct [WHO] is necessary to be understood first, then it should be at the topmost row then. Thus, the rows in the Eagle Table are not confined to the sequence that design researchers obtain from their main RQs. With the following information in place, design researchers can refer to the Eagle Table for designing the research workflow framework which will be explained in the next section.

Table 4: A complete Eagle Research Design Table outlaying the research sub-questions, research objectives, strategies of inquiry, expected outputs and knowledge contributions after the identification of the research question’s constructs

<table>
<thead>
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<th>Construct</th>
<th>Description of Construct</th>
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<th>Strategy of Inquiry</th>
<th>Expected Output</th>
<th>Expected Knowledge Contribution</th>
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<tbody>
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<td></td>
<td></td>
<td>RO1: To document how designers are currently sketching during collaborative meetings.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>[WHAT 2]</td>
<td>VR Tools</td>
<td>Sub-RQ2: What are the virtual reality (VR) operating characteristics of non-collocated project teams?</td>
<td>Experiment</td>
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</tr>
</tbody>
</table>

Problem Statement: There is a need to use IT/ICT by Malaysian building professionals for successful global project implementation.

Main RQ: How can 3D sketching [WHAT1] be utilized in virtual reality (VR) tools [WHAT2] for enhancing collaboration [HOW] among non-collocated design team members [WHO]?
5. Visualising the Eagle research workflow framework

We now move on to design the research workflow framework. With reference to the established Eagle Table, design researchers are now guided to draw their research framework thus forming a workflow that could be integrated with their time schedule.

5.1 Linking text to graphical framework

The next step requires the design researcher to draw in the inquiry strategy presented at the right side of the Eagle Table. For example, Sub-RQ1 leads to an ethnography methodology; Sub-RQ2 leads to an experimental approach while Sub-RQ3 leads to an analysis of both. Since the experiment follows the ethnography activity, that combination represents a sequential mixed-method research methodology. Then, the design researcher can fill in the remaining components of the research proposal like the problem identification, validation and expected outcome. Since the proposed research proposal example starts with an ethnography activity, the literature survey forming a typical research proposal is conducted concurrently. Literature survey would otherwise precede most established inquiry strategies. Figure 1 illustrates how the design researcher may link the strategy of inquiries together and completes the remaining components of the research methodology for his/her research proposal.

5.2 Checking and reviewing the research process flow

For the purpose of checking the accuracy of relationships between the main components of a research proposal, design researchers are recommended to review each Sub-RQ and ascertain whether its output is relevant or not for answering the main RQ. If there is any weak relevancy, design researchers are recommended to review and revise the respective Sub-RQ and this will “force” him/her to perform a research activity that we can expect produce the targeted output effectively. Additionally, we find that recommendations and guidelines are generally linked to an analysis step. In many instances, too, the validation of an experiment will produce a tangible prototype as its output. Visualising the expected research outputs and their knowledge contributions is illustrated in Figure 1.
5.3 Time schedule

Upon completion of the research proposal’s workflow, design researchers can indicate the amount of time (for example, one semester or half semester) needed to complete each task. A guiding timeline is indicated next to each major task in the research framework. In the example in Figure 1, we assigned time for each task according to the typical average length of time based on typical supervisors’ experience in supervising graduate students. We always could see, at this point in designing a research workflow framework, many of our design researchers drew sighs of relief since they could now better visualise the number of tasks and sequence of activities necessary to finish their doctoral studies within their stipulated study time. The question then is whether or not those students are willing to perform the due tasks within the stipulated time.

6. What is after the Eagle Table

We found the adoption of the Eagle Table approach—as early as the first week of joining a graduate study—was very useful to graduate researchers. Since there are a growing number of well-established research methodology books for different types of inquiry strategies, our design researchers are recommended to refer to them once they have identified their main inquiry strategy. Of these include Groat and Wang (2002), Creswell (2007), Yin (2003) and Zeisel (2006) in the design fields. Since the granularity of a research focus depends on extant literature review (Ibrahim 2008), we recommend all design researchers to continuously update and upgrade the Eagle Table as and when necessary throughout their research. Hence, we would like to emphasise the need for researchers in continuously refining their main RQs and Sub-RQs within the framework of their constructs’ descriptions as their doctoral theses progress. We found as consequence our design researchers drawing up more specific descriptions for their respective RQ constructs. For instance, the “IT tool” became a “VR tool” after intensive and more focused literature survey in our particular example.

Figure 1: Design of a research workflow framework based on the Eagle Table
7. Validation

The author had conducted a random survey via email among the graduate students (both at Masters and Doctoral levels) and colleagues who were preparing their research proposals for doctoral studies in years 2010 and 2011 to determine the effectiveness of using this Eagle Table as a guide in developing their research proposals. The respondents had been exposed to the Eagle Table either through an official coursework at the faculty or in special short courses for preparing research proposals. A total of 19 (35%) from a sample population of 54 students and staff responded to the call for feedbacks. The survey hypothesised that the Eagle Table would improve the respondents’ confidence level about when they could complete their graduate studies after they have been systematically exposed to how each research components is related to one another.

The survey instrument consisted of 10 questions covering their levels of confidence on pursuing their graduate studies before and after being exposed to the Eagle Table. Additionally, the survey also seeks which factors are influencing the confidence level after the Eagle Table course. A final question on which year each respondent took the course was also listed. For each question, each respondent was asked to rate his or her responses according to 6 levels of personal confidence in a Likert Scale format where “1” is “Totally Disagree”, “2” is “Very Much Disagree”, “3” is “Less Disagree”, “4” is “More Agree”, “5” is “Very Much Agree” and “6” is “Totally Agree”. Reliability analysis on the data presents the Cronbach’s Alpha value at 0.77. The questions and their corresponding results are presented in Table 5.

Prior to exposure to the Eagle Table, the respondents indicate a mean of 3.21 (SD = 1.08) confidence level compared to a mean of 5.10 (SD = 0.81) afterwards. The results reflect less disagreement on their confidence about how they could complete their theses at the start of their studies compared to being very much agreed on having their confidence to complete their theses within 3 years after their exposure.

The results regarding various aspects of a typical research proposal highlights the strength of completing an Eagle Table exercise very early during their graduate studies. They show very much agreement on understanding their research components in the areas of identification of research problem (Mean = 5.05, SD = 1.03), having a good research question (Mean = 5.10, SD = 0.88) and having good research objectives (Mean = 5.26, SD = 0.81). Additionally, the results show more agreement in knowing which body of knowledge one has to survey (Mean = 4.89, SD = 0.88), understanding about having an appropriate inquiry strategy to collect and analyse data (Mean = 4.63, SD = 0.83), knowing what results they could expect (Mean = 4.68, SD = 0.75) and knowing what knowledge contributions they could obtain (Mean = 4.79, SD = 0.79).

Table 5: Graduate students’ confidence level after their exposure to the Eagle Research Design Table

<table>
<thead>
<tr>
<th>NO.</th>
<th>DESCRIPTION</th>
<th>MEAN (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At the start of your thesis study, you are very confident about how you can complete your thesis.</td>
<td>3.21 (1.08)</td>
</tr>
<tr>
<td>2</td>
<td>After you have completed the Eagle Research Design Framework Table, 2.1 You have identified your research problem. 2.2 You know you have a good research question. 2.3 You know your research objectives. 2.4 You know which body of knowledge you need to know to focus on your literature survey. 2.5 You know which inquiry strategy you can use to collect and analyse your required data. 2.6 You know the expected results you can get after your analysis is completed. 2.7 You know the expected knowledge contributions you can obtain from your thesis.</td>
<td>5.05 (1.03)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.10 (0.88)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.26 (0.81)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.89 (0.88)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.63 (0.83)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.68 (0.75)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.79 (0.79)</td>
</tr>
<tr>
<td>3</td>
<td>After you have completed the Eagle Research Design Framework Table, you are confident about how you can complete your thesis within 3 years.</td>
<td>5.10 (0.81)</td>
</tr>
</tbody>
</table>

Note: N = 19; Population = 54

Further analysis of data indicates that all research components are influential in increasing the participants’ confidence level (R = 0.79). However, the most influential factor is the research question which has a significant value of 0.005. In general, respondents know what their research problems...
are, know their respective research questions and know their research objectives. A good comprehension of these three would lead them to better understand which body of knowledge to read in-depth, what inquiry strategies to use besides knowing what results and knowledge contributions could be expected at the conclusion of their studies. In traditional doctoral studies, the graduate students would obtain these latter components after they had conducted critical literature survey on the respective bodies of knowledge. Hence, the survey’s results support that the Eagle Table improves the respondents’ confidence level about when they could complete their graduate studies after they were systematically exposed to how each research components are related to one another in one visualised table.

8. Discussion and conclusions

We have illustrated how the Eagle Table assisted graduate students to develop their confidences to complete their doctoral studies. The article now explains how the Eagle Table overcame the issues and concerns of mature professional students we highlighted in Section 2 earlier.

Identifying the research problem. The three constructs—who, what and how—are only developed after the mature professional students have resolved their research problems. The insistence of non-inquiry strategy responses helped them to focus on the actual problem. Continuously asking why to each problem statement is suggested in order to reach one that could no longer answer the question.

Limitation of study. The Eagle Table recommended the mature professional students to determine their research questions before they determined their research objectives. Doing so had enabled them to scope and limit their theses to a level that commensurate their research inquiries.

Literature focus. The three RQ’s constructs highlighted the areas of concentration where the mature professional students would start their initial literature survey. For a doctoral study, there would be at least four bodies of literature to cover compared to three for a Masters study. These students would then look forward to review the necessary literature without fear of being given a turnaround later.

Inquiry strategy. The quick references to either Yin (2007) or Creswell (2003) explained why the mature professional students have to utilise certain inquiry strategy due to their research question. Based on similar references, these students were able to modify their research questions which enabled them to utilise their preferred inquiry strategy.

Research workflow. The arrangement of the inquiry strategy approach for each sub-RQ assisted mature professional students to design a research workflow framework. The framework enabled them to visualise and relate all aspects of the research components thus provided a quick reference to the whole thesis process.

Knowledge contribution. The Eagle Table guarantees the mature professional students at least one new knowledge contribution to current body of knowledge in their respective fields. Requiring either two “WHATs” or two “HOWs” clearly forced these graduate students to integrate either two bodies of knowledge or two respective processes in order to develop their inquiry solutions.

Systematic steps to complete thesis. The Eagle Table visualises the overall steps mature professional students would undertake in order to fulfil their respective doctoral research components and requirements. It provides a visual reference on how to complete their thesis journey in a systematic manner.

Successful doctorate study. The Eagle Table allows the matured professional students to allocate the required time to complete their theses. They would know that they have to instil self-discipline on top of hard work to see to the completion of their doctoral studies.

At Universiti Putra Malaysia, students were given a maximum of 5 semesters to pass their Comprehensive Examination which covers details of the above research components. The Eagle Table provides the opportunity to graduate students how to plan their schedule accordingly. The feeling of satisfactory is claimed to have emerged when these graduate students know very well that they are in control of the whole thesis process as opposed to the initial unknown uncertainties. The results support the author’s claim that knowing what to expect in their graduate studies as early as
possible is key to ensuring matured professional students to complete their graduate studies within the stipulated time.

In conclusion, this article shares how a built environment faculty guided mature design professionals to overcome the initial confusion and challenges of uncertainties about doctoral research. With an initial introduction to the roughly long and challenging doctoral journey, design researchers will feel less fearful of the unknown as this introduction enables them to develop an eagle’s view of their three-year doctoral process. Although the use of the Eagle Table is still limited to our faculty, it has the potential for usage in other fields where professionals and practitioners require supplementary scientific-approached innovations in order to solve existing and recurring business problems. To date, the Eagle Table is recommended as a tool for starting a research prior to conducting extensive literature survey. Furthermore, it is recommended as a principal guide for focusing on development and refinement of selected theoretical constructs later in their respective studies. Thus, the Eagle Table is expected to evolve and become the beacon of light to an otherwise doctoral journey that may end to nowhere.

This article shares with the scientific community how design researchers may develop and design a doctoral research framework based on their main RQs. The three constructs drawn from the main RQ will facilitate the development of active Sub-RQs, research objectives, expected outputs and determine the most appropriate inquiry strategies. The information is summarised in an Eagle Table to facilitate design of the research workflow framework for the whole doctoral study. Based on the visualised Eagle Research Workflow Framework, the graduate students can estimate the time needed to complete their doctoral studies. This article extends Ibrahim’s Eagle Table (Ibrahim, 2008) to include expected outputs and knowledge contributions, besides illustrating how design researchers may visualise their research design frameworks without missing the attributes of a good quality research. Additionally, the main purpose of the Eagle Table is to allow design researchers more time in refining their research methodologies through more focused literature survey without missing the orientation towards the end of their doctoral research journeys. The Eagle Table has now become a convenient tool that supports design supervisors in conveying their tacit knowledge about the doctoral research process. Therefore, having a beacon of light to guide the doctoral research is much better than changing the initial research methodology, or worse, changing the main RQ when the collected and analysed data are deemed inappropriate or satisfactory for concluding a doctoral thesis. Our ultimate goal is to retain and successfully graduate as many industry practitioners as possible, who will eventually become the industry links with academia.

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References

Abstract: Professional doctorates have been established as key arenas for learning and research with the requirement for individuals to make both a contribution to management practice and academic knowledge. Many students on these programmes are drawn from the senior business world, for which the traditionally quantitatively focused business environment is familiar territory and, from which, we often see a natural tendency towards research that embraces the positivist approach that brings with it the familiarity of hard, measurable, results-focused business disciplines. The insight into the academic world of ontology, epistemology and the different research approaches that form part of the learning arena of the professional doctorate provides an opportunity for students to consider the qualitative research alternative and the value of this in developing professional understanding and in making a contribution to knowledge, understanding and management praxis. This paper does not seek to critique the criteria for what constitutes “good” research or to argue against positivist research in the professional research arena per se. Our position is that critical reflexive thinking has a key part to play in research in both developing the student and in closing the loop between the approach taken to carry out the research, the research findings, the contribution to academic knowledge and how the research practically informs professional practice. Reflexive exploration we contend takes us beyond simple numerical objective measures and into the field of subjective understanding, which can be unsettling for the mindset of a traditionally positivistic organisation. It can be perceived as difficult and time consuming, and offering vague or conflicting outputs and we recognise that talk of subjectivity, bias and interpretation may seriously affect the acceptability of research in this tradition amongst business people and needs careful handling. The methodology must stand up to the scrutiny of both academic and management disciplines by producing results that both these disciplines accept and understand. The rewards, we suggest, of reflexive exploration, offer the opportunity of a privileged insight into workforce behaviours and motivations that are not often articulated and recognised in the business world. Within this paper we draw upon hermeneutics and critical discourse analysis highlighting the role of critical reflexivity to illustrate how these qualitative research methodologies can be used to bring the academic and business worlds together.

Keywords: critical reflexivity, hermeneutics, critical discourse analysis, qualitative research, research into professional practice

1. Research methodologies and professional practice

The aim of this paper is to position critical reflexive thinking as having a key part to play in professional doctoral research in both developing students from all industries and in closing the loop between the approach taken to carry out the research, the research findings, the contribution to academic knowledge and how the research practically informs their professional practice. We draw upon hermeneutics and critical discourse analysis highlighting the role of critical reflexivity to illustrate how these qualitative research methodologies can be used to bring the academic and business worlds together.

Professional doctorates have been established as key arenas for learning and research with the requirement for individuals to make both a contribution to management practice and academic knowledge. Many students on these programmes are drawn from the senior business world, for which the traditionally quantitatively focused business environment is familiar territory and, from which we often see a natural tendency towards research that embraces the positivist approach that brings with it the familiarity of hard, measurable, results-focused business disciplines.

For McAuley et al. positivism is “… the dominant philosophical stance in a great deal of organization theory …” (2007:33), and, as such, can be regarded as the default position for research designed to influence and improve management practice. It is also seen as “… pivotal to management …” (McAuley et al 2007) since it provides ‘truths’ that can be used to control, with the authority to do the controlling. This paper does not seek to critique the criteria for what constitutes “good” research or to argue against positivist research in the professional research arena per se and we do not argue that...
positivist research is de facto flawed, or that research carried out in this tradition should be disregarded; we do, however, contend that there is an alternative approach that has much to recommend it to the researcher who is specifically seeking to develop professional understanding and make a contribution to knowledge, understanding and management praxis.

For us, this is a subjectivist, often but not necessarily, critical approach to qualitative research that embraces reflexivity and takes familiar academic and business approaches a step further. Talk of subjectivity, bias and interpretation may, however, seriously affect the acceptability of research amongst business people and needs careful handling. The methodology must make sense to both academic and management practice. It must stand up to the scrutiny of both and must produce results that are understood and respected by both traditions. We suggest that one way of bridging the gap is to encourage senior figures from non-academic fields championing the approach in their own doctoral research and in putting the conclusions of that research to work in their own places of employment. The insight into the academic world of ontology, epistemology and the different research approaches that form part of the learning arena of the professional doctorate provides an opportunity for students to consider the qualitative research alternative to positivist research and the aspects of familiarity and the value that critical reflexive thinking can have throughout their research in both developing the student and in closing the loop between the approach taken to carry out the research, the research findings, the contribution to academic knowledge and how the research practically then informs professional practice.

This approach directly recognises the researcher’s hunches at the start of the research journey; hunches which we often find have motivated the professional student to seek a way of bringing their academic and business worlds together; hunches that are drawn from many different sources, such as, the researcher’s intuition, life history, and from corporate and academic research and literature. It offers the opportunity for research material to be gathered from methods that are familiar to the business practitioner, for example from, semi structured discussions, interviews, observations, focus groups, and texts. Forensic consideration and analysis is then used to gain and develop understanding of this and the context; the researcher gradually revealing new levels of understanding that is informed throughout by academic, corporate and the researcher’s self knowledge.

There is the major criticism made by some of interpretivist approaches, that the allowed subjective position of the researcher so influences the work that the outputs and outcomes, the research material and the conclusion are not “valid”, (a positivistic term from Johnson et al 2006). The epistemological commitment here however, is subjective and, as such, no research can be free from the taint of the researchers own knowledge, understanding and assumptions, and neither can the reader consult the data except through their own subjectivity. As Alvesson and Deetz put it “… recognising the interpretive nature of research means that no data, except possibly those on trivial matters, are viewed as unaffected by the construction of the researcher …” (2000:113).

We do not seek to respond to this criticism of interpretive approaches per se but to embrace it as, for us, the notion of being able to interact neutrally with research subjects, for example, talking about their understanding of organizational issues is, for us, untenable; in an interview scenario, both the interviewer and the interviewee bring subjective, interpretations of their social and professional world and their place in it. We contend that the active role of the interviewee and the interplay between interviewer and interviewee is important and it is this that provides an opportunity to look behind the prime facie data to explore the understandings of the interviewee; allowing the interviewee as well as the researcher to challenge taken-for-granted assumptions about the issues being researched. A case for a positivistic approach to this kind of intervention could of course be made, but the possibility of collecting neutral and objective data in this tradition is a non starter as the research material would be coloured and subjective, albeit for us, all the better for being so.

We must be prepared to be continually surprised by allowing the research material to set the direction but this from within a framework that a professional practitioner can draw sensible and useful conclusions from their research material and from the bounds of an approach that is “authoritative” (a critical theory term from Johnson et al 2006). Examples of our recent research into professional practice, in particular, Leadership in Practice (Couch, 2007), The Emotions of Individuals during Strategic and Organisational Change (Cole, 2007), and Discrimination Law as an Organizational Discourse (Chase, 2007), has sought to do this and brings forward a synthesis of critical reflexivity. In introducing critical ‘reflexivity’ into the mix, we seek to emphasise that for us research of this nature is
not about looking for and finding absolute truths but that through critical reflexivity we can seek to inform the development of professional practice through the interpretation and subjective understanding of research material that is already subjective.

In this section we have suggested that a subjectivist, often critical approach to qualitative research that embraces reflexivity is an approach to research into professional practice that has much to recommend it to the researcher who is seeking to bring the worlds of academic and professional practice together.

We now discuss critical reflexivity and in doing so, wish to provoke debate upon the way in which we engage with management research. The aim is that at a minimum, as researching practitioners we can hope to become more consciously reflexive. That is, as researchers we can see the importance in noticing and criticising our own pre-understandings and to examine the impact of these on how we engage with the social world of management.

2. Reflexivity

Once the researcher starts down the path of subjective intervention, they need to consider their role not only methodologically but also epistemologically. If it is not a transcendent truth that is being sought, but instead that of understanding, consensus or an authoritative position, with an understanding of how this plays back into professional practice, then the researcher’s whole approach can be different (Johnson et al 2006). This is something which, Johnson and Duberley (2000) refer to ‘the new spirit of reflexivity’ which they say is ‘developing in management research and from which, we contend, offers the opportunity of a privileged insight into workforce behaviours and motivations that are not often articulated and recognised in the business world.

But what is the spirit of reflexivity? For as Johnson and Duberley go on to say the form that reflexivity takes, “… not to mention whether or not it is perceived to be possible in the first place, are outcomes of our a priori philosophical assumptions” (2000:178).

Here we wish to provoke debate upon the way in which we engage with management research and how we do this. The aim is that at a minimum, as researching practitioners we can hope to become more consciously reflexive. That is, as researchers we can see the importance in noticing and criticising our own pre-understandings and to examine the impact of these on how we engage with the social world of management. This form of self-comprehension requires, as Johnson and Duberley (2000) argue, researchers to ‘challenge their epistemological pre-understandings’ (p.5) and to explore ‘alternative possible commitments’. This ‘reflective turn’ increasingly encourages management researchers to be aware of, to evaluate and to be suspicious of the relationship between the researcher and the object of the research (Johnson and Duberley, 2003).

Whilst individual accounts and narratives might be seen as creating ‘order’ in social events, they also as Blaikie (2007) suggests, ‘obtain their meaning and intelligibility with reference to this social order; they possess a fundamental reflexivity’ (p.142). Following Blaikie, it might be argued that this relates to the principles of hermeneutic understanding, that is, that understanding is interpretation and that this understanding underpins notions of critical management research. Thus at the heart of reflexivity are issues concerning, intuition, interpretation, understanding, the relationship between the research and the subject of the research (McAuley, 2004:192). In this sense, reflexivity takes the position that observations are only intelligible with respect to the social context in which they originate and that the meaning and order of the context is dependent upon such observations (Blaikie, 2007).

Since the 1930’s, there have been studies that have explored organisational and managerial practices, and how individuals understand each other and work together in business environments; the aim being to reveal the underlying “taken-for-granted” culture (Alvesson and Sköldberg, 2000; Garfinkel, 1967/2004; Gill and Johnson, 1997). The ethnomethodologist researcher, for example, is interested, amongst other aspects, in common sense knowledge, in what happens when there are breaches of common sense understandings, and where, “the “reflexive,” or “incarnate” character of accounting practices and accounts (or telling stories), make up the crux of (the learning) recommendation” (Garfinkel, 1967/2004:1), (our emphasis).

It is this ethnomethodologists principle of what Garfinkel (1967/2004) calls “reflexivity” that we find an interesting consideration for research into professional practice; the idea that meaning can be drawn
from the reflexive interaction between the organisation of memory, practical reasoning, and talk (Cirourel, 1970), and the idea that as a collective we reach and share implicit definitions of situations some of which are dependent upon hidden agendas, and all of which are steered by unquestioned underlying expectations and implicit rules (Cirourel, 1970; Garfinkel, 1967/2004), which generates common sense knowledge, that is captured in the symbols, myths and stories of organisational life (Cicourel, 1970; McAuley, et al 2007).

With the increasing emphasis in the management literature for the researcher to ‘think about their own thinking’ and to embrace the need to question our natural and taken-for-granted attitudes, such as, our prejudice, bias, thought and habits (Cunliffe, 2003), we contend that is important for professionals undertaking business research to become reflexive thinkers in order that they may close the loop between their research and how this informs and further develops professional practice.

The process of engaging in a reflexive methodology as implied by many authors tends to be more similar to reflective practice, mirroring Schon’s reflective practitioner. Schon (1991), articulates through the concept of the ‘reflective practitioner’; reflecting on action as professionals we construct an understanding by drawing on cumulative personal and organizational knowledge and engaging in a reflective conversation with the situation. Reflection, we contend, can form the basis for more effective problem solving but it does not require one to question the ends, means and relevance of practices, which is often the aim of critical management research practices. To question the basic assumptions of management practice or to seek new understanding of it, there is often a need to unsettle practices and discourses that are used in describing reality.

This paper is a start to develop what we mean by reflexivity for management praxis and research and to reinforce the need for a drive towards the critical. Our current thinking concerning the role of reflexivity in management research is very much influenced by the work of Johnson and Duberley (2003). Arguing from a Kantian synthesis perspective, they contend that management research cannot be carried out in some intellectual space which is autonomous from the researcher’s own context. They develop the notion of epistemic reflexivity, in which the researcher’s participatory approach increases awareness of their own intuitive processes. Their argument is that, “Management researchers should be concerned to develop new modes of engagement that allow subjects to pursue interests and objectives which are currently excluded by the dominant management discourses [e.g. foundationalism, determinism and managerialism]” (pp.1291). By engaging with the notion of epistemic reflexivity, the researcher attempts to relate research outcomes to the knowledge constraining and knowledge constituting impact of the researcher’s own beliefs which derive from their socio-historical location. Here, though, the researcher has to be aware of the difficulties, as epistemic reflexivity can lead to a never ending reflexive spiral and the challenge of “incipient and debilitating relativism” (Johnson and Duberley, 2000, pp. 179), or at its extreme, even silence.

Later in this paper, we discuss hermeneutic and critical discourse analysis as examples of interpretivist methodologies that afford the researcher the opportunity to comprehend and challenge their issues and problems and also to examine how they are part of their own research material and question their taken for granted assumptions which traditionally inform knowledge claims and practice.

“….. to read and express their own organizational realities through their creation of their own texts; those texts would become the basis for reflexive action by enabling the development of knowledge and transformative strategies that are practically adequate for coping with and resolving their own problems [professional practice]” (Johnson and Duberley, 2003:1291).

Epistemic reflexivity encourages researchers towards questioning accepted practice and to critically assess their role as a researcher. By adopting an epistemically reflexive process, the focus of the critical modes of management research discussed in this paper, we suggest, offer the researcher the opportunity to enhance the development of new interests and new interpretations of professional practice which are currently “excluded by the dominant management discourses”.

Alvesson, Hardy and Harley (2008) offer some possible guidance through their analysis of reflexive textual practices in organizational theory. Whilst, reflexive practices are evident in both conducting and writing up research (Alvesson et al., 2008) there is also a need to examine how reflexivity is
embodied in the practices of designing and conducting research. For us, there is a need for researching practitioners to develop the ability for intellectual critique and in this sense the textual practices that underpin this are seen as critical for reflexivity thinking. Reflexive practices challenge the conventional mainstream in management research practices by highlighting the questionable assumptions that researchers are objective, neutral observers of the social world.

Alvesson et al (2008) present four forms of conceptual practices associated with reflexivity: multi-perspective practices, multi-voicing practices, positioning practices and reflexivity as destabilising processes, and they link these practices to ways in which they might usefully differentiate between those that highlight problematic issues with existing theories and to those that attempt to ‘produce new insights’. In this way the concept of D-reflexivity is associated with practices of deconstruction, declaiming and destabilising theory, whereas R-reflexivity is about ‘developing or adding something’ (2008:494), reframing; reconstruction and re-presentation.

D-reflexive practices challenge the orthodoxy, by highlighting the limitations of the research, in the way the researcher and research are influenced by the shared orientations of a research community and it targets the unreflexive practices and research of others, often taking a position that undermines claims to knowledge. In contrast, by drawing attention to the limitations of looking at things in the ways dictated by the assumptions and practices of a particular view and by asking questions about the different 'voices' in the relationships between actors, the R-Reflexivist is in the construction not demolition industry. Reflexive practices are used to illustrate what is left out and marginalized and to provide alternative description, interpretations and voices.

The textual practices suggested by Alvesson et al. (2008) and in particular the notion of reconstructive reflexivity, seem to offer a strong epistemological consensus with the generic form (epistemic reflexivity) identified by Johnson and Duberley (2003). Thus, these practices can, it may be argued offer a means from which the researcher may begin to engage with a meaningful approach to reflective practice.

In this way, the role of the researcher in using both hermeneutics and critical discourse analysis is to try and become aware of many things through the interpretation of text that the author may have not themselves been consciously aware of. They must recognise that there may be meaning within the text that is culturally dominant and, as such, will not be revealed openly by the author themselves but will be just be a taken for granted part of the context.

We now explore this further now by considering reflexive research in practice using hermeneutic and critical discourse analysis as examples of interpretivist methodologies that explicitly recognise that a researcher’s own feelings, knowledge and experience have a part to play in the research, and as such, afford the professional researcher from any industry the opportunity to engage with their research in a critically reflexive way. In carrying out research in this way, Alvesson and Sköldberg contend that it is possible for the researcher’s knowledge or experience to be greater than that of the individual being studied, and be it different or related it is possible for the researcher to have a better understanding about the subject individual than the individual has of themselves. This is, they suggest, one of the key principles of the hermeneutic approach (Alvesson and Sköldberg, 2001:54).

3. Hermeneutics

Hermeneutic has been defined as, “the science of interpretation” (McAuley, et al 2007), and by Bettelheim (1983) as, “the science of the spirit”. Hermeneutics is invariably subjectivist and has a long history going back to the early written word where it was used to interpret and bring understanding to texts. Over time its scope has extended with modern hermeneutics embracing all human behaviour and its consequences with understanding arising from interpretation that is imbued with the imaginative sympathy and analogous experience of the interpreter as they relive the past through the information they have. It is now used to explore the underlying meaning within texts through critical interpretation and with continual reference to context. (Blaikie, 2007; Gadamer, 1975/2006, 1976/2004, Alvesson and Sköldberg, 2000).

The evolution of hermeneutic methodology has been complex, not surprisingly as different individuals with different life experiences and different views have attempted to explain how people make sense of the world we live in. One challenge from those who adopt a pure positivist position is on the reliability of the interpretation, the absence of material validation, equivalence or directly reproducible
results but equally there are challenges, albeit from looking through a different lens, from hermeneutic scholars themselves. These arise from the differing views on the subject of hermeneutics ranging from what Alvesson and Sköldberg (2000) term objectivist hermeneutics to alethic hermeneutics.

In objectivist hermeneutics, Alvesson and Sköldberg suggest that we can explain how people make sense of the world we live in through intuition that arises from "the understanding of underlying meaning, not the explanation of causal relationships" (2000:52). With this ambition, objectivist hermeneutics have attempted to position interpretation as a controllable activity by attempting to develop qualitative criteria that is aligned to quantitative criteria of generalisability, hypothesis testing, reliability, sample selection and representation, and validity (Denzin, 1989). Here, the starting point is often the development of a modest hypothesis, which may be no more than a hunch based on instinct or intuition, where, objectivity and truth considerations are drawn from the traditional qualitative view of information as the outcome of social interaction, and where the objective aspects are those attributes of the subject’s life that cannot be changed. The adequacy and validity of the interpretation is considered on the basis of the researcher’s ability to account for and explain the ways in which, the subject definitions have been produced (Denzin, 1989; McAuley, 2004; McAuley, et al 2000). This criteria logic issue has been subject to much debate (Johnson, et al 2006) and is a key consideration for us. Lincoln and Guba (1985) for example, call for principles within qualitative research that enable the reader to make judgements about its rigour that include, credibility, transferability, dependability, and confirmability. For Hammersley (1989), this requires the researcher to critically reflect on the research material to reduce sources of contamination and enhance its ecological validity. For Foster, "... any science of social life must ... be a hermeneutic one, which is concerned to make sense of ‘objects’ of study as ‘text or text-analogue’. Such a science is based on an immersion in the data and reading of meanings. This process is invariably confused, cloudy, often contradictory and always incomplete." (Foster 1994:149–150).

We regard a hermeneutic approach “... with its focus on truth as an act of disclosure ...”, as especially appropriate for research aimed at developing professional practice. This is Alvesson and Sköldberg's (2000:52) definition of alethic hermeneutic: people, intuition and explanation do not exist apart from the world but are intimately caught up and immersed in it and it is this basic understanding that must be explored to reveal the hidden meaning.

For us, the differences and the common tenets recognisable in the hermeneutic literature, provide a framework to develop insights that can be useful for reflexive organisational research that builds upon familiar methods, which, we now go on to discuss. In doing so we contend that hermeneutics as a methodology (or even considered as an epistemology given the nuances we have highlighted), has characteristics that make it highly suitable for investigations in the workplace. It is about understanding, disclosure, social life, about making a difference and it is a two way learning process.

4. Reflexive research in practice

Cole’s (2007) research into the emotional experiences of individuals during periods of strategic and organisational change is a reflexive hermeneutic study carried out in an environment where there is a growing interest in feelings and emotions in management theory, in which attempts are being made to, develop an understanding of the issues and the implications for management praxis. The business environment for the study was one of constant strategic and organizational change. Within this context, the early research “hunches”, drawn from the researcher’s intuition, and life history, that an individual’s feelings and emotions, their nature of being, their self motivation, their relationships, and the nature of control, are considered a reasonable way of looking at and interpreting how individuals interact in everyday life, and their personal response to change, are brought to life and evolved.

Cole’s study draws upon a humanistic theoretical perspective, which places individuals and not processes or organizational structures at the centre of the research focus, and it explicitly recognizes the free will of individuals and their ability to learn, to develop and to change. It explores individuals’ emotions and individuals’ variations from organizations’ cultural expectations and cultural fit and considers individuals’ emotions collectively, and the psychology of emotions as a basis on which organizational change could be managed.

This study collects research material through semi structured discussions, observations, company documentation and focus groups and through the use of a hermeneutic framework illustrates how insights can be gathered into the emotional complexity of organizational life during periods of change,
the work derived feelings and emotions individuals struggle with on a daily basis, the feelings and emotions that influence and shape, and can in turn be influenced and shaped, by change events, and the stark management conditioning arising from the emotional devoid reality and manipulation of organizational expectations and mechanistically driven change programmes. This emotional insight belies the emotion and legacy of process driven change solutions, and adds to the growing voice that seeks to usurp the emotionally sanitised picture of organizational life. It informs the debate that seeks to influence the transformation of managerial objectivism, change practise, and behaviour, so that emotions are recognised, welcomed, respected, supported and embraced in the workplace.

With the same focus on understanding phenomena to develop and improve professional practice through subjective interpretation of research material, Couch (2007) carried out research into Leadership in Practice in the Civil Service using interviews within a hermeneutic epistemology.

For the professional doctoral student of any industry, the research methods illustrated in our examples will be familiar business approaches that we have taken forward to embrace a subjectivist, reflexive methodology and arrive at new understanding that can be taken back into the work place to inform business practice. For any business practitioner undertaking research of this nature, the opportunity exists for the conclusions and learning to be taken forward and used in their own places of employment. 

Research methods that engage participants in gathering research material, such as, interviewing are suitable for subjectivist research as they enable deliberate engineering of an interactive relationship with the research participants. For example, with interviews, the researcher can specifically look for two things during the interviews and the later analysis; first, for the interviewee to steer the researcher away from those aspects of the research area that the interviewee does not recognise as important and to guide the researcher towards new areas or those already under consideration; and secondly, to try to identify how, if at all, the research topic is being translated into ‘common sense’ by the interviewees, and adopted into their day to day culture and operations, and the effect that has on their interpretation of the rhetoric and their daily lives. The interactive part of the process for us is a very important ingredient that is missing from some other research methods. For example framing a single fixed set of questions at the outset for surveys or questionnaires, is either impossible or wholly inappropriate if adopting a reflexive hermeneutic approach as with a reflexive approach, one doesn’t know what new insights will be revealed and from this where the research will go.

Alvesson and Deetz (2000:194) describe interviews as a “… difficult but highly useful method …”. It is “… the most common method of data gathering in qualitative research …” (King 2004:11), which is flexible, well understood by participants, and delivers rich data (King 1994:14). We like Kvale’s definition of a qualitative research interview which is “an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena”, to which he added “neither in the interview phase nor in the later analysis is the purpose primarily to obtain quantifiable responses” (quoted by King 1994:14).

We also consider it is also worthwhile reflecting on the point that “… most people like talking about their work… but rarely have the opportunity to do so with interested outsiders” (King 2004:21). This, of course, means they may be prone to exaggeration or over-enthusiasm and this needs to be taken into consideration in any analysis.

Just as engagement with research participants can range in type from spontaneous to those that are fully structured where the researcher scores responses in a statistical manner, the role of the participant can also change along the same continuum from being a participant, helping to shape the course of the engagement, for example the interview, to being a research subject, responding to fixed questions. King (1994) identifies a middle position, which he calls ‘structured open-response interviews’, which he admits suffers from being “… neither fish nor fowl …” (King 1994:16). He also identifies the problematic interviewer and interviewee relationship this can spawn, as the latter is neither solely a participant nor solely a subject.

In our experience, the role of individuals as participants is a key feature of a hermeneutic study, so we did not conduct interviews and discussions in what Marshall (1994) considers the traditional way, with a clear distinction between interviewer and interviewee.
There can of course be a difference in interviewing as a subjectivist research method if one distinguishes between hermeneutics and discourse analysis as the research epistemology or methodology. For Marshall, “… discourse analysts see the interview as a form of social interaction and the interviewee’s contribution is seen to be important. Both interviewer and interviewee are seen as constructively drawing on a range of interpretive resources which are of interest in the subsequent analysis” (Marshall 1994:95). King generalises the same point and applies it to qualitative interviews in general “… the relationship is part of the research process, not a distraction from it …” (2004:11). However, Marshall goes on to say that interviews in discourse analysis are not seen as a “… a means of measuring the genuine views of a participant …”, but as “… a means of exploring the varied ways of making sense … available to participants …” (Marshall 1994:95). He says the concern is not at the level of the individual interviewee, whereas we have seen that McAuley (1985) sees hermeneutics as a process that includes a role for the individual, “… and then get [interviewees] … to explore for themselves the implications of what they are saying …

What is important is that “… things that are simple to … extract from interviews are not really what critical theory sees as an essential subject of research” (Alvesson and Skoldberg 2000:131). So names and dates, for example, may be interesting, and are simple to extract, but the core of the interview is the individual’s understandings and that may not be at all easy to synthesise. Further, Fontana and Frey (1998:56) suggest that unstructured in-depth interviewing, which they call ethnographic interviewing, goes hand in hand with participant observation. For us, these are all options for the researcher that afford the opportunity to develop new understanding and with reflexion, the opportunity to inform professional practice.

5. Some considerations for subjectivist researchers

In order to make the leap from research material be it document or interview material to conclusions with weight and authority when applied in the professional workplace, the subjectivist researcher has to do rather more than their positivist counterpart. Interviews are often tape recorded and transcribed and become documents that can be treated as any other document, except that the researcher was, first, present and thus an influence, and second, even if not using participant observational techniques would at least have memories of how an interviewee behaved. And of course the tapes still exist. So whilst a questionnaire, for example, generates quantitative data from which an objectivist researcher could draw immediate conclusions, documents and interviews generate qualitative material less easy to work with and analyse, except this is what the researcher must, and will, do. The process needs to be recorded so that others can see what happened and see why the researcher believes their conclusions are meaningful.

Reliability and validity of interview data are now often regarded as positivistic values that cannot apply to critical research (Johnson et al 2006). As Alvesson and Skoldberg (2000: 271) say, “… critical theorists and a whole host of other non-positivist scholars have gone beyond the truth criterion … what may be ‘true’ in one context may not be so in another. After all, published research also affects social conditions…”

As Johnson et al (2006) put it “… a subjective view of epistemology repudiates the possibility of a neutral observational language: language does not allow access to, or representation of, reality”. The search for an objective ‘truth’ is not part of the equation, so the quest is not to eliminate bias but to acknowledge it. Data obtained in interviews, for example, is not neutral, but “… constructions made by the researcher to a higher (interviews) or lower (observation) degree in interaction with the research subjects …” (Alvesson and Deetz 2000:112). King (1994) suggests two steps that should be taken to maximise reliability, or “authenticity” as Johnson et al (2006) might put it. First, he suggests “… researchers should explicitly recognise their presuppositions … and make a conscious effort to set these aside”. As he says, researchers “… should allow themselves to be surprised by the findings”. Both King and Saunders et al 1997, refer to the importance of interviewer preparation in the minimising of bias. Second, he suggests the involvement of other researchers, with room for discussions about disagreements (King 1994:31). This should also help with a problem identified by Alvesson and Deetz (2000:194), which is “… whether accounts in interviews refer to something external to the interview situation and the language used … or are a reflection of the interview situation as a complex social setting …”. As the authors admit, this is almost in the ‘too difficult’ category and one has to “… manoeuvre between two unhelpful positions” (2000:194). It is here that self-reflexivity becomes crucial. If, as Alvesson and Deetz (and post-structuralists) say “… language does not stand in a one-to-one relationship to (partially) non-linguistic phenomena such as
behaviours, thoughts and feelings …” (Alvesson and Deetz 2000:112), then it is crucial to ensure that
the researcher responds to the idea that “… reflexivity involves the self-critical consideration of one’s
own assumptions and consistent considerations of alternative interpretive lines and the use of
different research vocabularies …” (Alvesson and Deetz 2000:112).

A major consideration for this approach to research is to be clear about the status of the outputs of
the research. If subjectivist research is not about discovering a truth in a positivistic sense then what
is it about and how can the outputs be legitimised? As McAuley (2004:196) puts it when discussing
hermeneutics, there are two ways “… one lies in the professionalization of the hermeneutic
researcher; the other is the methodic processes through which hermeneutic work is conducted”. We
would add a third, which McAuley implies but we consider needs setting out clearly. Subjectivist
research is legitimised as well by the recognition and acceptance of the authority of the outputs by a
consensus of the peers of the researcher and, perhaps even more importantly, by a consensus of the
research participants.

6. Critical discourse analysis

By way of a further example of reflexive management research meeting professional practice, we now
briefly offer the same argument for critical discourse analysis which seeks to illustrate the emergence
of the influential and pervasive discourse, and how, for example, this may become part of the psyche
of the workplace. In doing so, we briefly draw upon Chase’s (2007) research which seeks to illustrate
the emergence of employment legislation as an influential and pervasive discourse, particularly for
those employed in the personnel profession, and illustrates how one element of this legislation
discrimination law, has become part of the psyche of the workplace. The emerging argument is that
legislative provisions are now so embedded within organisation policies and practices that it is
impossible to escape their reach. As a result, it is suggested that an understanding of the dynamic
between this legislative framework, the ‘theatre’ played out in employment tribunals, the practice of
the personnel profession and the influence on individual employment relationships adds value at both
the professional and intellectual levels.

The language, legal interpretation and debate around this whole area of the employment environment
present opportunities for critical and reflexive study. As with hermeneutics, the routes to critical
discovery allow the researcher considerable scope for epistemological perspective and
methodological choice. As far as the former is concerned, there is an opportunity for exploration by
drawing on a blend of critical perspective, reflexivity and hermeneutic understanding. Indeed, the
researcher may be encouraged by such latitude and the apparent endorsement given by Cassell and
Symon (2004:2) “qualitative methods might be informed by all possible epistemological positions” and
the assertion by Fournier and Grey (2000) that critical research draws on a number of intellectual
traditions and is committed to some form of reflexivity. McAuley et al (2007:48) record with elegant
simplicity the opportunities provided by a critical theoretical perspective, “it enables us to reflect on the
ways in which we need to constantly question issues of organisational design, leadership and
communication…….” The challenge set by Alvesson and Deetz (2000) was to articulate a relationship
between the critical tradition, characterised by critical theory and the interpretive tradition
characterised by hermeneutics under the more generic banner of critical management research. In
part, we seek to embrace this to consider how we might take new learning from the academic
research journey and use this to practically inform professional practice.

Discourse analysis as a methodology has emerged as one of the ‘new’ critical approaches that are
becoming increasingly evident in management and social research. Interest in discourse does, of
course, go well beyond the epoch referred to here as ‘new’, but there is some support for the view
that discourse analysis is a topical theme in management studies and one that offers the potential for
an exciting contribution to qualitative research, (Alvesson and Sköldberg 2000).

Critical discourse analysis, as a distinctive brand of discourse analysis opens up we suggest, the
potential to explore the discourse in the professional arena as one component of the business
environment. Scollon (2001:140) provides a useful definition: “Critical Discourse Analysis is a
programme of social analysis that critically analyses discourse, that is to say language in use, as a
means of addressing problems of social change.” Equally helpfully, Van Dijk (2001:96) terms critical
discourse analysis as “discourse with an attitude” and claims that “Critical discourse analysis can be
conducted in, and combined with, any approach and sub-discipline in the humanities and social
sciences.” Accordingly, a central theme in critical discourse analysis involves the conversation or
narrative being studied to be viewed from a political perspective to reveal the power relationships and to emancipate the meaning for those who do not hold such authority (Travers, 2001). Although discourse analysis methods may differ in detail, they would normally involve the adoption of some of the principles of literary theory applied to a particular context.

7. Closing thoughts

In this paper we have sought to provoke the debate and to illustrate that there is an alternate approach to the dominance of positivistic research into professional practice and to suggest how this can be used to develop professional and academic understanding through the research approaches taken.

We have sought to position critical reflexive thinking as having a key part to play in professional doctoral research for students from all industries. We have discussed how the professional doctoral student can draw upon familiar business techniques and by developing their use of these through self reflexivity can reach new understanding that can be taken back into the workplace to inform and develop business practice. We have drawn upon hermeneutics and critical discourse analysis highlighting the role of critical reflexivity to illustrate briefly how these research methodologies offer a framework to do this.

The rewards, we have suggested is that reflexive exploration offers the opportunity of a privileged insight into workforce behaviours and motivations that are not often articulated and recognised in the business world and, for any business practitioner, we have suggested that by undertaking research of this nature, the opportunity exists for the conclusions and learning to be taken forward and used practically to inform professional practice.

References


Project Management Bodies of Knowledge; Conjectures and Refutations

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Abstract: The traditional view of a profession is that of a discipline with a distinct set of skills and knowledge that define the area of practice and characteristics of the practitioners. This nature and area of practice of a profession is sometimes defined as its body of knowledge or ‘BoK’. In the case of project management, as the discipline moves towards professional recognition, this BoK becomes a significant device that serves the needs of many stakeholders in addition to those of the practitioner or academic. The purpose of this paper is to examine the role of research in the development of project management Bodies of Knowledge. As project management emerges from the ghetto of engineering and develops its trajectory towards recognition as a profession, its knowledge area becomes even more significant because it needs to be seen to define a distinct knowledge domain that sets out the limits of the ‘profession’. However, the knowledge domain can be said to have shifted so that it is still under constant review and improvement to respond to continual change. New areas of practice have emerged, such as programme management and portfolio management, that are considered to be part of the discipline hence the knowledge area requires refinement. In this paper we show that current versions of project management BoKs are poorly served by underpinning research. We contend that evidence based research should play a part in the construction of BoKs, and that other research approaches should be also seen as relevant and effective. This paper draws on experiences of updating a formal Body of Knowledge, reviews the context of a range of project management bodies of knowledge and identifies a number of issues concerning the nature of project management knowledge and how it can be represented. We conclude that BoKs serve a valid purpose but conflicting priorities affect the development process and undermine their usefulness. From the epistemological issues identified, we add our conjecture that the capacity of bodies of knowledge to represent the broader understanding of the discipline is limited. The paper concludes with a review of some methodological implications of the interaction of stakeholder interests and BoK development practice.

Keywords: profession, body of knowledge, research design, knowledge representation, certification

1. Introduction

Many organisations now recognise project management as key to their business operations (see for example Packendorff 1995, Hodgson 2002 or Crawford 2005). As Morris et al [2000] show, a wide range of industry sectors now make use of projects and see the effective delivery of projects as a key driver in their organisational performance. In common with many new areas of knowledge and practice, project management has seen itself as an emerging profession. Partly, this has been due to the unprecedented expansion of the discipline [Morris et al 2006]. It also results from the establishment of societies that foster particular views of the discipline which have set out to demarcate areas of knowledge that they can claim as their own. As Zwerman et al [2001] pointed out; project practitioners see themselves as offering a professional service and hence see a need to have this service recognised. Thus they tend to join societies that legitimate their claims to specialist knowledge and its mastery. In their turn, these societies require documentation that can be used to provide not just recognition of a unique knowledge domain but also to form the underpinning of practitioner recognition [Shenhar 1996]. The major professional societies call these documents their Body of Knowledge (BoK).

Traditional professions, such as medicine or the law, have established the boundaries of their disciplines so that the knowledge required of their practitioners may be embodied in prescribed programmes of study at specialist schools. The nature of the knowledge component of professions and the requirements for an occupation to be classified as a profession have been the subject of extensive academic discussion (e.g. inter alia Abbott 1988, Evetts 2003, Cacciatore and Jacobides 2005, Siegrist 2002); these authors link the development of professionalism to a unique body of knowledge; either implicitly or explicitly.

In the absence of established specialist schools for project management, membership societies serving the discipline tend to use their BoKS as the basis for their certification schemes. These schemes have proved singularly popular, certainly with practitioners, as the success of Project
Management Institute (PMI) and International Project Management Association (IPMA) models show [Hodgson 2002]. In addition, access to predefined descriptions of required knowledge and the linked courses and programmes of study provided by education and training organisations are also seen as advantageous to practitioners.

In common with any knowledge based discipline, project management is not static and so the various BoKs are seen to require updating from time to time. Two of the most influential BOKs were developed in the 1980s, for instance, when most practitioners were concerned with single projects (although often very large) while more recently, interest has become focused on the management of multiple projects either as coherent programmes or as portfolios of single projects. Thus there is a periodic need to update BoKs, at least to reflect changes in practice. Such an updating process is currently underway for both PMI’s version and for the Association for Project Management (APM) BoK. Interestingly, these important updates would appear to have no underpinning research basis.

Examination of the main BoKs will show that the structure varies significantly. However, there seems to be a broad agreement on the main aspects of content. This paper does not address issues of specific content, or indeed, the purposes that BoKs are put to. Rather we are concerned with the development process and the rigour necessary to produce a credible work that merits the name of Body of Knowledge.

2. BOK development

The concept of a body of knowledge seems have different interpretations in different professions. Most of the traditional professions such as medicine and law would regard their body of knowledge to consist of the range of medical libraries, research papers and text books that exist in their world [Shepherd and Johns 2006]. Thus they are much broader conceptually, are usually segmented into subsets (e.g. osteology, oncology, hematology and the like), are significant aggregations of formally documented text with a substantial research base and are embodied in a wide range of formats. In sharp contrast, Project Management bodies of knowledge are encapsulated in short, single volumes and are undifferentiated [e.g. PMI 2004, APM 2006]. This leads to the view that they are conceptually narrow, unsegmented books in a single format and with little underlying research to provide legitimacy.

The evolution of Project Management’s professional associations began in the late 1960s/early 1970s. Initial activities concentrated on information exchange but soon expanded into the area of certification. As already noted, certification requires some standard against which candidates may be assessed. In the absence of existing standards, the associations - first PMI in USA, and later APM in UK, developed their own reference documents. PMI established the first version of its (Guide to the) Project Management Body of Knowledge in 1976, although it was first published in 1983. Various other national project management associations produced their own versions, in some cases quite different from PMI’s, over the next 10 to 15 years. A number of upgrades have followed [Crawford et al 2006]. Interestingly, none of these documents emerged from academic institutions or, with one exception, from explicit research. Originally PMBOK® was based on “what most Project Managers do most of the time” but this has now been modified to “generally recognised practice…applicable to most projects most of the time” [PMI 2004: 3]. APM’s early BoKs were academically led and one later version had a research based component. IPMA’s approach built initially on APM’s early work but has evolved into a distinctive independent form which can be adapted by its Member Associations to form the basis for their certification activities. The later IPMA versions have been developed by small teams of practitioners.

In addition to PMI and APM BOKs, there are a number of BoKs in use throughout the PM world; only one other is significant for the purposes of this paper, that of the Japanese Engineering Advancement Association who published their distinctly different version in 2001 [ENAA 2001]. All these BoKs were developed over the period 1976 – 2001 [Morris et al 2006]. Not only do these documents vary in detailed content, they are significantly different in conceptual terms and to some extent in the way they were developed. PMI and APM BOKs were developed by experienced practitioners although APM have since moved to make use of academic research [Morris et al 2000, Morris et al 2006] for their 4th edition while IPMA at first used the combined elements of the British, French and German models. Japan developed their P2M well after the other key documents from an academic committee although again there is little evidence of a research based approach.
That the various versions show significant differences is hardly surprising considering the disparate approaches and the time interval; however, these differences are outside the scope of this paper which is aimed at examining the role of research in defining BOKs. However, the fact that a lack of consistent body of knowledge may hamper the development of project management as a profession seems to be a point of consensus among some academic authors (e.g. Winch 2006, Winter et al 2006).

The limitations of existing BoKs have been addressed by many authors since PMBOK® Guide first appeared (see for example Wideman 1995, Koskella and Howell 2002, Morris et al 2006, Winter et al 2006). Such criticisms point mainly to the failure of BoKs to address the issues of project complexity and the existence of multiple life cycles. While BoKs provide a useful guide to knowledge areas, the reliance on them as certification standards indicates a narrow and shallow approach. PMBOK® Guide, especially, espouses a model of projects as having clearly defined goals, a well established life cycle and a largely linear sequence of tasks [Crawford et al 2006] – fine for straightforward projects but certainly not effective for more and more projects as complexity increases. Crawford et al [2006] also note that BoKs are important for both practitioners and for their employers since they exert a considerable influence over the training and development deemed appropriate for project managers. However, this importance masks the possibility that employers with more complex projects to manage may feel that their needs are ignored and thus they may prefer to develop their own project staff, ignoring the possibility of buying more training and certification services from the professional societies.

The traditional role of BoKs can be seen as:

- Defining the scope of the discipline,
- Defining the areas in which practitioners can be expected to show expert knowledge
- Setting certification parameters

Thus they can be seen as serving several communities of interest. These are outlined in Table 1 below, from which it can be seen that some of these interests may conflict.

**Table 1: BoK Stakeholder areas of interest**

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Knowledge Guide</th>
<th>Certification Base</th>
<th>Major Income</th>
<th>Knowledge Generation</th>
</tr>
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<tr>
<td>Practitioners</td>
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<tr>
<td>Prof Societies</td>
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<tr>
<td>Academic</td>
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<tr>
<td>Trainers</td>
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</table>

The challenges these conflicting interests pose for the professional societies and for BoK development are addressed in section 5 below.

3. **Ontological issues**

Project management appear to be the key words for a profession that now extends to programme and portfolio management. For project management the defining characteristic seemed to be that each project has a definite start and finish point (various BoKs) while programme management appears to include ‘business as usual’ that now includes the operation of the project; there are also projects that include higher levels of complexity. As stated earlier project management in some way responds to events that change over time such as the inclusion of programme and portfolio management. Themistocleous and Weaver [2000] indicated how the relative importance of topics of PM had changed over a 10 year period by taking the titles in academic papers and conference topics and Crawford et al [2006] has undertaken a similar study over a more recent time period resulting in a different set of important factors.

Project management can be considered to be an eclectic collection of topics that, individually, can be found in other professions of science, art and craft, and as these continue to develop, project management also must adopt and adapt to these same changes, such as risk and governance. The continual change of business, commerce and industry with new laws, improved working practices all demonstrate that PM will continue to be a changing discipline and that the BoKs must either anticipate
or react to such changes. Whether PM anticipates or reacts in the development of BOKs could be seen to be a combination of the two philosophical stances of the rationalist and empiricists views [Harrison-Barbett 1990]. The rationalist view would argue that practitioners start with experience and building on that knowledge would be derived through causes which are ‘logically prior to the experience’. On the other hand, empiricists believe it is through our senses that we obtain knowledge after something has happened. In the true sense much depends on whether Project Management could be considered to be a science within the ontological sense, that is to say PM is ‘real’. Thus project management could be tested by cause and effect. It is more likely that Project management has developed into what it is considered to be from the acceptance of new knowledge or perceptions of knowledge from practitioners and academics and this definition and understanding can be seen to be changing over time. The development of what constitutes project management is critical to enable, for example, certification to take place. This development has in some way been formalised through the maturity levels with which organisations can determine how they compare to others and to competences against which individuals can map their PM knowledge base. Over time it is highly probable that new topics will emerge as new topics for the BoK [Morris et al 2000, Morris et al 2006].

4. Epistemological issues

Following the discussion of what knowledge is required to be placed in the PM BoK, the next question is how that can be identified with some degree validity and reliability. For example, It would be reasonable to undertake a risk analysis and develop a management plan, however, the charge can always be made that any success achieved could have resulted whether the risk analysis had been conducted or not., It seems reasonable that risk should be a part of PM but it is not possible to prove this through deductive research.

Research techniques have been documented for PM (see for example Smyth and Morris 2007 and Leybourne 2007). Smyth and Morris [2007] for example studied the research methods and the epistemological issues used in the 2005 issues of The International Journal for Project Management; these include: Positivistic, Empiricist, Structural and Ontology while the methods used included: Ethnographic, Multi choice, Game theory, Survey, Case study and Action research.

Turner [2006] considered the theories from other domains in order to identify which paradigm Project Management could be classified. Turner considered:

- Systems approach,
- Process,
- Projects as information processing systems,
- Organisational and management theory.

These were viewed and discussed with the factors that could be considered inherent within the following three windows:

- Defining the project,
- Governance,
- Value of the project.

If a theory for project management could be agreed, research methods would be easier to determine. However, as mentioned earlier project management continues to evolve, Atkinson [1999] wrote, ‘Project management is simply an evolving phenomena, which will remain vague enough to be non-definable, a flexible attribute which could be a strength’. There will without doubt be a need for mixed research methods, for both inductive and deductive research approaches within the philosophical theories most likely to be used in Project management research.

Project Management is a phenomenon, it is what we say it is, it does not exist in such a way that cause-effect deductive research can be used solely to define what it is. It therefore requires the use of inductive logic as a research option. However, inductive logic is open to many fallacies of reasoning , for example, those of composition, division and non-sequitur. The research strategy often associated with inductive logic would be a survey [Saunders et al 1997]. The research methods within a survey strategy could include both interviews and questionnaire. The issue then is whether the study would be either attitudinal or behavioural. One such study was conducted by Robson [1997] who compared an attitudinal survey with behavioural survey method. When respondents were asked what they
thought PM involved, the replies suggested more an art based discipline. When the same respondents were later asked to what they had done (behavioural) over a period of time, the replies changed to be much more science based. That study identified a difference in the replies from the same respondents when attitudinal type questions were asked compared with behavioural type study.

How then can project management be identified? As discussed earlier, the nature of projects is evolving including the level of complexity and as such it is clear that many different research methods would be needed to provide the overall understanding exactly which elements of project management are appropriate for each individual projects, bearing in mind that projects are considered to be a ‘unique’ undertaking. The response is often to study projects which fail in some way by use of case studies, these can give clear points that can be catalogued. However, the results of individual case studies, for example, are unsafe to generalise. The study of success is far more difficult to conduct as it has been discussed that it would be impossible to provide a cause-effect of success. On the other hand if these successful projects could be repeated then while significance can’t be determined, reliability through repeatability could be indicated. The challenge for those developing a new BoK is to determine which research philosophy, strategy and methods can provide the list of topics needed for a BoK while accepting the limitations of both deductive and inductive approaches.

5. Practicalities

Morris et al [2006] have shown that practitioners and their employers regard formal Project Management BoKs as very important. These provide guidance on boundaries of the discipline, set out certification criteria and have a significant influence on the training and education for practitioners. While there may be significant differences between the various ‘brands’ of BoK, there is general agreement on content [Shepherd and Johns 2006]. However, there are other interests to be taken into account as Morris et al [2006] show..

Morris and his team at University College London had been commissioned to undertake formal research to validate potential changes from the 4th edition of APM’s BoK. A research plan was developed: preliminary pilot interviews held to validate a broader and wide ranging survey, focus groups to review findings and broadly constituted industry committees to review detailed content. When the results of the research were passed to APM, it was found that two problems occurred. First, the content of the new BoK was thought some stakeholders to be too complex. The needs of certification drove the draft 5th edition towards ‘a more comprehensive and discursive document’ in order to capture the richness and complexity of the emerging discipline. Yet the needs of certification programme were at odds with the revised draft. Secondly, Morris et al [2006] noted that structure was easier to develop than detailed content and criticism of the previous structure (as not having a narrative thread running through it) reinforced the need for a lengthier document. The structure is what people see first and from this, much of the institutional work which flows from a body of knowledge – curricula, special interest groups, library and filing systems, and so on. In the event, the structure set constraints on the institutional ability to respond to the proposed changes in topics and the perceived ‘thread’ running between them'. Morris et al [2006] found that there were a larger number of stakeholders than just the practitioners and the professional society. These stakeholder interests lead to significant constraints in the content and layout of the BoK, and it was clear that these constraints were not driven by the needs of practice.

Furthermore, there were also commercial interests to consider as professional societies make extensive use of their BoKs to regulate their certification processes. Changes to the underlying ‘standard’ impacts on existing training courses both within the industry and in company schemes so there resistance to change.

At the institutional level, any significant shift in the content is also likely to engender resistance since the different sections of the practice community need to be reassured that their existing knowledge remains valid. This is perhaps the reason that there has been little change in the general shape of PMBOK and restricted changes to APM BOK.

6. Conclusions

We have discussed that the discipline of project management continues to evolve, often in unexpected ways but understandably as the nature of projects change. Thus any document that purports to delineate the content of the discipline will also be required to evolve. We contend that there are ontological issues that have not been adequately addressed in the development of existing
BoKs and these issues pose epistemic problems when determining approaches to the structure of the documents, their detailed contents and the manner in which they have been compiled. We have thus far argued that deductive logic alone is unlikely to provide the necessary level of quality within most PM studies, in particular when attempting to identify ‘what is PM’, but could add to a mixed methods study to provide a richer picture. Inductive logic is prone to errors of logic through fallacious reasoning and attitudinal and behavioural studies have provided markedly different conclusions from the same respondent data source. This should not however prevent the search for what is PM from continuing and continual development of the project management Body of Knowledge, it is simply to indicate the potential weakness and limitations of some conclusions that different research designs will generate.

In this preliminary study, we make only tentative recommendations, these are:

- To Seek consensus on the ontological nature of PM. This will encourage a range of useful and agreed research methods to be devised in order to bring methodological discipline to the field.
- The research community will need to engage with the ‘membership associations’ to identify the contribution academic research might make to BOK development.
- Alternative methods will need to evolve to overcome the current lack of theoretical base for the discipline. We propose evidence based research approaches to help over come this problem.
- Closely linked with Recommendation 2 above, we believe that it will be important to encourage action research in an effort to engage with practitioners in research.
- Propose alternatives to research approaches based on observation or case studies – or at least to set up programmes of related case studies to assist with theory building.

The purpose of this paper was to examine the role of research in the development of project management Bodies of Knowledge. In conclusion, the paper identifies that there is no single theory of project management emerging (this is not seen as a weakness since other major professions operate under the same development). But this clearly places project management in the phenomenological paradigm, that cannot be tested as would be possible if it were positivistic. However, using mixed methods is still possible and advisable in the constant development of the Body of Knowledge that can be seen as a catalogue of reflective practice that can be considered a ‘network of knowledge’ (Moon 2005) which, at any one point in time can be considered ‘best known practice’ but naturally requires constant attention since the business, commerce and industry are constantly changes around project management and as such, project management has to reflect those changes in it’s ontological position and how to cope with the epistemological of knowing that knowledge is correct.

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Deciding on the Scale Granularity of Response Categories of Likert type Scales: The Case of a 21-Point Scale

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Abstract: This research investigates the use of a 21-point Likert type scale in the design of a questionnaire that explores factors related to staff turnover and retention. The paper examines the notion of granularity in researcher-defined fixed rating scales, where granularity refers to the number of response categories or cut off points that are imposed on a scale (Smithson 2006). The aim of this research paper is to examine the usefulness of a scale with high granularity, from the perspectives of respondents and the researcher. The questionnaire was administered among employees in three different public sector organisations in South Africa, to create a combined data set of 178 respondents. Informing the formulation of the hypotheses was Parducci’s (1965 cited in Tourangeau, Rips & Rasinski 2000) range-frequency model, which assumes that respondents make use of the various response categories available with equal frequency, if they are evenly spaced. It was therefore hypothesised that (1) there are no significant differences in the frequency of use of the 21 response categories, implying that all of the response categories are useful to respondents; (2) that there would be no difference in the response pattern of respondents when different scale types and lengths are used, implying that increasing the scale granularity did not lead to redundancy; and (3) that there are no significant differences in the variation of responses with ongoing use of the scale. That is, if the scale was useful to respondents, they would continue to use a wide range of the response options available. Chi-square tests were primarily used to test the hypotheses. It was concluded that the 21-point scale was useful to respondents and by implication to researchers as well. This was evident in the spread of responses across the 21 response categories of the scale, and that even with prolonged use, they continued to utilise a wide range of response options. It was recommended that researchers should give more explicit attention to scale granularity when designing a questionnaire and that further research is required to assess the value of various levels of scale granularity.

Keywords: questionnaire design; scale construction; likert scale; scale granularity

1. Introduction

Lee and Soutar (2010) maintain that while there are several ways to gather data of a quantitative nature, rating scales remain the most popular. There has been much interest recently in alternative scale formats such as graphic scales (Cook, Heath Thompson & Thompson 2001), single item scales (Lee, Douglas & Chewning 2007), tailoring scales for multicultural and/or multilingual settings (Arce-Ferrer & Ketherer 2003) and the development of individualised rating scale procedures as an alternative to researcher-defined fixed rating scales (Chami-Castaldi, Reynolds & Wallace 2008). Nevertheless, the popularity of researcher-defined scales seems to persist, and yet there seems to be relatively little attention paid by researchers to their decision to adopt a specific rating scale design.

This research investigates the use a particular researcher-defined fixed rating scale, namely a 21-point Likert type scale, in the design of a questionnaire that explores factors related to staff turnover and retention. It is argued that the properties of such a scale enhance statistical analysis. The aim of this research paper is therefore to examine the use of such a scale by respondents, and by extension, to infer the usefulness of the scale for the researcher.

2. Likert type scales

According to Rattray & Jones (2007), Likert type scales are one of a range of scale types that researchers can choose from, and they identify Frequency, Thurstone, Guttman, Mokken and Multiple choice formats as alternatives. DeVellis (2003) refers to a Likert scale as a type of response format for a scale item, rather than a scale type. This distinction is helpful, as it serves to differentiate summated scale types from the characteristics or format of a single item. Summated scales such as the Guttman and Thurstone scales consist of a number of items making up the scale. In contrast typical response formats for a single item include the Likert, semantic differential, and visual analogue scales. This study’s focus is on the response format of single items.

Likert type scales can be traced back to the work in the 1930’s by their namesake, Rensis Likert, who experimented with a simpler response format for various Thurstone attitude scales (Likert 1932; Likert Roslow & Murphy 1934). A statement was provided and respondents were given one of five response
options by which to describe their reaction to the statement. These options were: “Agree with the statement”, “Strongly agree with the statement”, “Disagree with the statement”, “Strongly disagree with the statement”, or “Undecided”. Respondents indicated their reaction by writing down a symbol that corresponded to the option, rather than writing down a number. In addition, Likert’s original instructions set out the options in the order that they are listed above, and not in a more intuitively logical sequence that would suggest a continuum of reactions ranging from “Strongly disagree” to “Strongly agree”. This continuum of responses has certainly become the more popular format (Dawes 2008). Furthermore, a neutral response was not provided by Likert, but rather the option of being “undecided”. It is interesting to note that there is no evidence of Likert personally providing a theoretical justification of his method (Roberts, Laughlin & Wedell 1999). Nevertheless the Likert scale is seen to be consistent with classical test theory, which was developed subsequently (Roberts, et al. 1999).

A Likert scale has several defining characteristics, namely a declarative statement, and a number of response categories that have distinct cut-off points and assume linearity and equal intervals between them. These characteristics are now discussed in more detail.

Firstly, Likert scales consist of a “declarative sentence, followed by response options that indicate varying degrees of agreement with or endorsement of the statement.” (DeVellis, 2003 pp.78-79). Referring to attitudinal scales in particular, Roberts, et al. (1999) note that the declarative statement typically expresses a clearly positive or negative opinion and not a neutral one. This is designed to solicit more definitive responses from respondents, rather than eliciting muted, unvarying responses. Furthermore, some argue that a well designed questionnaire should have some of the items reversed so that response bias in the form of acquiescence is reduced (Churchill 1979). However, there are voices of caution that reversing an item may not create an exact opposite statement and can lead to a reduced internal consistency of the scale (Rodebaugh, Woods, & Himberg 2007; Wong, Rindfleisch & Burroughs 2003).

Secondly, in adopting a closed-ended question format (Dillman, Smyth & Christian 2009), Likert scales make use of a number of response categories. Cook, et al. (2001) observed that Likert scales explicitly present their scoring metric to the respondents and expect them to limit their choice to one of the options provided. As noted above, the response categories of Likert’s original scale were not placed on a continuum. However, there is an increased tendency to provide graded response scales, and typically in a “disagree-agree” format (Roberts, et al. 1999). With Likert type scales, the appropriate number of categories and the type of response options used is something that the researcher should be giving more attention to when designing a questionnaire.

There has been much debate on what should be regarded as an optimal number of response categories. Dillman, et al. (2009) recommend that only four or five categories should be used, while Fink (1995) recommends five to seven, and Foddy (1994) concludes that a minimum of seven categories is required to ensure scale validity and reliability. Some researchers have preferred to make use of a nine-point format instead (e.g. Almli, Naes, Enderli, Sulmont-Rossé, Issanchou & Hersleth 2011; Lee & Soutar 2010), and more rarely, a 15-point format (e.g. Chaiken & Eagly 1983). Nevertheless, the five- or seven-point formats would appear to be the most prevalent (Dawes 2008). The seven-point format typically provides the following response options: “1 = Very Strongly Disagree”, “2 = Strongly Disagree”, “3 = Disagree”, “4 = Neutral”, “5 = Agree”, “6 = Strongly Agree”, “7 = Very Strongly Agree”. The five-point format typically does not have the two extreme options of “Very Strongly Disagree”, or “Very Strongly Agree”.

While a disagree-agree format is most typically associated with a Likert type scale, it should be noted that there are other less popular types of response options that are also used, that would adhere to the characteristics of the Likert type scale format. These formats include endorsement (true-false), frequency (always-often-sometimes-never), intensity (mild-moderate-severe), influence (e.g. size of the problem) and comparison (more-less than others) (Fink 1995). Furthermore, Dillman et al. (2009) propose that Likert type scales can be unipolar or bipolar, depending if a zero point is placed at the end of the scale or somewhere towards the middle, between opposite dimensions.

Thirdly, Likert scales have distinct cut-off points and often assume linearity and equal intervals between various response alternatives (Rattray & Jones 2007), thereby facilitating the statistical processing of (at a minimum) interval-level data, and using parametric statistics (Terre Blanche &
Durrheim, 1999). However, there has been some debate as to whether Likert scale data can be assumed to be interval data, or to be only ordinal in nature (see Pedhazur & Schmelkin, 1991).

Likert scales seem to have become the most popular format used in scale design (Foddy, 1994:168). So much so that researchers rarely interrogate, or justify their adoption or use of this scale format. This paper examines the notion of granularity in researcher-defined fixed rating scales. Granularity refers to the number of response categories or cut-off points that are imposed on a scale (Smithson 2006). Granularity is first examined from the perspective of the researcher and then from the respondent's viewpoint.

It is acknowledged that the value, quality and meaningfulness of a questionnaire is also affected by, for example: the wording of each of the items, the characteristics of the sets of items that make up the scale or questionnaire, the sequence of the items, and the design and layout of the questionnaire (see, for example, DeVellis 2003; Dillman, et al. 2009; Fink 1995; Schuman & Presser 1996). Furthermore, all attempts to quantify responses have to deal with problems of representation, objectivity and correspondence (Terre Blanche & Durrheim, 1999). Representation is related to uncertainty about what characteristics the numbers actually represent, objectivity interrogates the rules related to the assigning of numbers, and correspondence is concerned with the extent to which differences between scores on a measure correspond with the actual differences that they represent. All of these issues are not explored in detail here, except where they may relate to granularity.

3. The researcher's perspective on scale design

It is argued that increased granularity can achieve three main interrelated objectives, namely to ensure more precise data is collected, to increase the reliability and validity of the data, and - from the perspective of statistical analysis - to ensure that more useful data is gathered.

Firstly, a researcher is concerned with the precision of the question responses offered to respondents in a researcher-defined fixed rating scale. This would include considerations of the inclusiveness, exhaustiveness and mutual exclusivity of categories (Bourque & Fielder 1995; Fink 1995). However, to achieve precision, a central concern of the researcher is to achieve an optimal level of granularity that combines linguistic differentiation with measurement precision (Smithson 2006). This implies that the categories need to be meaningful to respondents and not trivial or ambiguous (Dillman, et al. 2009; Fink 1995), while simultaneously providing as wide a range as possible of alternative, but significant responses. To achieve this ideal level of precision, the researcher also needs to take into account the cognitive ability and level of patience of respondents (Cook, Heath, Thompson & Thompson 2001; Oppenheim 1966). Clearly, if a scale has more options, it will be more difficult and take longer for respondents to make a choice among the alternatives and therefore a questionnaire would take longer to complete. This concern about precision is therefore largely a matter of correspondence (Terre Blanche & Durrheim, 1999).

Secondly, the choice of granularity can affect the reliability and validity of the scale. There has been much debate related to the statistical properties of various levels of scale granularity or coarseness. For example, Krieg (1999 p. 763) notes that scale coarseness can affect the bias of a scale as well as "the mean, variance, covariance, correlation coefficient, and the reliability of scores". Cook, Heath Thompson & Thompson (2001) note that in theory, increasing the number of response alternatives used will automatically increase score variance, and that this has the potential to increase score reliability. However, the results of studies in this regard reveal mixed results and do not always support Symonds' (1924) assertion that using seven scale points would achieve an optimal level of reliability. For example, Cook and Beckman (2009) compared nine- versus five-point rating scales and concluded that nine-point scales appeared to provide more accurate scores. See Miller (1956), Molenaar (1982), Foddy (1994) and Coelho and Esteves (2006) for further discussion of this topic. Of relevance to and in support of this study though, is the finding of Andrews (1984) who made use of various rating scales, some of which had more than 20 categories, and concluded that the validity of the rating data improved with an increased number of categories.

Finally, related to the reliability of the scale, is the fact that data derived from scales with higher levels of granularity are more likely to produce more meaningful results when subjected to statistical analysis. Many statistical procedures rest of the assumption of variability of data. When the data set lacks variance in respondents' scores, this is reflected in inconclusive statistical results. As DeVellis (2003 p. 75) states succinctly "A measure cannot covary if it does not vary".
This consideration is also important when researchers are looking for evidence of change over a period of time or between groups or individuals. Pejtersen Bjorner, & Hasle (2010) note that slight differences may prove to be statistically significant with large sample studies, but insignificant for small samples. Similarly, when making group comparisons a slight variation in scores may be more evident than when comparing individual scores (Pejtersen et al. 2010). The ability of the research to identify these minimally important differences (Pejtersen et al. 2010) is affected by measurement precision, and in the case of questionnaires - the granularity of the scale. In summary, it would appear that developing scales that have a high level of granularity can be of more value to the researcher by rendering accurate, reliable and valid data that is more suited to statistical analysis, as long as the level of granularity is also meaningful to respondents. In the next section, the respondent's perspective on scale construction is examined.

4. The respondent's perspective

As a type of closed-ended question (Dillman, et al. 2009), Likert type scales represent a forced choice format of questioning. Given the fixed and limited range of options provided, it is assumed that respondents would generally respond better to a wider range of meaningful choices. The question remains though, as to what can be regarded as an optimal number of response categories. It has previously been noted that the number of categories needs to be meaningful to respondents and not trivial. Properties of the response categories are explored in more detail here. It is acknowledged that having the items reviewed by experts (DeVellis 2003) and pretesting or piloting the questionnaire (Dillman, et al. 2009), will also facilitate the design of a questionnaire with meaningful response categories. However, this usually takes place towards the end of the design process, if it is given any purposeful and conscious attention at all. The focus of interest here is on a more considered design of the response categories themselves, while the questionnaire is being constructed.

It has already been established that having 20 or more response categories can be meaningful for the respondent (Andrews 1984), depending on the nature of the question items. It is therefore not simply a matter of simplistically setting predetermined limits on the minimum or maximum number of categories, but rather establishing what is required and how best to solicit an accurate and meaningful response, given the nature of the question that needs to be answered. However, items with different types of, and a different number of response categories are not responded to in the same way. This raises further issues about the type and number of response categories to use, as well as their numeric labelling.

Firstly, Rosch (1975) notes that numbers are not responded to equally, but that some (such as 1, 10, and 100) stand out as “cognitive reference points” and thereby draw a disproportionate share of responses. Rosch (1975) attributes this to rounding effects. It is further argued that these effects may be compounded if one of these reference points is also the largest numeric anchor, as Foddy (1994) cites evidence of a positive response bias towards the highest numeric value. On the other hand, there may also be a tendency for respondents to make finer discriminations closer to these reference anchors, and be less discerning when choosing responses that are further away from them (Tourangeau, Rips & Rasinski 2000). Yet other research indicates that some respondents have a tendency to select more extreme responses, partly as a result of their cultural or language background (Arce-Ferrer 2006; Arce-Ferrer & Ketherer 2003). That is, there is a higher frequency of responses at the upper and lower ends of the scale, regardless of the scale or item’s content. Hui and Triandis (1989) reported significant extreme response patterns when a five-point scale was used, whereas this pattern was negligible when a ten-point scale was used. The net result of these various effects is that there may be a disproportionate accumulation of responses at the positive extreme of a scale, particularly if the end-point is, for example, 10 or 100. It is evident that this could affect the linearity of the scale, skew the distribution of responses, and generally complicate statistical analysis and compromise results (See Arce-Ferrer 2006 for a more detailed discussion in this regard). From the perspective of scale granularity, higher levels of granularity would be more prone to the distortion effects of cognitive reference points, simply because respondents are given a wider range of alternatives.

A second issue related to the type and number of response categories is the use of a central or neutral category. There is much debate regarding how respondents react to the provision of a middle or neutral response option that is offered as part of the scale continuum. Foddy (1994) notes that Likert type scales have been prone to a central tendency error, implying that this may be exacerbated by the provision of a mid-point. However, he also cites evidence of the number of “uncertain”
responses declining as the number of categories increases, which could suggest that a neutral or mid-point position was being used as a fallback position when respondents did not recognise a category that matches their ideal or desired response. In investigating the inclusion of a middle alternative in a forced-choice attitude item, Schuman and Presser (1996) concluded that this alternative attracted about 10 to 20% of responses, but that this tended to affect both polar positions proportionately, so that the overall distribution of opinion was not unduly affected if the middle alternative was to be excluded. As a rule of thumb, Fink (1995) recommends using a neutral response only if it is a valid response. That is, it serves as a neutral or midpoint, or a valid “no opinion”/“don’t know” option that the researcher wishes to make available to respondents, but also recognising there is the risk that it may be used as an excuse for not answering the question. This also raises the possibility of including a “not applicable” option at the end of and separated from the list of response categories, either as an alternative to, or in addition to the neutral response (Dillman et al. 2009).

Thirdly, a related issue is the assignment of the number zero to the neutral position and by implication, the use of a numeric continuum that has negative and positive values. Dillman, et al. (2009) have cautioned the researcher to carefully evaluate the use and possible impact of numeric labels. In particular, in some cases the use of a zero and negative values can have negative connotations for respondents and has shown to affect their responses by, for example, not using these values in questions where they had to rate themselves. Similarly, Kubovy and Psotka (1976) reported a tendency of respondents to avoid the numbers zero and one, surmising that these values were not seen as random, and furthermore that the value zero was interpreted as meaning the complete absence of the characteristic being investigated. It is further argued here, that the familiarity of the scale granularity will determine how meaningful the response categories are to respondents, and hence their use of the various categories on the scale. In particular it is proposed that the metric system is well ingrained and therefore provides a useful framework for creating response categories. As Dawes (2008: 63) notes “many people are familiar with the notion of rating ‘out of 10’.” Cummins and Gullone (2000) are of the view that a decile scale is the most instinctive of formats and easy for people to relate to; having learnt to count as children by counting ten fingers or toes. A word of caution is required though, in recognising that there may be cultural differences (c.f. Huynh, Howell & Benet-Martinez 2009; Lee & Soutar 2010) in response to a decile scale, especially in countries where the metric system is not well embedded.

Table 1 provides a synopsis of the advantages and disadvantages of high versus low levels of scale granularity. Given the arguments presented above, it is therefore proposed that it is more than reasonable to design a questionnaire that makes use of a 21-point bipolar scale, ranging from a score of minus ten to score of plus ten, with a middle point score of zero for a neutral response. Such a scale will capitalise on the advantages of high levels of granularity as set out in Table 1. In addition, the use of the metric system in the design of the questionnaire should address some of the disadvantages that scales of high granularity typically display, by providing more familiar scale categories. Furthermore, as explained below, the use of a zero midpoint and positive and negative numbers for the scale is not arbitrary, but is aligned to the intent of the scale and the underlying concepts being measured. Concerns related to category redundancy (e.g. linguistic differentiation, complexity, cognitive ability, distortion and acquiescence) remain, but are to be examined through the hypothesis testing. In the next section the questionnaire that formed the basis of this study is described and the theoretical rationale for developing the 21-point scale is presented.

Table 1: Scale granularity advantages and disadvantages

<table>
<thead>
<tr>
<th>Granularity</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Quicker to answer.</td>
<td>Scale exhibits more bias.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respondents become frustrated if their option is not represented in the options made available.</td>
</tr>
<tr>
<td>High</td>
<td>More likely to have inclusive, exhaustive and mutually exclusive categories.</td>
<td>Linguistic differentiation of categories more complex.</td>
</tr>
<tr>
<td></td>
<td>More precise data.</td>
<td>More difficult to differentiate categories and to make a choice.</td>
</tr>
<tr>
<td></td>
<td>Higher reliability and validity.</td>
<td>Cognitive ability of respondents may hinder the proper use of the scale.</td>
</tr>
<tr>
<td></td>
<td>Increase score variance.</td>
<td>Respondents may become impatient.</td>
</tr>
<tr>
<td></td>
<td>More meaningful statistical results.</td>
<td>Categories may become trivial.</td>
</tr>
<tr>
<td></td>
<td>Fewer neutral and “uncertain” responses.</td>
<td>More prone to the distortion effects of cognitive reference points.</td>
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5. The scale

The literature on staff turnover and intention to quit has a long history, with Mobley and his associates (Mobley Horner & Hollingsworth 1978; Mobley Griffeth Hand & Meglino 1979; Mobley 1982a; 1982b) making a significant early contribution. The literature on staff retention has a more recent history. What is apparent when examining these two bodies of literature, is that while the concepts are closely related – and could be regarded as two sides of the same coin – the authors on staff turnover generally do not cite literature on staff retention, and vice versa. However, there are cases where the same factor is identified by both bodies of literature, albeit in different forms. See for example the factors related to the existence, or lack of staff support that contribute to retention or turnover, respectively (Hatton Emerson Rivers Mason Swarbrick Mason Kiernan Reeves & Alborz 2001; Riggs & Rantz 2001).

In the light of this observation, a questionnaire was designed to explore whether in fact employees would differentiate between turnover and retention variables as two distinct sets, or (as was anticipated) that a variable could be considered as contributing either to the employee’s intention to stay or leave, depending on its level or characteristic in the organisation. Questions were therefore stated neutrally to allow for both of these possibilities. This formed the second section of the questionnaire that is briefly described below, and is the focus of this paper.

The questionnaire that has been designed consists of 124 questions. The five sections of the questionnaire are: (1) a 19 item biographic section which gathered background information on the respondent; (2) 67 items on turnover and retention factors, where the respondents was asked to rate the importance of a wide range of internal push factors (perceived to increase their intention to leave their employer) and/or pull factors (perceived to increase their intention to stay on); (3) 22 items describing management factors where the respondent was asked to rate the perceived value of a number of possible management interventions aimed at retaining them; (4) seven items describing external factors that may influence their decision to leave the organisation, but were generally regarded as outside of the employer’s direct control and (5) nine items on intention to quit, where the respondents was asked to rate their likelihood of leaving in the near future.

6. Research hypotheses

To test the utility of the 21-point scale, the following hypotheses were generated:

Ho1: There are no significant differences in the frequency of use of the 21 response categories.

Ha1: There are significant differences in the frequency of use of the 21 response categories.

The idea that the 21 response categories are used with more or less equal frequency suggests that all of the response categories are useful to respondents. This notion is derived from Parducci’s range-frequency model. According to Parducci’s (1965, 1974, cited in Tourangeau, Rips & Rasinski 2000) model, it is assumed that respondents make use of the various response categories available with equal frequency, if they are evenly spaced. On the basis of this model it could then be assumed that an approximately uniform frequency distribution of responses could be expected across all response categories, or at least that all response categories would be used with regular frequency.

It should be noted that this assumption of a uniform distribution that underpins the range frequency model does not represent the natural distribution of a Likert scale. That is, the selection of response category for an item can be described as a dominant response process, which is more accurately represented by a cumulative model (Roberts et al. 1999). What this means is that for a positively worded item, there is an increased likelihood that the individual will agree with the statement rather than disagree. In contrast, negatively worded items are more likely to have lower levels of agreement than disagreement. By implication, there is therefore a higher probability that the null hypothesis will be rejected, simply because the response required is in the format of a Likert scale. This hypothesis was tested by making use of the Chi square test for independence.

The reasoning of the range-frequency model can be extended to scales of varying length. This extension would imply that it would be reasonable to assume that there would be no significant difference in the response patterns when different scale types and lengths are used. In other words, respondents are making regular use of the increased variety of response categories that are provided
in scales of higher granularity. In this study, this would suggest that even increasing the scale granularity to 21 categories has not led to redundancies or meaningless categories. This leads to the second hypothesis.

**Ho2:** There are no significant differences in the distribution of responses between two different scales (that the same set of respondents has used in response to a questionnaire).

**Ha2:** There are significant differences in the distribution of responses between two different scales.

To examine this hypotheses, responses to Section 2 of the questionnaire (which makes use of the 21-point scale), were compared to the responses to Section 3 of the questionnaire, which makes use of an 11-point scale, with values ranging from zero (meaning the item is “not important at all”) to ten (meaning the item is “extremely important”). The similarity in construction of the two scales is apparent, the main difference being the use of a negative set of response categories in the 21-point scale. This hypothesis is tested by making use of the Chi Square test of association, or a contingency table Chi square. Prior to testing this hypothesis, the comparative 11-point scale will be tested to see if the 11 response categories are used with equal frequency, and thereby can serve as a suitable comparative scale.

Finally, it is assumed that if the scale is useful to respondents, they would continue to use the range of response options throughout the questionnaire. That is, there would not be evidence of “fatigue” or acquiescence evident in a reduced range of options being used later in the 67-item section of the questionnaire, compared to earlier responses. This leads to the third hypothesis that is tested by making use of the Chi Square test of association:

**Ho3:** There are no significant differences in the variation of responses between the first and second halves of Section 2 of the questionnaire.

**Ha3:** There are significant differences in the variation of responses between the two halves.

7. Research procedure

Equivalent versions of the questionnaire were administered among employees in three different public sector organisations in South Africa, to create a usable combined data set from 178 respondents. The only differences between the three versions of the questionnaire were in the adaptation of some of the items of the biographic section’s response categories to suit the particular organisation context. Furthermore, due to a printing error in one of the versions, the last item of the section was omitted and so only 66 items appeared in the second section and not 67.

The data was captured in Microsoft Excel and various quality checks applied, including descriptive statistics (such as calculating minimum and maximum values), to check the accuracy and completeness of data capture. Further descriptive and inferential data analysis was conducted in Microsoft Excel following the guidelines of Remenyi, Onofrei and English (2010). The response categories used by respondents were firstly subjected to descriptive statistical analysis to examine the underlying response patterns. Thereafter, inferential statistics in the form of Chi-square tests were conducted to test the three hypotheses.

8. Results

As described above, Section 2 of the questionnaire was designed to measure respondent’s responses to neutrally stated items describing factors related to turnover or retention, and which were assessed by respondents in terms of their importance as push or pull factors affecting their intention to stay with or leave the organisation. This scale therefore combined two decisions, namely (1) deciding if the factor was a push or pull factor and then (2) deciding on the importance of the factor. Given the nature of these question items, the distribution of responses between positive (scores ranging from +1 to +10) and negative (scores ranging from -1 to -10) categories for all 67 items combined, was first examined, and is illustrated in Table 2. The results indicate a reasonable balance between positive (58.3%) and negative (31.8%) responses to warrant further analysis of respondent’s use of the full scale. The table also illustrates that the neutral response was not overused, reflecting just under 9% of all responses. The missing data category was also omitted from the Chi square analyses. Of the 127 blank or missing items, 40 were for the missing item 67 in one of the versions of
the questionnaire. The rest of the missing items seemed to be quite widely distributed across question items and respondents.

Excluding the missing values as a category, a uniform distribution would provide a mean percentage frequency of approximately 4.76% for each of the 21 categories. The results of the Chi square tests are summarised in Table 3. The results indicate that the first null hypothesis cannot be rejected, implying that the frequency distribution of responses amongst the 21 categories are sufficiently uniform.

Table 2: Frequencies of responses by aggregated category

<table>
<thead>
<tr>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Blank</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3788</td>
<td>1056</td>
<td>6955</td>
<td>127</td>
<td>11926</td>
</tr>
<tr>
<td>31.8</td>
<td>8.9</td>
<td>58.3</td>
<td>1.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3: Chi square results to test for uniformity of distribution

<table>
<thead>
<tr>
<th>Degrees of freedom</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance level</td>
<td>5%</td>
</tr>
<tr>
<td>Test calculated</td>
<td>25.8473</td>
</tr>
<tr>
<td>Critical value</td>
<td>31.41</td>
</tr>
<tr>
<td>Decision</td>
<td>As the Calculated Chi Square value is less than the Critical value, the null hypothesis cannot be rejected</td>
</tr>
</tbody>
</table>

The nature of this distribution was explored further using descriptive statistics. Table 4 illustrates the combined percentage frequencies for all 67 items for all 21 response categories. The table has been truncated and the remaining categories added below so that it can fit within the page width. In addition, the sequence of the positive categories (i.e. +1 to +10) has been reversed so as to facilitate comparison with the negative equivalents. The distribution of responses is further illustrated graphically in Figure 1.

The results indicate that all categories are being utilised reasonably often, the minimum frequency being for category -2 which was only used 2% of the time. It should be noted though, that this category is part of the negative set of categories that received a lower number of responses than the positive set of categories. It is further evident that some categories are used more frequently, notably the categories 0, -5 and +5, -8 and +8, and -10 and +10, suggesting that they may be serving as cognitive reference points (Rosch 1975). This is more clearly illustrated in Figure 2 which reflects the categories in absolute values. That is, category -1 is combined with category +1, -2 with +2, and so forth. The zero category and blank responses were omitted from this Figure. In addition, the results indicate that there is a trend of higher frequencies towards the extremes of the scale and lower frequencies towards the central point.

Table 4: Frequency of responses to all categories

<table>
<thead>
<tr>
<th>Category</th>
<th>-10</th>
<th>-9</th>
<th>-8</th>
<th>-7</th>
<th>-6</th>
<th>-5</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
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<td>363</td>
<td>411</td>
<td>298</td>
<td>340</td>
<td>422</td>
<td>285</td>
<td>263</td>
<td>234</td>
<td>249</td>
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<tr>
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<td>7.7</td>
<td>3.0</td>
<td>3.4</td>
<td>2.5</td>
<td>2.9</td>
<td>3.5</td>
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<td>2.2</td>
<td>2.0</td>
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<td>+9</td>
<td>+8</td>
<td>+7</td>
<td>+6</td>
<td>+5</td>
<td>+4</td>
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<td>+2</td>
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<td>642</td>
<td>942</td>
<td>812</td>
<td>819</td>
<td>1143</td>
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<td>482</td>
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<td>269</td>
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<tr>
<td>Percentage Frequency</td>
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<td>5.4</td>
<td>7.9</td>
<td>6.8</td>
<td>6.9</td>
<td>9.6</td>
<td>5.3</td>
<td>4.0</td>
<td>3.4</td>
<td>2.3</td>
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<tr>
<td>Percentage Frequency</td>
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<td>1.1</td>
<td>100.0</td>
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</tr>
</tbody>
</table>
Before testing the second hypothesis, where the 21 point scale is compared to an 11 point scale, the latter scale was tested for uniformity to assess if it was a suitable for comparative purposes. As the results displayed in Table 5 indicate, the distribution of responses to this scale was not sufficiently uniform. Consequently, the second hypothesis could not be tested. Figure 3 illustrates that all categories are not being utilised often enough and that there is a bias towards the midpoint and extremes, with the category “10” accounting for more than 20% of responses.

**Figure 1:** Distribution of percentage frequency responses for the 21 categories

**Figure 2:** Distribution of percentage frequency responses for absolute value categories
Table 5: Chi square results to test for uniformity of distribution of comparative scale

<table>
<thead>
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<th>Degrees of freedom</th>
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</thead>
<tbody>
<tr>
<td>Significance level</td>
<td>5%</td>
</tr>
<tr>
<td>Test calculated</td>
<td>38.8542</td>
</tr>
<tr>
<td>Critical value</td>
<td>18.31</td>
</tr>
<tr>
<td>Decision</td>
<td>As Calculated value is more than the Critical value, the null hypothesis can be rejected</td>
</tr>
</tbody>
</table>

Figure 3: Distribution of percentage frequency responses for the 11 categories of the comparative scale

The third hypothesis compared the variation in responses to the first half of Section 2 to the second half. The first 33 items were compared to the next 33. The last item was omitted from the comparison, given that it was not included as an item in one of the three sets of data that were combined. Table 6 displays the Chi square test results and indicates that the null hypothesis cannot be rejected, suggesting that the distribution of the frequency responses of the two halves are equivalent. Figure 4 provides a graphical illustration of the similarity of the distribution of the two halves.

Table 6: Chi square results of split halves comparison

<table>
<thead>
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<th>Degrees of freedom</th>
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<tr>
<td>Significance level</td>
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<td>Test calculated</td>
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<tr>
<td>Critical value</td>
<td>56.94</td>
</tr>
<tr>
<td>Decision</td>
<td>As the Calculated value is less than the Critical value, the null hypothesis cannot be rejected</td>
</tr>
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</table>
9. Discussion and conclusion

Two of the three hypotheses for this study were tested. The first hypothesis concluded that the null hypothesis cannot be rejected. This conclusion implied that the frequency distribution of responses amongst the 21 categories are sufficiently uniform, thereby conforming to the assumptions of Parducci’s range-frequency model and confirming the utility of the 21-category scale for respondents. Given that the scale is useful to respondents, it follows that the increased scale granularity should also benefit the researcher in the form of enhanced results in statistical analysis.

Unfortunately the second hypothesis could not be tested as the distribution of the comparative 11-point scale was not uniform. This was unfortunate, especially in the light of the evidence of possible cognitive reference points (Rosch 1975) in the 21-point scale. Further comparative research of scales making use of a different number of response categories is therefore required. A comparison of a 21-point and a 5-point or 7-point Likert scale would be particularly valuable.

In testing the third hypothesis, it was concluded that the null hypothesis cannot be rejected, implying that the two halves of the section of the questionnaire that was being investigated had equivalent distributions. Building on the results of the first hypothesis, this conclusion implies that respondents continued to use the full spectrum of responses throughout the Section and were not acquiescing or becoming “fatigued”, in spite of the length of the section (i.e. 67 items).

It can therefore be concluded that the 21-point scale was of value to respondents. Consequently, it also has benefits for the researcher by producing more accurate data that is also more suited to statistical analysis, given its increased variability. The result of this research challenges researchers to give more explicit attention to an aspect of questionnaire design that is often taken for granted, and to consider the merits and demerits of design alternatives, including the type of response options and the appropriate number of categories. In particular, researchers should pay more attention to the scale granularity that they use when designing a questionnaire, rather than simply applying conventional wisdom. Researchers should also consider more carefully their choice of scale in the light of the statistical analysis that is to be conducted.

When piloting a questionnaire, the views of respondents about the range of response options that were provided should be solicited to find out if they were comprehensive enough and exhaustive, or if the level of granularity was too high and therefore some response options were either not meaningful, or were too difficult for respondents to differentiate from other choices. More holistically emotional reactions can also be gauged to determine if respondents were frustrated or satisfied with the level of granularity in relation to the length of the questionnaire. Of course the granularity of these pilot results could also be statistically assessed in the same way that was demonstrated above when testing the first hypothesis.

Figure 4: Split half distribution of percentage frequency responses for the 21 categories
Finally, further research is required to assess the value of various levels of scale granularity in various types of questionnaires, and their application in various contexts. In particular, a limitation of this study was that it was only carried out in a South African public sector context. Other research suggests that gender, ethnicity and cultural background may affect an individual’s responses to question items (e.g. Arce-Ferrer 2006; Arce-Ferrer & Ketherer 2003; Huynh et al. 2009; Lee & Soutar 2010). Therefore, exploring responses across a range of levels of scale granularity could make a valuable contribution to cross-cultural research.

References


Inciting Advanced Levels of Practitioner Reflection Through Progressive Graphic Elicitation

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Abstract: Qualitative research routinely requires experienced practitioners in a given field to be interviewed, and there are a range of methods known to elicit dialogue. The method for elicitation presented in this paper, however, goes a stage further; it seeks not only to elicit dialogue but to provide subjects with additional knowledge, which they are encouraged to use as a lens for reflection on their own experience. Using a progressive series of related information graphics, accompanied by explanations, subjects are quickly taught a new topic and are asked to reflect on their own practice while the learning occurs. The research project is described to contextualise the elicitation method within the wider engagement. The approach was tested with a number of Information Technology (I.T.) specialists, each with extensive experience of encouraging users to participate in new I.T. environments. Subjects were provided with information graphics that incrementally increased their understanding of psychological theories related to attitude change, namely cognitive dissonance and the elaboration likelihood model. As their knowledge increased, they were guided to reflect on occasions where they had encountered phenomena related to such psychological theory, its effect and affiliated best practice. Overall, this approach was effective, with over 130,000 words of relevant, advanced discourse forthcoming. In this paper, the elicitation method, its affiliated epistemology, an overview of the project and the research methodology are presented, along with some early results.

Keywords: infographics, graphic elicitation, inter-disciplinary, inductive

1. Introduction

It is well understood that diagrams and other forms of imagery can assist communication and learning (for example, Nelson et al. 1976; Paivio 1971, 1986). Despite this, diagrams have seen relatively little use as stimuli in research interviews. Given the current trend of seeking out new imaginative approaches to stimuli (e.g. Allett 2010; Bragg and Buckingham 2008) this is surprising. Photographs have been commonly used, but diagrams have not (Crilly et al. 2006). The aim of presenting this method is to explore the ways in which knowledge elicitation can be improved. The interviewees for this research have significant experience, many years of practice and deeply tacit understanding, described as a ‘special form of experience-based expertise’ or ‘deep smarts’ (Leonard and Swap, 2005). When graphics have been used for elicitation during research interviews, the benefits have been apparent, they have proven to be: a) effective in eliciting dialogue and reaction from interview subjects (e.g. Woolner et al. 2009; Umoquit et al. 2008; Crilly et al. 2006; Törrönen 2002); b) intuitive and easily understood by respondents (Umoquit et al. 2008); c) able to invoke ‘contemplative verbal responses’ (Umoquit et al. 2008); and d) capable of focussing interviewee attention on the issues in question (Umoquit et al. 2008). The method presented in this paper takes the use of diagrams a stage further; first of all it employed a type of diagram known as an infographic (information graphic) and uses them in a progressive series to introduce the interviewee to a new topic. As the subjects gained new theoretical knowledge they were encouraged to use that perspective as a lens for reflecting on their own professional practice and experience. This method is situated within the wider methodology adopted and the research project is described for the purpose of contextualisation. Some results of the study to date are presented and conclusions are drawn.

2. Motivation

The aim of presenting this method is to explore the ways in which knowledge elicitation may be improved during the interview process within the context of this research project. This project itself arose from a determination to see the process by which new I.T. systems are introduced change, influenced by the social and cognitive psychologist’s understanding of attitude. Attitudes affect a person’s intentions, opinions and behaviours (e.g. Krosnick and Petty 1995; Petty, Haugtvedt, and Smith 1995) and attitudes related to new I.T. environments are no exception to this rule (e.g. Angst and Agarwal 2004; Zhang and Sun 2009; Kim et al. 2009). It is reasonable, therefore, to suggest that an advanced understanding of attitude change theory, as found in social and cognitive psychology, could improve the user acceptance of new I.T. systems. Research into this disciplinary intersection, although embryonic, has already been beneficial and has exposed significant empirical deficit (e.g. Bajaj and Nidumoli 1998; Angst and Agarwal 2004; Bhattacherjee and Sanford 2006; Shumarova and
Swatman 2006; Zhang and Sun 2009; Kim et al. 2009). This is a largely un-researched and relevant field that could yield substantial social and economic benefits.

Existing studies, with few exceptions, have been deductive and far from being policy driven, have intended to critique or demonstrate theory. Empirical work has generally revolved around case studies with an action research overtone. This paper does not seek to criticize such works on the contrary their contribution is invaluable. However, far from exposing just a few lacunae, previous work has instead shown the role of attitudes in I.T. acceptance to be an area of substantive empirical deficit. Accordingly, it is proposed here that a series of policy-driven inductive research projects are now merited. Such projects should propose investigations that are wide-ranging, focused on making a high level and relevant contribution that can support those responsible for introducing new I.T. environments. The project described in this paper, has such an inductive research approach. Whilst the method presented is a tool, which demonstrates an affective approach to gather meaningful data from high-level engagements.

3. Epistemology

This method is based on an epistemic assumption that significant understanding and best practice is found in the oral traditions of experienced and affective practitioners, and in this case those experienced in encouraging users to participate in new I.T. environments; an assumption reflected in the remuneration packages such people demand. The backdrop against which these highly paid experts sit is that of a public perception of the world of IT failure, where large costly projects are dropped after public spending has failed to deliver (Jones, 1995), yet large systems are successfully implemented demonstrated in patterns of complex global trade which deliver the trimmings of modern life.

Commercial and industrial sectors clearly respect systems integration experience and the wisdom of those with a history of successful delivery. With respect to attitude change psychology, although unfamiliar with specific theory, this study confirms that affective practitioners tend to be familiar with the phenomena that such theory seeks to explain. Most have encountered manifestations that have led to problems and/or have developed techniques for cultivating user attitudes. This paper presents an approach by which aspects of that learning can be reflected on, captured and reviewed, allowing best practice to be distributed and scholarly debate encouraged.

4. Research paradigm

This inter-disciplinary research area combines elements of computer science/engineering, psychology, sociology and information systems. Stereotypically, these areas are associated with different research paradigms and this merits a special mention. Although the research topic is inter-disciplinary, the research paradigm associated with the method is not, it lays clearly in the information systems tradition, in particular with the sociology of information systems.

As already stated in section 2, this approach arose from a determination to see I.T. acceptance influenced by the work of social and cognitive psychologists. Such work can nearly always be classed as positivist or, at the very least, alienable with a descendent of positivism such as behaviouralism or operationalism. However, this research is not psychology, the objective is not to contribute to a psychological conversation but to extract learning from such research that might positively influence the manner in which I.T. environments are introduced. Consider for example the causes of cognitive dissonance (discussed later), our intention is not to contribute to a debate about what the causes are, that would be psychology, the intention is instead to ‘stand of on the shoulders’ of psychologists to provide a viewpoint from which to consider I.T. implementations. Likewise, this work should be distanced from computer science and its related rationalist, technocratic and scientific paradigms (Eden 2007). As it happens, the focus is I.T. based systems, however the exact same method could equally be used to investigate the acceptance of other systems, such as regulatory frameworks or quality systems.

This approach is interpretive, and when implementing it the researcher in keeping with interpretive principles, should be aware of, but not confused by, other paradigms found in the papers that provide supporting evidence. This paper in no way seeks to be critical of these other paradigms; it is the output of such research that has brought knowledge to the level that calls for the approach outlined in this paper. The simple proposition is that another phase of research is merited, one that is interpretive and, perhaps most importantly, inductive.
With respect to the project for which this approach was developed, the active intention is to get into the everyday ‘grime’ of user acceptance, to mine the oral traditions of effective practitioners capturing ‘whatever they have to tell us’. There is no desire to be abstract, or clinical. Indeed, the researchers involved in this particular case are unashamedly practitioners of significant commercial and industrial experience.

As is often the case with interpretive research, this work does not seek to be explanatory but descriptive. A later reflection on how findings relate to the underpinning psychological theory could allow explanatory discussions to follow but this is not the objective. The intention is to consider how I.T. implementations might be beneficially influenced by attitude change psychology.

5. Infographics and their role in elicitation

Modelling our epistemology on the famous ‘four stages of competence model’ (often attributed to Maslow) and Kolb’s (1984) experimental learning theory, it could be said that affective practitioners have significant unconscious and conscious competence that causes them to recognise, understand and manage phenomena that affect user attitudes. This is concrete experience (Kolb 1984) that, although present, subjects may or may not have reflected on or conceptualised. If reflective observation (Kolb 1984) and abstract conceptualization (Kolb 1984) can be facilitated during an interview, such experience can then be verbalised, recorded and discussed. Such a process should also benefit the subjects’ understanding of their own practice.

![Figure 1: Diagrammatic representation of the four stages of competence model (Mackinnon 2007)](image)

This presents two fundamental challenges:

- Reflective observation and abstract conceptualization need to be facilitated during each interlocution;
- General reflective observation and abstract conceptualization is not sufficient, it must be from the perspective of a particular attitude change theory.

To achieve these goals, a progressive series of infographics are presented to the subjects. Infographics are diagrams (and other graphics) specifically developed to portray information. A famous example is the London Underground map. Infographics intend to provide simple access to just the information that people need for the time that they need it. Infographics need not be
memorable, educational, entertaining, artistic or impressive. In the London underground example, information is particularly fleeting and superficial, passengers ignore the great complexity of an underground rail system and extract from the graphic, just the information they need at that moment (e.g. which train on which platform). In this method, subjects are provided with a progressive series of infographics accompanied by explanations and guidance that incrementally built their understanding of the relevant theory, sufficient to invoke reflective observation and abstract conceptualization. Their understanding of the theory is neither deep and durable nor precise, but it is adequate. As the interview proceeds, new infographics supported by dialogue incrementally provide additional new knowledge. As subjects learn, they are encouraged to reflect on their practice; considering where related phenomena have occurred, their impact, cause and appropriate responses.

Figure 2: Diagrammatic representation of Kolb’s experimental learning theory (Kolb 1984, p21)

The attitude change theories used to test the approach, were Cognitive Dissonance (Festinger 1957) and a dual-mode processing theory known as the Elaboration Likelihood Model (Petty and Cacioppo 1986). For illustration purposes, the following section introduces cognitive dissonance and examples of the infographics used to explain it. As appropriate, it also includes further discussion about the usefulness of infographics.

6. Infographics and cognitive dissonance

An initial adequate understanding of cognitive dissonance can be achieved through the following infographic (figure 3) and accompanying simple explanation:

"Cognitive dissonance refers to any uncomfortable mental state that could cause attitudes or behaviours to change. For example, anger, disappointment, embarrassment, confusion, shock, moral dilemma and so forth. It is a generic term for uncomfortable cognitive experiences that cause one to reconsider. As an example, consider a parent who discovers that an activity is hurting their child. According to the diagram, the parent starts in the green area, their thoughts are consistent and they are comfortable, when they discover that ‘sugar for breakfast’ is harming their child, they enter the red uncomfortable area, one way out of this red area is to change their attitude toward ‘sugar’ (move into the red square box), if they then change their behaviour and stop given their child ‘sugar for breakfast’, comfortable (green) cognitive consistency is restored."

Crilly et al. (2006) warned that when using diagrams, responses might differ dependent on how subjects relate to them, to avoid this they suggest that users should comment on what the diagram means to them at the outset. In this scenario however, the diagrams are not the heart of the stimuli,
they are designed to invoke an understanding that is the stimuli. Accordingly, extensive discussion of the diagram is not appropriate as it would be focused on the psychology, these infographics play an almost pedagogic role and as subjects learn the interviewer needs to guide their understanding, clarifying points and providing more information as required.

**Figure 3:** Infographic used to introduce the concept of cognitive dissonance

By way of example, figure 4 is the infographic used for the ‘causes of dissonance’. It intends to present only the summative information. To understand its degree of saliency, the reader is encouraged to read a review of cognitive dissonance’s evolution, such as Harmon-Jones and Harmon-Jones (2007). For illustration purposes, a few points from this paper are summarised and critiqued in the following paragraphs.

At its most basic, cognitive dissonance theory proposes that people are inclined to change behaviours and attitudes to ensure consistency with beliefs, values and perceptions. Failure to acknowledge this consistency of perception causes dissonance, Festinger, and some of those who followed him, actually created formulae to define its impact and scale (e.g. Sakai 1999). The greater the dissonance the greater the motivation to resolve it and the probability of change, likewise in a dissonance situation, change usually involves weaker attitudes giving way to stronger attitudes. Since the late 1960s, researchers have attempted to understand what motivates dissonance, and three dominant revisions have been proposed with supporting evidence (Harmon-Jones and Harmon-Jones 2007) namely, Self Consistency Theory (Aronson 1968, 1999), Self-affirmation theory (Steel 1988) and a ‘new look at dissonance’ sometimes called aversive consequences (Cooper and Fazio 1984):

- **Self Consistency Theory** proposes that the self concept (or a violation thereof) is the primary cause of dissonance; people suffer dissonance if they compromise their own self image.

- **Self Affirmation theory** proposes that people uphold a set of values and thus maintain an overall self image. Simon et al. (1995) performed significant interpretive work and found that when suffering dissonance, if subjects confirm a value (any value, relevant or otherwise) then attitude change does not occur, they are effectively distracted from the dissonance and its affect is subdued. The Self Affirmation premise is that dissonance is caused by the disruption of the holistic self-image, if something then confirms the self-image (anything) consistency is restored.

- A **new look at dissonance** was published after Cooper and Fazio (1984) repeated some of Festinger’s original experiments and concluded that dissonance is invoked when a subject feels responsible for possible aversive consequences. When people are paid substantially to tell a lie,
they avoid dissonance because the perpetrator of the bribe is the originator but, when the pay is low, the subject has no one else to blame and becomes dissonant.

**Causes of Dissonance**

- Feeling **Responsible** for possible *negative outcomes*
- Compromised **Self Standards**
- **Self Image**
- **Self Perception**
- Or ..
- a **damaged ego**
- **Disappointment**
- (and other emotions)
- A **Tough choice**
  - will change attitudes as people assure themselves they **did the right thing**
- A **Simple choice**
  - means no dissonance but no attitude change

The harder something is to attain, the more it is **Valued**

A **tough initiation** causes us to:

Value the result .. or .. to give up trying

**Figure 4:** Infographic that aids discussions about the causes of cognitive dissonance

In an early experiment (Aronson and Mills 1959), women underwent a severe or mild initiation to join a group and the severe initiation subjects were subsequently found to value group membership more. The discomfort of the initiation had invoked dissonance which formed their attitudes. This is a notion that is now well established and employed for various purposes (e.g. Beauvois and Joule 1996 Axsom and Cooper 1985; Draycott and Dabbs 1998; Wicklund and Brehm 1976) an extreme witness to this would be gang initiations.

In another example, Festinger and Carlsmith (1959) paid people to lie, claiming that a tedious task was interesting. When the fee was high, people did not experience dissonance (they did it for the money and felt fine), but when the fee was low there was significant dissonance. Unable to justify their lies, their attitudes about the job changed and the proclamations thus ceased to be lies and
became genuine representations of belief. This can all be aligned with Brehm’s (1956) findings that cognitive dissonance is greater when a choice is hard. It stands to reason: if multiple options appeal then choosing can be difficult, conversely, if given the choice between something pleasant and something horrible, the choice is simple.

The intention behind the preceding section was to provide some idea of the complexity of the ‘causes of dissonance conversation’. The other two streams investigated were equally complex. The infographics serve to protect subjects from such debates providing only the information they need in a clear and accessible form. If individual interviewees require additional information it is then provided by the interviewer as required through the ongoing dialogue.

One might suggest that figure 4 appears amateur and simple. It contains minimal text enhanced with simple colours and typography. Such suggestion would not be received negatively but as support that the objective has been achieved. To quote Keyes (1993 p1): “When we’re confronted with a page of solid, undifferentiated text, what do we do? We use a colored highlighter. In highlighting, we create visual landmarks. We mark key points that we want to remember and refer to, that help us mentally follow the structure of the information”. In any reasonable communicative document, information comes in levels (Keyes 1993), the infographic only provides the highest levels in a comfortable form, and the interviewer as required then provides additional layers.

This section has presented the notion of the infographic as a means to elicit advanced dialogue from expert practitioners. The next section will describe the context of the research in which this method was deployed.

7. Research methodology

This research project has been carried out in a three stages, an initial investigation which included reviewing significant literature, and initiating two interviews to familiarise the researcher with the interview process and with the use of the infographics. The second phase tested the infographics as a data collection method over four interviews in the final data gathering phase a further nine interviews were undertaken.

In the first instance it was essential to devise a way by which experts could be identified. As previously stated in section 3, this research is based on an epistemic assumption that significant understanding and best practice is found in the knowledge and oral traditions of experienced and effective practitioners. A criteria for selection thus emerged, by which those with relevant experience and expertise might be identified as suitable subjects, a criteria that identified the ‘expert’.

Hoffman et al. (2002) surveyed definitions of ‘experts’ proposing a return to craft guilds terminology. It is a significant observation that failing to find clear definitions of ‘experts’ in modern literature they opted to revive a taxonomy based in the Middle Ages. Accordingly, Hoffman et al. presented a taxonomy with seven respective categories: naivette; novice; initiate; apprentice; journeyman; expert; and master. At one end of this comprehensive spectrum is the naivette “who is totally ignorant of a domain” (p. 132) with masters being those who are the expert in a sub domain, “whose judgements set the regulations, standards or ideals” (p. 132). However, most relevant is their definition of an expert:

“The distinguished or brilliant journeyman, highly regarded by peers, whose judgements are uncommonly accurate and reliable, whose performance shows consummate skill and economy of effort, and who can deal effectively with rare or “tough” cases. Also expert is one who has special skills or knowledge derived from extensive experience with sub domains” (p, 132)

Avoiding an extended etymological debate, this definition provides a basis from which a selection criterion can be defined. In this research, the following attributes were used to define ‘experts’:

- Experts are highly regarded by their peer group and are referred to using distinguishing terminology such as ‘leader’, ‘expert’, ‘best’ or ‘strongest’;
- Their practitioner experience is in excess of ten years;
- They have played a lead role in the introduction and implementation of at least three major systems and have participated in many more;
Each has a proven track record of dealing affectively with ‘tough’ examples.

It should be noted that most subjects satisfied these minimum criteria several times over. Four candidates comfortably met the Hoffman et al. (2002) definition of a master and all but three candidates struggled even to estimate the number of implementations they had participated in.

A second criterion for selection related to the sector in which a subject’s experience predominately lay. Eight of the candidates only had experience of a single sector; two more predominantly resided in a single sector with perhaps a single project excursion into other sectors. The rest had experience across three or more sectors. To prevent an unbalanced focus, no two subjects had gained the predominate part of their practitioner experience in the same organisation and no more than three candidates were selected from any single sector. Specifically, three candidates were selected from health and logistics; two interviewees represented financial services and one interviewee represented the other sectors.

Eliciting expert knowledge although difficult (Kidd, 1987), is a proven empirical technique exploited in a wide range of applications and disciplines (Hoffman et al. 2002). With respect to the role of attitude change in user acceptance however, this research represents the first study of its kind. With the criteria for selection defined, the next section discusses the number of candidates interviewed and the size of the transcription corpus created.

7.1 Number of interviews conducted

Estimating the correct number of purposively sampled subjects is known to be problematic (e.g. Guest et al 2006; Onwuegbuzie & Leech 2007), general guidance is that data gathering should continue until a point of saturation has been reached (Onwuegbuzie & Leech 2007). Guest et al. (2006) reviewed the use of the commonly used term “theoretical saturation” in literature, finding this routinely proposed as a milestone for selecting a sample size. However, Guest et al. also observed that the same literature “did a poor job of operationalizing the concept of saturation, providing no description of how saturation might be determined and no practical guidelines for estimating sample sizes for purposively sampled interviews” (p.60). They go on to review work where the ‘number of interviews’ is suggested exposing an erratic set of figures. Although it can be observed from Guest et al. that many papers suggest small numbers often to be adequate (perhaps only 5 or 6 participants), ultimately it has to be concluded that no one can say how many interviews are enough.

In this research, the interviews were relatively long (about 90 minutes) and being conducted ‘expert to expert’ they were intensive and productive. Accordingly it was predicted at the outset that saturation might be reached quickly. Although no figure was put on this, 19 potential subjects were originally identified, of which 15 were interviewed. On reflection, it is apparent that just the eight strongest interviews would have been sufficient, but it took all of the interviews to identify those eight. Strictly speaking, the final three also need not have taken place as no new major themes emerged, however they served as assurances that saturation had occurred and provided additional supporting examples. Accordingly at 15 interviews a decision was taken not to seek out any more candidates.

7.2 Conducting the interviews

Each interview began with a confidentiality statement, which explained that no information would be made public that might enable the subject, their affiliated organisations or other people involved to be identified, they might be quoted in journals and conference papers but not in an attributable manner. It was further expressed that no copies would be made of interview recordings or transcripts and that they would be made available to no one but the interviewer, and selected participating academics. Any deviation from this agreement would require the subject’s express written permission.

Given the nature of the organisations involved this guarantee of confidentiality was necessary for a significant ‘warts and all’ corpus of information to be gathered. As most subjects were employed by large commercial organisations with ‘public relations departments’ accounts that were not guaranteed anonymous would be significantly sanitised and virtually impossible to attain.

The interviews were recorded for subsequent transcription with consent for the recording to take place being obtained. The interviewees were offered breaks during the process, as after the pilot interviews it was apparent that the process was tiring for both the interviewee and the interviewer. The location
for the interviews was decided upon at the interviewee’s discretion to aid in creating conducive ambiance, a feeling of comfort, to reduce formality and with an eye to their convenience. For those interviewees who were in the workplace it was important that taking part in the interview was not intrusive and made a minimal impact on their working day. After the interview in some cases (where it was thought to be useful) permission was sought to re-approach the interviewee to take reflections on the findings of the research.

From the perspective of the interviewer awareness of good interview techniques such as; active listening, observation, appropriate language, awareness of the comfort of the interviewee were researched prior to entering the field.

7.3 Using the infographics

With a basic understanding established through discussing the theoretical lens to be applied aided by the infographics, subjects were then encouraged to reflect on their experiences of cognitive dissonance among users, its cause, affect, appropriate responses, management and so forth. The focus for the interviewee was on real experience and not imagined scenarios, as this is understood to produce more accurate and reliable information (e.g. Ericsson and Simon 1993; Cote et al. 2005). Questions were presented in a manner that built a beneficial peer relationship with the subject, respecting their knowledge and experience (e.g. Mishler 1986). As the infographic provided only an introductory understanding, an iterative process was required that revealed other aspects of theory through dialogue, relative to the subject’s examples. This also served to avoid potentially distracting confusion about ‘psychology’.

With a fundamental understanding of cognitive dissonance established in the first instance, more advanced theory was introduced focused on three themes, namely dissonance in a group context, it’s cause and the affect of current activity on the process. Once again, although such theory is complex, subjects only required an understanding adequate at a level to enable reflection; which was provided by additional infographics presented and explained in the same manner as before. These later infographics were particularly simplistic, effectively just text that incorporated illustrative typography. The same process was then undertaken for the second theoretical construct, which was the elaboration likelihood model, further discussion of this construct is outside the boundary of this paper.

All of the infographics used, were held in a laminated file and presented to the interviewees at the appropriate point in the interview. They were available to subjects throughout the interview to act as information reference points when required. The ‘file’ also kept things tidy and portable allowing interviews to occur at the time and place of the subjects choosing, which is significant given the importance of interviewee comfort discussed above (e.g. Hair et al. 2000; Babbie 1998).

8. Results

Results largely confirmed initial optimism to be founded. All subjects were practitioners with extensive experience of encouraging users to participate in I.T. Elements of this approach (a single infographic) were initially tested on two subjects, one with over 40 years experience and another with 20. Four complete interlocutions were then performed as a pilot stage, three with women who each had 10 to 15 years of experience and a man, recently retired with over 40. In all 15 interviews were undertaken and the table below indicates the significance of the corpus of data gathered. The table, which is not in chronological order, describes the data in terms of the word count of transcribed data per interview and the time taken for the data to be gathered. The interviewees were asked how many organisations they had worked for, and their experience in the field of user acceptance. Interestingly the number of different largely blue-chip organisations that were referred to was over 100 with over 150 separate projects being subject to expert reflection by the interviewees.

The main objective of encouraging practitioners to reflect while learning was certainly achieved, subjects often paused, clarified and questioned the psychological theories, appeared deep in thought then recalled relevant scenarios. Covering seven infographics, the complete interlocutions each lasted for an average of 90 minutes. In some cases, infographics elicited nothing, with subjects simply saying that they couldn’t contribute, out of the four full pilot interlocutions, only one subject provided discourse for all seven infographics, one was unable to do so for two infographics and the remaining two both failed to contribute for one infographic each. From the pilot, however, there was no single problematic infographic. Subjects failed to respond to different ones and, in all cases, subjects
understood the theory being explained but were just unable to recall a circumstance where they had seen it. Without prompting, three subjects made positive comments about the infographics themselves, all subjects focused on them, flipped between them and in one case, sat stroking them while deep in thought. The graphics also clearly assisted in keeping subjects ‘on topic’, which can sometimes be a problem (e.g. Oropeza-Escobar 2007). The knowledge elicited was also excellent. Two candidates, for example, described in detail scenarios where dissonance was so severe that it led to resignations, another subject revealed they had affectively made a career out of avoiding dissonance when introducing IT systems to northern unionised industry and described the best practice that underpinned their success. This pilot phase gave confidence that the infographics were useful and contributed to the interview process and the decision was made to continue with their use for the remaining interviews.

Table 1: Key aspects of the research data

<table>
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<tr>
<th>Interview</th>
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<th>Interview length (Minutes)</th>
<th>Organisations worked for (full time)</th>
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</tr>
</tbody>
</table>

Although subjects claimed to have personally benefitted from participating, the process was clearly tiring. The first full interlocution was stopped for a comfort break after 37 minutes (less than half way through), and despite an intention to continue it was decided that to maintain focus it should be postponed to another day. This had unexpected benefits, providing space to reflect on the topic between discussions. In later interlocutions where subjects chose not to break, they clearly started to ‘slow down’ towards the end.

Two older subjects, displayed personas that support our epistemic assumptions. One was passionate, almost angry that his experience was now going to waste and appeared frustrated by a culture that dismissed qualitative experience and was over focused on technical competence and dry technical manuals. Although off-topic, the following statement captures this persona:

“the only thing that really fucking matters, is deciding what the machine will do and what the people will do, and that determines the interaction. This determines what communication will take place and when, it all comes from that one thing”

The elder subject involved in the full interlocution was clearly moved by the experience; he had originally been unsure that he would have anything to contribute. While driving the interviewer home (from his very large house in his prestige car) he appeared deep in thought and expressed surprise at the level of contribution he had made, it made him realise how affective a practitioner he had been.

Another observation is that subjects didn’t automatically differentiate between I.T. systems and other systems. One, for example, spoke about enforcing the use of cycle helmets on industrial plants. Although such tangents were discouraged, they support the proposition that this method could be re-applied to the acceptance of other environments, such as health and safety systems. Although such tangents are not explored here, it would be interesting to see how results between such potential future investigations compared.
As an inter-disciplinary investigation, the subject of contrasting paradigms couldn’t be avoided. Three subjects without prompting said they had never encountered this type of research, one of whom (a certified engineer and PhD chemist) openly questioned its validity, although she also admitted prejudice towards all qualitative research. The same three subjects however, with alacrity agreed this research would be beneficial with significant real world application, they simply found it ‘alien’. Perhaps such responses are a burden that inductive, interpretive, inter-disciplinary researchers will simply have to live with.

The initial data analysis was conducted employing a thematically driven approach, which in these early stages are already producing interesting results. The knowledge gained will be used to suggest improved implementation strategies alongside understanding more fully the manner in which experts may more readily share what they know.

9. Conclusion

This paper has presented an approach to augmenting the efficacy of interviewing as a technique for data collection. Asking experts to reflect on their considerable experience aided by a ‘new to them’ theoretical perspective has yielded interesting and substantive results. Whilst this particular research project focused on knowledge elicitation from the world of information systems implementation the intention is to assess its applicability to other complex domains such as logistics, health and safety, and health. When dealing with experts the embedded and tacit nature of the processes by which they arrive at answers and make decisions is often difficult to understand, with this research accessing this rich source of knowledge becomes a possibility.

References


Researching Sustainable Development of the Rural Poor in India

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Abstract: This paper examines the methodology undertaken by one PhD researcher in a rural Indian context. The research built an in-depth understanding of how to deliver an improvement in the sustainable development of local rural Indian villages. The sustainable development projects are developed and implemented by Non-Governmental Organisations (NGOs) but are part funded through the corporate responsibility programme of a multinational Bank. The research focused on the processes used in the projects, how they were implemented and the outcomes achieved. The research is unusual in management research, in that it takes a stakeholder perspective rather than the more customary corporate perspective. Consequently the focus is on understanding the processes, implementation and outcomes from the perspective of three groups of stakeholders. The three groups are the Bank, the NGOs and the villagers who are the end recipients of the projects. This paper does not explore the outcomes of this research but rather describes the research methodology undertaken to effectively execute the research. The research methodology chosen was that of case study with an interpretivist stance. Whilst case study can be an umbrella term for multiple data collection tools, there was a focus on collecting data via discussion and observation, in line with the interpretivist paradigm. To achieve the required level of discussion and observation was facilitated by undertaking an ethnographically-styled approach. This ethnographic-styled approach included the researcher spending time living in the Indian villages with respondents to understand the outcomes of the sustainable development projects which had been undertaken from their perspective. The data gathering processes include structured, semi-structured and in-depth interviews across the three primary stakeholder groups of respondents. Other data gathering included observation, documentation, artefacts, video and photographs. In summary this paper provides an insight into a method for undertaking research in a local rural developing country context. It particularly focuses on taking a stakeholder perspective to corporate interventions in a community, rather than the more usual company focused approach. It further contributes to the development of appropriate methodology for contexts where the researcher is from a different cultural and linguistic background to the respondents.

Keywords: interpretivist case study; language barriers in research; video research; research in a developing country; ethnographic-styled approach

1. Background to research

Corporate scandals have caused people to question of the role of business in society and the obligations and responsibilities that this encompasses (Boele et al., 2001; Zadek, 2002; Maak, 2007). Companies worldwide are being held to account for their actions, by a variety of stakeholders. However, there is no agreed understanding of what these roles and responsibilities are. There is no agreed definition or indeed any agreed term to use (e.g. Corporate Social Responsibility, Corporate Citizenship, and so on). The uptake of corporate responsibility within the world’s largest companies has however increased, if measured against the number of reports published by companies now compared to fifty years ago (Wood, 2010).

Underlying corporate responsibility is Stakeholder Theory and the competing Shareholder Theory of the firm. The first says, in effect, that all people or groups which can affect or are affected by the company have a stake in the firm (Freeman, 1984), the second says that the responsibility of a company is to ensure maximizing (legal) profits for the shareholders (Friedman, 1970).

The reasons a company may adopt corporate responsibility are diverse. For example, companies can promote corporate responsibility for their own benefit (Friedman, 1970), or to enhance firm profitability, based on a resource-based view (Russo and Fouts, 1997) or from a strategic perspective (McWilliams and Siegel, 2001). Alternatively a company may adopt corporate responsibility practices for moral or ethical reasons that characterize effective leaders (Daft, 2007). Whatever the reason, it can be assumed that the company would want to undertake their corporate responsibilities so that they do not cause harm to the company and / or the stakeholder. In this respect the thesis does not explore the business case for corporate responsibility but assumes that, for those who wish to follow a stakeholder approach, they would want to aim at a successful approach.
The purpose of the thesis is to inform stakeholder theory, particularly in the field of community stakeholders, specifically poor rural communities in developing countries. The aim is to examine what role companies can take in breaking the cycle of poverty in these communities and to view this from the stakeholder perspective. The stakeholder perspective is under-explored in the management literature (Laplume et al., 2008). Indeed communities in general, Non Government Organisations (NGOs), and other end recipients in this stakeholder category have had little published in the top management journals (Bamberger and Pratt, 2010; Bruton, 2010). However, communities are becoming one of the most relevant to many large companies. Some companies are ‘globalizing’ and spreading their footprint into developing countries directly, and others are outsourcing to developing countries with their supply chain and therefore have an impact on these communities. Indeed, rural communities are a source of employment for many industries. As a stakeholder perspective is to be taken, the views of the NGOs and the end recipients in the rural villages will be explored to assess the plausibility of the success of the company initiatives. The thesis shows that from the perspective of the villagers, poverty is not just lack of money and income. Poverty encompasses a range of social factors which are described as well-being and its converse, ill-being (Chambers, 1983; Sen, 1985).

Breaking the cycle of poverty is an intended outcome of sustainable development. There have been two special issues of the Journal of Management Education on sustainability (2003 and 2009) but both focused on environmental issues. The Academy of Management Learning and Education also published a special issue in 2010 on the issue of sustainability, but again the focus was on the environment. The focus of the thesis is on one aspect of corporate responsibility and sustainable development – the social aspect; whilst observing the effects on the economy and environment only as they are impacted by the social element. The social element is further limited to corporate interactions with communities in the realm of the social part of sustainable development, rather than from a philanthropic approach or how a company impacts the community. Brower (2011) explores the social side of sustainable development in a developing country context but from the perspective of how to develop appropriate training for students in this subject. Boutilier (2007) also looked at the corporate role in community development, specifically focusing on social capital in firm-stakeholder networks. However Boutilier (2007) makes the assumption that companies can deliver social capital in communities and that they are already good at it. Further, that the only aspect which a company should explore before commencing community development work, is what networks of social capital already exist within a community, in order to then apply appropriate strategies. The thesis shows that there are many aspects to community development and social capital is only one of them. Social capital is viewed as a process and an outcome, and there are multiple ways that it can be developed (Shortall, 2008). Maak (2007 quoting Andriof and Waddock, 2002) suggest that “in an era of networked stakeholder relationships, understanding social capital is essential to learning how to construct and maintain corporation-stakeholder connections.”

As many rural communities are living in poverty and there is little written in the management literature about them, it is pertinent to explore a different literature to uncover where lessons can be learnt. Eisenhardt (1989) suggests that drawing together two different literatures is one way of building theory. One field of academic which has been working on poverty issues for many years is social sociology. Indeed it has been a topic of debate in international, political and public arenas for centuries. However, breaking the cycle of poverty has not been achieved. Since the 1980’s it has been absorbed in the debate on sustainable development. Therefore, the thesis draws on the theory and practice of sustainable development in developing countries to explore what lessons have been learnt from that field. From this research, questions on how sustainable development is implemented by NGOs in rural India are explored. This fieldwork then informs the debate on stakeholder theory with communities.

The methodology undertaken is qualitative and as Birkinshaw et al. (2011) remind us, this is at the heart of International Business research even if quantitative methods are the current favourite. For the individuals in these communities, and the communities as a whole, the improvement explored is their empowerment to be able to take control of future development. Empowerment is alternatively referred to as social capital.

Through an exploration of the literature, the following research question was proposed:

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1 NGOs are defined by the World Bank as “private organizations that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development” World Bank Operational Directive 14.70
How can NGOs make social interventions leading to sustainable development in rural communities? The effectiveness of the interventions of two NGOs were isolated and assessed by the levels of social capital (as a proxy from empowerment) within the individuals as well as the overall economic, environmental and social outcomes for the village.

This paper explores the methodology required to effectively answer these questions rather than seeking to answer the questions themselves. The results of the research are the subject of further papers.

2. Addressing the research question – what data are required and from whom?

In this thesis the research questions explored practical constructs. The focus was on processes, how these processes were implemented, and the outcomes. The research went beyond the traditional view of corporate responsibility research, in which perceptions are viewed from a company perspective alone (Bamberger and Pratt, 2010), and took a stakeholder perspective. Taking a stakeholder perspective can cover the views of a broad range of people, and groups of people who effect or are affected by the organisation (Freeman, 1984). This research focused on three primary stakeholder groups. These were:

- The NGOs who develop and implement the processes for undertaking sustainable development – There were two NGOs, referred to as NGO1 and NGO2;
- The organisations who provide the resources for the interventions – the Bank; and,
- The end recipients, that is, the villagers in the communities being helped towards sustainable development.

In line with the interpretivist stance of the researcher, the research focused on the perceptions of individuals, relating to the process, implementation and outcomes within each stakeholder group to create an in-depth understanding of the key dimensions involved in answering the research questions. To gain an understanding of peoples’ perceptions it was necessary to use a methodology that elicited respondents’ inner thoughts and feelings. These cannot be observed directly. The data gathering method selected to access these phenomena is discussion. The specific methods of discussion, or data collection, are addressed in section 4. However, it is important to note here that because discussion tends to involve words rather than numbers, although not exclusively (Bryman, 2008: 366), in broad terms the researcher followed a qualitative methodology.

Carr (1967) and O’Brien et al. (2004) suggest that only through comprehension of past context and events is it possible to fully understand the current situation. However, the use of current discussions to elicit past information concerning the earlier situations and events is subject to people’s inner psychological processes, and accounts will differ. These differences in perceptions add to the richness of description surrounding events (Geertz, 1973).

It was also judged by the researcher that understanding the concepts of sustainable development – particularly the environmental and social aspects, would require direct observation. The use of observation also falls within the qualitative research approach taken.

3. Case study research

Following these criteria, this research was judged to be appropriate for case study research. Specifically, in relation to the collection of data through discussion and observation, case study does not restrict the researcher to a specific set of tools. Yin (2009) indicates that the main tools for data collection are interviews, participant-observation, documentation, archival records, direct observation and physical artefacts. There is no limitation to whether qualitative or quantitative tools are used in this process (Bryman, 2008). Bryman goes further and says that this can allow the researcher to access ‘different levels of reality’ and that the practical and flexible nature of case study is also an advantage of this methodology. In this research, these characteristics of case study methodology facilitated the use of discussion and observation at the different stakeholder levels. Tesch (1990) suggests that research approaches such as ethnography, participant observation and action research can all be adopted within the case study strategy. These examples suggest that it is acceptable in case study research to embrace techniques from other methodologies to collect different forms of discussion and observation as appropriate to the context, specifically, the ethnographic-styled approach for the discussions and observations at an NGO and community level. Whilst case study
research is generally classed as qualitative, it can take on a variety of qualitative and quantitative tools for data collection. However, case studies can be undertaken under a positivist (Yin 1984, 2009) or interpretivist (Stake 2005, 2006) paradigm. Stake (2005: 443) suggests that undertaking a case study is not a methodological choice as such; it is more of an umbrella term for a theoretical perspective that can incorporate qualitative, quantitative or mixed methods. However, the important choice that needs to be made, according to Stake, is about what to study. This concept of what to study is, in the terms of Stake, the ‘quintain’\(^2\). The quintain is then researched by identifying cases which reveal information about the quintain. That is, the ‘case’ itself should be the vehicle for researching the quintain, rather than a mere setting or location in which the research happens (Stake, 2005; Bryman, 2008: 54). Additionally, the case is bounded within its context (situational, social and political) hence not dealt with in isolation. Finally, the activities undertaken through the case study require close attention. In summary, a case study, according to Stake (2005), is the research of a specific and ‘bounded system’ within an unique context, that is studied through a variety of methods, as appropriate, to understanding the quintain. The variety of methods available, infers that discussion and observation can be used as different forms of data collection, if appropriate for the context.

In contrast to Stake, Yin (2009) views case study as a method, to be used in the circumstances of certain research questions which pose a ‘how’ or ‘why’ question about a “contemporary set of events, over which the investigator has little or no control” (Yin, 2009: 13). Also, Yin suggests that the case study, as opposed to other methodological strategies, “copes with the technically distinctive situation in which there will be many more variables than data points”. This leads him to methodological approaches such as ‘triangulation’ through multiple sources of data converging, and starting from a theoretical conjecture. Only at this point does Yin suggest that, during the planning stage, the researcher should look for which case to study. Which case to study will, according to Yin, be integrally related to the unit of analysis. He also suggests that the researcher should try to stay more detached from the case.

Yin, who is well known for his writings about case studies (e.g. Yin, 1984; , 2009), is recognised as adopting some of the broad approaches of the positivist paradigm. However, Stake (2005) as revealed above, takes a more interpretivist view on such issues and allows for the researcher to be more involved (Easterby-Smith et al., 2002: 57). The primary difference is in the philosophical approaches to the process of how the data is collected and analysed. Following the arguments of Stake, an empathic, flexible approach can be used to develop depth of understanding of the quintain. This will facilitate understanding the processes and outcomes from the perspectives of individuals and groups of individuals (or the stakeholder groups). Yin (2009) on the other hand, develops understanding through methodological techniques such as replication and logical models which may create barriers to in-depth interpretivist understanding.

In summary the aim of the research was to inform theory from in-depth information about ‘the processes and outcomes of sustainable development at a local level’ (the quintain), as delivered by NGOs (the cases) from the perspectives of the stakeholders involved. The observation of events was judged to be critical to the researcher’s understanding of the processes involved. Consequently, fieldwork in-situ was required to obtain this level of observation. This led to an ethnographical-styled approach to the collection of data at the village and NGO level.

4. Data collection

Prolonged periods of in-situ fieldwork were undertaken in rural villages of Dinapur, Nandgaon, Wahigaon and Sevapur\(^3\) between March 2007 and December 2009 where the results of the interventions were studied.

Bernstein (1983: 135) argues that ‘there is no determinate method for acquiring or pursuing this art [of understanding] in the sense of explicit rules to be followed’. Bernstein suggests that there are several schools of thought within the interpretivist tradition; Stake (1995) and Geertz (1973) take a more ‘artistic’ approach to interpretation compared to Miles and Huberman (1984) and Strauss and Corbin (1997) who emphasis a more procedural approach. The procedures emphasise validity, relevance

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\(^2\) Stake (2006: 6) defines a quintain as “an object or phenomenon or condition to be studied – a target, but not a bull’s eye” He goes on to suggest that “For multicase study… we have needed a word representing the collective target…This quintain is the area or holding company or umbrella for the cases we will study. The word needs to be generic. Neither “program” nor “phenomenon” is a big enough word”.

\(^3\) Not the real names of the villages.
and importance, addressing issues such as type, frequency and magnitude when generating an understanding of the topic.

According to Stake (1995) the interpretive case study, although bounded by its context does not require the researcher to maintain a distance. Due to the contextual nature of the methodology and the fact that the researcher does not need to be detached from the respondents, it is a method that facilitates the adoption of an ethnographic-styled approach. The implicit philosophical stance is that, as the stakeholders are intimately involved in the processes of interest, their interpretation is the best source of understanding about the situation.

The two cases chosen to study were NGOs which undertake the process of sustainable development in rural areas of Maharashtra. The processes of sustainable development is inevitably long term, however the investigation was cross sectional in design not longitudinal. The cross sectional dimension was supported by an historical element as people were asked about past events, and the chronology of them. Reissman (2008) would suggest that because prior context is essential to our understanding of events, the data could be viewed as partially longitudinal. During the field visits there were changes apparent in some of the communities previously visited. The cross sectional design, with the collection of some longitudinal data is appropriate for use in an interpretivist case study because Yin (2009) and Stake (1995) suggest that it is accepted that there can be a need to investigate events in the recent past.

The method allowed respondents to recount their own versions of events and how they related to them in a variety of ways. These included structured interviews, semi-structured and in-depth interviews and the researcher observing examples of community work, environment generally and the personal circumstances of the respondents with regards to their health and education. Collecting data from the villagers themselves on social capital (as a proxy for empowerment) gave an understanding of the outcomes of the NGO interventions from a community perspective. This allowed the researcher to develop a picture of the effectiveness of the processes the NGO undertook. Interviewing the bank staff facilitated an understanding from their perspectives about what was effective in the processes and implementation undertaken by the NGOs on the Bank’s behalf (i.e. with their funding).

Primary data were collected during four field visits through a combination of interviews, observation, focus groups, objects and artefacts, photographs and video. Data were collected from three levels of stakeholder groups – the bank staff, the NGO staff and the individuals at the community level. A total of 82 interviews, 3 focus groups and 5 recorded village meetings were conducted as shown in table 1. Linked to the interpretivist paradigm being followed, the type of questions in the interviews did not lend themselves to scale, ordinal or rank answers, as they require a detailed exploration of the context within which the communities exist. In fact, some scales were used in the structured interviews at the villager level, but this should not be confused with a positivistic (or a quantitative) approach (Bryman, 2008: 367). These answers were used to support the rich data collected and to facilitate common understanding of the responses, given the language constraints of the researcher and the literacy levels of the respondents. The collection techniques are now explored in detail.

Table 1: Sources of primary data

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<td>In-Depth Interviews</td>
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<td>Village Meetings</td>
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4 Maharashtra is a state in the North West of India. Maharashtra is then sub divided into ‘regions’, ‘districts’, ‘blocks’ and ‘villages’.

5 Mumbai (or Bombay) is the capital city of Maharashtra.
4.1 Interviews

4.1.1 Semi-structured interviews

At the bank and NGO level, semi-structured interviews were conducted in English and recorded directly to a laptop computer using ‘Audacity’ software. These recordings were later transcribed by the researcher. Backup digital audio recording was carried out as well as some videos of interviews taken at NGO and village level. Several of the respondents provided between 2 and 5 interviews over several field trips. Initial interviews were between 60 and 90 minutes in length. The sampling strategy for the bank staff was a ‘comprehensive selection strategy’ which LeCompte and Geotz (1993) describe as when everyone involved is a respondent because the number of people working in the area is small. The number of people working in the corporate responsibility department of the Bank was six. The bank CEO was also interviewed giving a total of seven bank respondents.

With NGO1, again a comprehensive selection strategy was chosen focusing on all the staff that have involvement with the three villages of Dinapur, Wahigaon and Nandgaon. This was supplemented by further interviews with other NGO1 staff that work in the same district, the CEO and the regional coordinator. A summary of the number of respondents is given in table 1.

4.1.2 Structured interviews

Most individuals at village level were illiterate. These respondents did not speak English and consequently were interviewed through an interpreter. Therefore, a structured interview was conducted to aid the consistency of understanding of the questions and the responses given. These interviews took between 45 and 75 minutes. As this interview schedule was designed to assess elements of social capital it was based on a pre-validated survey tool developed by Grootaert, Narayan, Woolcock, and Nyhan-Jones (2004). This interview schedule used Likert scales, which aided consistency of delivery of questions and understanding of answers. All interviews were video taped so that where open answers were also given, or comments made, these were available for later translation and transcription. This video evidence provided extra transparency to the interview answer scripts which were conducted through the interpreter. Numbers of structured interviews are also given in table 1. The village of Dinapur was used as a pre-test of the interview schedule. The schedule proved sound, but much was learnt about the delivery of the interview. Despite there being lessons to learn about the process of delivering the interviews from the pre-test, the data were still valuable and judged by the researcher as suitable for inclusion in the overall dataset.

4.1.3 Village and SHG meetings

Observation by the researcher and discussion by respondents at the village and Self Help Group (SHG) meetings provided data to enhance the understanding of how the villagers had experienced the changes to their lives, initiated through the processes of NGO1. The participants’ discourse during these meetings and the stories told are, according to DeMarrais and Lapan (2004), data supplemented by the recording of interviews. This exploration of people’s lives allowed the researcher to understand specific experiences through the stories told by the participants (Kramp, 2004). Exploration of respondents’ everyday lives involved spending multiple weeks in the villages to attend village meetings and SHG meetings as well as to conduct the interviews and spend time observing general village life. Achieving this required staying in the villages for longer periods of observation than merely visiting for interviews and exiting immediately. This ethnographic-style approach allowed for an inductive and deductive approach to enquiry – whilst having some theory to direct the work, it did not obstruct the induction of findings from crucial observations and analysis whilst in the field (Alvesson and Sköldberg, 2009: 85). Hence, large quantities of data were gathered through asking the assembled villagers to discuss their experiences. These assemblies constituted five village gatherings (which were videotaped and later transcribed) and three focus groups with SHGs (also videotaped and transcribed).

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6 Due to the very low educational level of these persons the scale type answers could be demonstrated easily by the interviewer. Also as the interviews were conducted in a language unknown to the researcher it was felt that the use of Likert scales would give a common term of reference against which to isolate and assess answers.
4.1.4 In-depth interviews

Following the field trips to collect data from NGO1, these data were partially analysed prior to the following field trips for collecting data from NGO2. One of the key findings, based on a community wide approach adopted by NGO1, meant that the researcher was prepared for the fact that the collection of data from NGO2 may need to take on a more flexible approach because NGO2 did not adopt a community wide approach. The same structured interview was used however, it was evident that the richness of information obtained from village and SHG meetings of NGO1 would not be gained by only using the structured interview. NGO2 serviced the community of Sevapur via individual assistance to women only. Therefore, to gain the same level of understanding of the processes involved in the NGO interaction and the social and environmental aspects of life in Sevapur, an in-depth interview process was conducted. Twelve recipients of the NGO intervention were asked to reflect on the process taken that lead to where they were now – in effect giving their personal story of involvement with NGO2 (Bryman, 2008: 388). This involved visiting the respondents several times, to get input on emerging themes after the first interview was translated.

4.1.5 Note taking

Field notes were taken about the researcher’s perceptions of what was happening, what was seen during the interview processes and whilst observing village life in general. These notes were written up at the end of each day and subjected to some initial analysis. This process of collecting all the impressions of the researcher ensured that the researcher was not just reacting to what appeared to be important, but rather, delayed judgement until the analysis was (partially) complete (Eisenhardt, 1989). However, as Goffman (1989: 130) says, these notes are at their most informative during the first few days because “[t]here is a freshness cycle when moving into the field. The first day you’ll see more than you’ll ever see again. And you will see things that you won’t see again”.

Interestingly Goffman (1989) also suggests that you should not take too many notes as they will be read by no one other than yourself and maybe only once again. The primary danger being that there will be too many pages of notes to analyse. In the case of this research, much video footage was also recorded to supplement the written notes.

The form of notes taken varied from ‘jotted notes’ to full field notes (Lofland and Loftland 1995 cited in Bryman 2008). The jotted notes were used by the researcher during the structured interviews to keep a record of observations about the person being interviewed and to record informal observations in general and any ideas towards analysis so that they were not lost (Eisenhardt, 1989). Full field notes were taken of conversations and events together with initial ideas towards analysis.

4.1.6 Observer as participant

In order to address the research questions effectively, it was decided by the researcher that discussion and observation should be used as forms of data collection. Observation was required particularly as sustainable development involves the interaction between the people, their environment and their economy. To undertake this observation the researcher took a ‘spectator’ role in the villages whilst conducting overt research and therefore in the terms of Gill and Johnson (2010: 167) was an ‘observer-as-participant’ as shown in figure 1. Observation allows the researcher to get an in-depth understanding of the social reality and to ‘see as others see’ (Bryman, 2008: 465). Being an observer-as-participant also facilitates the researcher to observe behaviour over an extended period to verify whether what is observed is the same as what is spoken about. The video evidence of the geographic community enabled a record of the observations to be catalogued. This was particularly important in judgements of levels of impoverishment, environmental degradation and other social structures (Yin 2009).

4.1.7 Documentary evidence

Secondary data were requested from the Bank and the NGOs via email at the start of the research design phase with additional documents supplied during follow up field visits. These data have been used as corroborating evidence for the primary data (Yin 2009: 103). This documentation included:

- Administrative documents such as applications for funding by the NGOs to the bank, progress reports from the NGOs to the bank and training documentation from NGO1;
- Formal studies of NGO2 that had been conducted prior to this research; and,
Articles and video footage of the interventions by NGOs 1 and 2.

Figure 1: A taxonomy of field roles (source: Gill and Johnson (2010))

The photographic and video footage supplied by the respondents are extant to the research. As these data run the risk of not being accurate or containing an element of bias they were treated as printed documents, i.e. only for use as secondary data to corroborate primary data (Yin, 2009: 103).

4.1.8 Objects and artefacts

The use of photographs and video for data collection is not new and has been used by social anthropologists for decades (Bryman, 2008: 424). The taking of photographs and video was considered helpful to provide an additional source of observational data. These videos, taken by the researcher are treated as primary data. The use of these data are also considered to be necessary in order to answer the research question, in that corroboration of findings was being sought from the end recipients of the Bank's funds. This corroboration of sustainable development goes beyond what people say about it, to observation of the environs of the village.

The collection of so many data over prolonged periods of time (4 – 6 weeks per visit over three years) could cause the researcher to experience some blurring of what happened when and where. However, the photographs and video were all date and time stamped and so acted as an aide-mémoire for the researcher of the sequence of events and supplemented the field notes (Bryman, 2008: 419).

As well as the video and photographic footage other physical artefacts were supplied by the NGOs. NGO1 supplied numerous copies of training aids used by them at village meetings, for example on how to grow turmeric crops organically and how to make organic pesticides and fertilisers. The researcher was also given articles as examples of the economic output of villagers such as the paper bags that were produced out of recycled paper and sold to shops in Mumbai and insect traps made from recycled drink bottles, used amongst their vegetable crops. Whilst the potential relevance of these is limited, they do again act as an aide-mémoire for the researcher to supplement field notes.

5. Conclusion

The complexity of this research, and the methodology undertaken could be questioned for PhD research, which is after all ‘an apprenticeship’. However, taking this approach of viewing the results from the stakeholder perspective has made a contribution to the corporate responsibility literature. By conducting the fieldwork at such a local level has also addressed the identified lack of empirical work at this level (Bamberger and Pratt, 2010). Finally, the use of case study, using an interpretivist
paradigm and an ethnographic-style approach is a contribution to research design in the management field.

The primary lesson learned during the fieldwork was that the development of empathy with respondents is key to ethnographic-styled research where gaining understanding is the critical issue. Following the approach to case study suggested by Stake (2005) facilitates this more than does the approach by Yin (2009). To create empathy with respondents there has to be a level of trust and relationship built without the researcher becoming so close to the respondents that he or she becomes subjective.

References


Birkinshaw, J, Brannen, M Y And Tung, R L (2011) 'From A Distance And Generalizable To Up Close And Grounded: Reclaiming A Place For Qualitative Methods In International Business Research'. Journal Of International Business Studies, 42 (5): 573 - 581.


The Mixed Methods Reader – a Book Review

The Mixed Methods Reader edited by Clark and Creswell, Sage 2008, ISBN 978-1-4129-5145-6 is an exceptional book and should be required reading for anyone who is interested in undertaking academic research using a mixed methods approach. Mixed methods to which an increasing number of academic researchers are resorting is generally poorly understood and few of those who claim to use it are competent.

In many cases mixed methods is seen as a refuge where those who refuse to take part in the methodological wars can shelter. In some cases the academic researcher will collect some qualitative and some quantitative data and process these independently of one another and then will claim to have used a mixed methods framework. When this is done, the claim is usually made that the researcher has used two different lenses through which to examine the research question and that this is what mixed methods is about.

Whilst it cannot be said that the approach of resorting to both quantitative and qualitative data is in any way valueless a more informed and integrated framework for the use of mixed methods makes the research more powerful.

Clark and Creswell provide an excellent overview of a number of important papers in the subject. They trace the need for mixed methods and they contextualise this approach and provide an accessible way of understanding its role and how it functions.

The book contains 23 papers and addresses most of the important issues which any researcher needs to come to terms with if he or she is to be a successful practitioner of mixed methods. The book is divided into two parts, the first of which is titled Methodological Selections and addresses the essential topics within the mixed methods domain. The second part, titled Exemplar Research Studies, addresses the different types of mixed methods design. The Methodological Selections take on some of the philosophical issues related to Mixed Methods. In particular, I found the discussion on Pragmatism as a Philosophical Foundation for Mixed Methods and The Transformative-Emancipatory Perspective as a Philosophical Foundation for Mixed Methods interesting. The paper on Advanced Mixed Methods Research Design is particularly useful. In the Exemplar Research Studies section papers on triangulation and on experimental design are especially interesting.

In general the book is accessible and there is an extensive index.

The book is available at the usual bookshops.

I wholeheartedly recommend this book to anyone wishing to become a competent Mixed Methods Researcher.

Dan Remenyi
Writing a Research Proposal – Practical guidelines for business students: A book review

The new textbook Writing a Research Proposal – Practical guidelines for business students by Professor Pumela Msweli published by Juta ISBN 978-0-70218-877-0 is a professionally produced easy to access guide to a very important aspect of academic research. The research proposal is the first step in any important research project. It is the research proposal which sets the agenda for the research, indicates its feasibility and most of all it demonstrates the researcher's ability to undertake the work required. It is therefore most important that a competent research proposal is developed. This short book which is only 120 pages is a good guide to the work involved when developing the research proposal. It is designed for the novice to have with him or herself during the early days of their research while they are finding their feet. Over the 8 Chapters the author addresses all the important issues in an easy to understand way. Another important aspect of the book is that many of the key concepts and terms which are used in academic research are explained. Useful diagrams and tables are supplied.

The issue of research language is an important one. Many novice researchers find it very difficult to get started because they do not know the terms which are used by researchers. Novices stumble over issues like deduction and induction and non sequitur are explained. However a Glossary of terms would be a helpful addition to the next edition of this book.

Books by their nature have a target readership and this one is written for the novice researcher in the business studies field. Books also have a pre-determined scope and depth and this book is written as a starter-book which is really needed and no doubt this book will be a great success. When considering a master degree more depth may be required even at MBA and MBL level. Perhaps the book would be fully adequate for those undertaking honours level research.

Finally publishers are always optimistic about the utility of their books and on the back cover it is suggested that Research Proposal – Practical guidelines for business students would be of use to doctoral students. It is true that even doctoral students have to start somewhere but I would say that a doctoral degree candidate would need to move on to more detailed texts rather soon.

The book is available on Amazon at http://www.amazon.com/Writing-Research-Proposal-Practical-Guidelines/dp/0702188778

Dan Remenyi
September 2011