This issue has one invited paper on an issue of great importance to business researchers – developing conference papers into publishable journal papers.

Les Worrall draws on his wide ranging and long experience in academia to offer some excellent advice on how to convert a conference paper to a published journal paper.

The remaining five research papers introduce an extra-ordinary range of subjects and approaches:

- An innovative new method for analyzing a range of types of qualitative data from diverse sources (Ehsan Soltanifar and Manochehr Ansari)
- Conceptualization as a technique for clarifying quantitative research aims and the adoption of appropriate analytical methods (David Onen)
- A critical assessment of the potential value of mixed methods for a case in IS research, drawing on the ideas of Phenomenological Constructivism (Fenio Annansingh and Kerry Howell)
- A warning to all researchers about the dangers presented by the new group of journals developing online (Dan Remenyi and Shawren Singh)
- A case example showing the importance of taking account of culture when administering surveys. (Chanchai Phonthanukitithaworn and Carmine Sellitto)

Ehsan Soltanifar and Manochehr Ansari present an impressive tool (called matrix-collage) to handle the problem of analysing a large amount of qualitative data from multiple sources of relevance to several types of issues with clashing aims (ie social geographic problems not focused on one objective but taking account of several). Moreover they illustrate their ideas through the description of a successful application of the method to a challenging project on socioeconomic planning in Southeastern Iran.

Davin Onen’s driving theme is his experience of poor application of key research concepts in quantitative research projects. He seeks to establish the problems raised by misconceptualization and how the researcher can avoid these through proper conceptualization.

The paper by Fenio Annansingh and Kerry Howell introduces a case study using the mixed method approach for exploring developers’, customers’ and users’ perspectives and perceptions of risk exposure in 3D photographic databases and their use. The authors draw on the phenomenological constructivist world view to make the case for the methodological richness of this research method.
The extra-ordinary proliferation of new academic journals spawned by the web is the subject of Dan Remenyi and Shawren Singh’s paper. They give us an in depth review of all the pitfalls that we as academics face when negotiating with these new publishing outlets.

Chanchai Phonthanukitithaworn and Carmine Sellitto offer their reflections on an Intercept survey that they carried out in Thailand. The paper illustrates the importance of taking account of national culture, at both the initial survey translation stage and later when collecting data in the field.
From Conference Paper to Journal Article: The long and Winding Road

Les Worrall
Coventry University, UK
Worrall.l@sky

1 The Context

Over the last couple of decades academia has changed radically as most universities have developed what I call “output driven” research strategies. Consequently, academics have to do things that “count” against the metrics that are embedded within these strategies. It doesn’t matter whether you consider these developments are a good thing or a bad thing as, whatever you think, they provide the framework against which you will be judged. They also provide the framework against which you will be promoted (or not) and you will be recruited (or not). Your curriculum vitae (and you) will be audited against these frameworks.

I have been involved with supervising PhD students and mentoring academic staff for many years and this article is based on the experiences I have had helping colleagues develop their academic careers (some of whom are now professors, readers and directors of doctoral programmes in well-respected universities). I have always tried to impress upon all those I have supervised or mentored the importance of taking a strategic and, some might say, a highly instrumental approach to developing their academic careers. I try to emphasise to them the importance of developing what I have termed the four pillars of an academic career and then building a curriculum vitae around those four pillars.

The four pillars are:

- a robust publications profile (of, preferably, single authored papers in rated journals)
- a track record in external income generation (from, preferably, funding councils)
- peer esteem in their academic field
- a credible profile in doctoral supervision

Of the four, I see a robust publications profile as the most important pillar but, in the increasingly mercenary world in which we live, this is very closely followed by success in external income generation. In some universities, an ability to generate external income might even come first.

The aim of this paper is to provide guidance to doctoral students and more junior academics on developing a credible publications profile. It is unlikely that a recent PhD graduate or junior academic will be able to get a paper published in a top journal unless the paper is co-authored with a more senior academic. Co-authoring papers with a more senior academic when you are in the early stages of your academic career can be a sound tactic.

All publishing careers have to start somewhere and, for most doctoral students and junior academics, their first foray into airing their work in public is when they present a paper to a conference. Consequently, the purpose of this article is to provide some guidance on how to turn a conference paper into a refereed journal article. As a former cricketer, the most important thing you need to do when you go out to bat is to “get off the mark”. Few batsmen ever get off the mark by hitting a six and most are happy just to push a quick single to get their innings moving. When you have got off the mark, your real job is then to build a solid innings that looks impressive in the scorebook.
1.1 Be selective

Presenting a paper at a conference often gives the researcher their first chance to expose their ideas to what can be a very critical (and sometimes pedantic) academic audience. Obviously academic conferences vary considerably in quality. Highly rated conferences expose candidate papers to robust peer review prior to acceptance. If you have got through this process, there is a good chance that you have a paper of publishable quality. Your task is now to get your paper accepted in as high a quality journal as you can. However, the height of the hurdle you have to jump to get a paper published in a reputable academic journal is considerably more difficult to clear than the one you have just negotiated to get your paper accepted at a conference.

Other conferences (of the less esteemed variety) will allow almost anyone to present anything often to a handful of younger, less experienced researchers or “academic tourists” (of which, there are many and whose ranks you should not join). Consequently, you have to be true to yourself about where you are on this continuum. If you are currently at the lower end of this continuum you are wasting your time and you should aim considerably higher. If it is not difficult to get a paper accepted, the conference is not worth going to. If you have had your paper accepted at a good quality conference and your paper has been peer reviewed and generated good debate from a well-informed audience, you have a very good chance of getting it published in a highly rated journal.

The better the conference, the more likely you are to present your work to the top people in your chosen field. Consequently, you should be very selective and focused when you are considering which conferences to attend. There is no point padding your CV with low grade conference papers. Your CV will look far more impressive if you have presented papers to a smaller number of well-regarded conferences than if you have presented a large number of papers at low grade conferences. In today’s academia, where you have published is more important than what you have published.

1.2 Be strategic and think “networking”

When you attend a conference, you should have a strategy for managing your time at the conference. Yes, you want to be seen to give a good quality presentation but academic conferences are also social events which provide you with the opportunity to network with both leading and developing academics in your field. In particular, you should try to find out who is in your audience when you present your paper as they may be journal editors or on the editorial boards of the papers you want to target. Again, not only should you be targeting specific conferences, you should also be targeting specific journals. If you find established academics or journal editors have attended your paper, go and talk to them to get their views about your paper. If they are involved with journals, try to find out what their journal is looking for; what current editorial policies and priorities are; and, what kind of papers their journal is likely to publish. If you are really lucky, journal editors might approach you about your paper. This is rare but it does happen.
I have often found that the networking pay-offs from conference attendance are the most valuable outcomes. I have been offered publishing opportunities and the chance to speak at other conferences and high profile events. I have been approached by other academics to undertake collaborative research or to join partnerships and teams to bid for research funding. I have also been offered lucrative consulting work and jobs at other institutions. Conferences are a very important aspect of academic life and they can help you build an impressive academic CV – if you get it right.

1.3 Be tactical

If you are hoping to transform your conference paper into an article in a rated academic journal, you should select conferences that have links to good quality journals (see the ABS List for guidance, http://www.associationofbusinessschools.org/sites/default/files/Combined%20Journal%20Guide.pdf). Some conferences will often use papers from a conference or a conference theme to develop a special edition of their journal (which is usually edited by someone involved in the conference organisation). You should always look for conferences that have these links in place as having your paper accepted for such a conference often means that the editorial team have already seen merit in your work. In other instances, conferences are used to identify chapters for edited books. While book chapters do not carry the same weight as an article in a top rated academic journal, it will not do your CV any harm to have contributed a chapter to a well-regarded book particularly if it has been edited by a leading authority in your field. When you are deciding what to do with a paper or an article, you should ask yourself what is the best value you can get out of this paper as you try to build your academic CV.

1.4 Be instrumental

Even experienced researchers can get nervous presenting a paper BUT you should really pay great attention to the questions you are asked and the issues that your audience raises. You should certainly pay more attention to any negative issues that get raised than to any positive ones as your aim should always be to use negative (but hopefully, constructive) feedback to strengthen your paper rather than use positive feedback to boost your ego. You should also be very careful with how you deal with feedback particularly if it is of the unhelpful and negative type. I remember, as a very young academic, getting savaged by “an expert” in my field who was keen to impress the audience with his knowledge and his status. All he really did was alienate the audience with his arrogance and undermine my self-confidence. Other people from the audience provided really useful feedback that helped me to rework the paper and to get it published in a journal which was in the top five in its field.

You should certainly make a note of who are most vociferous/influential attendees in your session and go and talk to them after your session has ended. If people approach you after your session, take time to talk to them and listen to them. If no one approaches you after your presentation, worry. You should also see a conference as another peer review opportunity and you need to use the conference to identify any flaws in your arguments or any weaknesses in your paper. The weaknesses could be analytical flaws such as not using the most up to date analytical techniques or not making full or proper use of these techniques. Another weakness could be that you have missed relevant literature indicating that you have not done as exhaustive a literature review as you needed to. After attending conferences, I have often used information from papers presented in my stream or in parallel streams to improve my paper particularly when authors have looked at the issues I am addressing from different theoretical positions or have used different methodologies to address similar issues to mine. Sometimes you need to be able to look at your research from a completely different angle. A good conference will provide you with these opportunities.

1.5 Be calculating

Immediately after presenting your paper, make a list of the issues that have emerged and decide how you are going to deal with them. Don’t be tempted to fire your paper off to a journal without giving full consideration to how your paper can be further improved following the conference. Being impatient and submitting a paper too early can cause you a significant problem as journals are unlikely to accept repeat submissions of the same paper. With top rated journals, you only get one chance. So, when you have redrafted your paper, it is a good idea to ask someone who is an expert in the field (that you may have met at a conference) or a trusted academic colleague to review your revised paper before you submit it to your chosen journal. You should always aim high with the journals you target (again, consult the ABS list for guidance). While you should aim
high, you should always be realistic as it is far from easy to get published in the top rated journals in any field. But, if you are rejected by a top journal, you can always aim lower with a submission to another journal. Getting published in the top rated journals is incredibly difficult even for established researchers: learning to handle rejection and bounce back is an essential academic skill.

1.6 Be savvy

If you think your paper has a good chance of getting published you need to select a candidate journal or a shortlist of journals. You then need to research those journals to see what kind of papers they publish to see if they have published papers similar to yours; to see if your paper fills a gap in any of those journals; and, to identify the kind of issues/themes that have been published in these journals recently. Obviously, if your research area has been exhaustively covered in a journal, then you need to move on to another journal.

You should certainly get hold of the editorial guidance notes for the journals you are considering. But don’t just get them, read them and do what they say. I have been a reviewer for a number of journals and grant awarding bodies for many years, and I cannot tell you how annoying it is when the clear guidance that has been provided has not been followed. As a reviewer, you immediately feel negatively disposed to the paper particularly when other authors have produced good quality work and worked within the guidelines. Authors need to be assiduous in removing sloppy errors such as missing references or incorrectly citing papers. You should not do anything that will annoy the editors or reviewers as you want them to become positively disposed to you and your work. You should also think long and hard about your papers’ title and the abstract as these are the two most “visible” parts of your paper. Journal editors are very busy people and an uninspiring abstract can easily consign your work to the dustbin of history.

1.7 Be aware

It is also good practice to include a covering letter with your article which indicates to the journal editor how your paper fits his/her journal and gives them a compelling reason to publish your work. However, with the increasing use of automated submission systems this approach has become more difficult. You should certainly look at the list of people who are members of the journal’s editorial board as it is highly likely that your paper will be sent to people on that list. As these people will often be prominent in your field, you should have read some of their papers and you should not only look at their style of writing but also form a view of their prejudices and “dispositions”. If you haven’t cited any papers from the journal you are submitting your paper to, why are you submitting your paper to that journal?

When you submit your paper to a particularly journal, you should write specifically for that journal. If your paper gets rejected (not an uncommon event even for experienced researchers), be prepared to do some more work to reshape it for another journal. Never (ever) submit your work to two journals simultaneously - if either journal finds out, your work will be immediately rejected and your reputation gets tarnished. In fact, most journals ask you to confirm that you have not submitted your paper anywhere else and that your paper has not been published anywhere else.

1.8 Be professional

It is rare for people to get a paper accepted in a good journal without the editor and/or reviewers asking you to revise and resubmit your paper. This can go on for two or three or more iterations until the reviewers and the editor feel that your paper “passes muster”. I have seen papers finally rejected after the third iteration. The whole process can be tiring and tiresome but you have to persist.

If you are asked to do a revise and resubmit, you should:

- Read the reviewers comments very carefully and take them very seriously even if you disagree with them and think they are unreasonable and you are annoyed/upset by them
- Respond clearly, concisely and fully to the reviewers’ comments
- Send the editor a letter indicating how you have responded to each of the reviewers’ comments and where they can check this in the text
Editors really like authors who make life easy for them, so do what you can to make their life easy. This involves following editorial guidelines closely; responding clearly and concisely to reviewers’ comments; and, responding promptly and fully. As the trajectory of your academic career depends on journal editors deciding to publish your work and not the work of other academics who have submitted papers to their journal, it really makes sense for you to treat them well. Remember, a top journal might publish about fifty articles a year but the editor might receive 6-700 submissions a year. As our American friends might say: “do the math”. You need to do everything you can to make sure that your’s is one of the papers that is selected as the cards are stacked against you.

2 In a nutshell

As a newly graduated PhD or a junior academic, you need to think very strategically, tactically and instrumentally about the development of your career. If you have recently completed a PhD, you should be thinking very tactically about how you can turn parts of your thesis into conference papers and, ultimately, into peer reviewed journal articles. I had a very good doctoral supervisor who advised me to get my work published prior to submitting my doctorate. These published works were then included in my thesis as appendices. My supervisor’s argument was that my case for being awarded a PhD was strengthened if my single authored work had already been published in “rated” journals. This tendency towards instrumentalism has stayed with me throughout my academic career. I would advise you to be just as instrumental.

You need to target good quality conferences where all the papers submitted are peer reviewed prior to acceptance. If the conference is of the “pay and display” variety, avoid it as you are wasting your time. If you have a paper accepted for a conference, think long and hard about how you are going to make the conference work for you. Who is going to the conference? Are any of your fellow delegates on the editorial boards of the journals which might publish your work? With whom do you need to network? Do you need to work on your networking skills? Who is attending your session? How can you get useful and insightful feedback on your paper (being aware that this might hurt)?

Which journals might publish your work? Where do different journals sit in the hierarchy of journals? Realistically, which journal is likely to publish your work? Is there anyone at the conference with whom you can collaborate (especially if they are better connected than you)? What are the key criticisms of your work? How can you use the feedback you have received to improve your paper? When you submit your paper to a journal, have you followed their guidelines to the letter? If you have been invited to revise and resubmit your paper, have you adequately responded to all the issues the reviewers have raised and documented your responses in an accompanying letter?

Becoming a well-published academic is a long and challenging process. It requires hard work and some luck. It can be as infuriating as it can be rewarding. But, the process has to start somewhere and, for many developing academics, it starts with a reworked and revised conference paper eventually getting accepted in a reputable journal.
Matrix-Collage: An Innovative Methodology for Qualitative Inquiry in Social Systems

Ehsan Soltanifar and Manochehr Ansari
1University of Tehran, Iran
2University of Grenoble-Alpes, France
soltanifar@ut.ac.ir
mansari@ut.ac.ir

Abstract: This study developed a framework for qualitative inquiry and administration of social systems. It describes the mechanisms that decision-makers, such as the police detectives, military commanders, and transformative managers use in their problem solving initiatives. First, the framework was reviewed and constructed for: (1) the theory of qualitative data analysis; (2) problem solving process; and (3) the correlation matrices. Then, based on 14 Points, an extracted framework and its methodology are presented. Finally, a manifest (praxis) is introduced for the framework developed for a project in development planning. This innovative framework can be used for policy-making, qualitative data analysis, or problem solving and administration of social systems.

Keywords: data classification and analysis, framework analysis, land-use planning, problem solving, qualitative data analysis, qualitative methods

1 Introduction

During a national project on socioeconomic planning in southeastern Iran in 2011, we were confronted with a large volume of incoming qualitative data gathered from the region (the first author served this initiative as project manager and senior scholar). It was necessary to analyze this data and apply it to solutions within the limited time of six months. The data included 100 hours of recorded interviews, 300 related papers and reports, and countless memos about field observations. The topics were problems voiced by habitants, insights gathered about the region, solutions and ideas presented by residents and their proposals for implementing those solutions. However, the problem remained as to how to analyze all this data and attain to practical conclusions on problem(s), insights and solutions regarding the region.

We began by going back to the formal frameworks available about the issue. We found frameworks too general (such as the strengths, weaknesses, opportunities, and threats (SWOT) analysis) or time-consuming, bureaucratic, and non-agile (such as Aménagement du territoire; This is a French expression dedicated to a French-based doctrine of regional planning. Its incomplete translation is land-use planning). We shaped our research as follows to analyze a pool of incoming data gathered from different sources about a system, reach conclusions about the problems and environment and achieve practical solutions.

We reviewed literature from land-use planning to strategic management and system engineering. Through action research by personal innovation, we designed a framework for analyzing the data and development planning in the region. The framework was implemented in the region over 12 months. The outcomes were valued and used by the government and included elaboration of the problem definition, two macro-policies, and a detailed policy package for the region. Briefly, the framework is an interrelationship qualitative matrix (Figure 7) that establishes a connection between universal-problem-solving processes (in rows) and data collection sources (in columns) that can be customized for each subject under investigation (e.g. Figures 9 and 10). Any data entry can be filled by corresponding memos (data pieces). We attempt to solve row vectors (problem-lines) together iteratively. After attaining theoretical saturation by reaching a conclusion on column vectors, we attained a problem definition, environment analysis, practical solutions, and considerations about implementing solutions.

As noted by St. Pierre and Jackson (2014), data analysis is a “black hole” in qualitative analysis. To confront this dilemma, methods like content analysis, grounded theory and discourse analysis have been popularized. These often rely on codification of data (Carrera-Fernández, Guàrdia-Olmos, & Peró-Cebollero, 2014). Qualitative
data analysis (QDA) continues to be problematic, especially when the volume of data is great and it is collected from different sources. Qualitative analysis is described by some as involving as much “art” as science as a “dance” (Schutt, 2015).

Thus after attaining our framework, we were inspired and motivated by such a gap in research about qualitative data analysis, so we decided to review more literature, develop and represent our model. Surprisingly, we discovered new contributory concepts and methods in the field of QDA. Among these are qualitative metaphors and framework analysis as an emergent method. Using such insights, we have upgraded and present our matrix-collage framework (as briefly is summarized at section 1.1) through a systematic review. We think that our matrix-collage can be used not only for social systems (like the case of Iran-south east) but also for problem solving in organizations and other social systems in general.

The initial research question in 2011 was about problem solving in social systems using a qualitative pool of incoming data. Thus in line with our primary question and concern, in this paper we aim to present an innovative method (matrix-collage) to create order for research studies that use diverse data sources and types of data which may be relevant to a problem or a social phenomenon under study.

Using the key themes of the question and in past reviews (since 2011), we extract our contribution and constructed our literature review using three interrelated fundaments: 1-theory of Qualitative-Data-Analysis(QDA) and qualitative metaphors, 2-problem-solving process, and 3-correlation matrices (Figure 1). Each is described in the following sections.

**Figure 1:** Positioning the main contribution of the present article

1.1. An outline on the paper's logic and sections interplay

Before starting the discussion, to explain connectivity between sections and elaborate the paper’s logic, we present an explanation to give a general view about each section’s contribution on the mindware’s formation. As has been introduced above, our mindware entitled matrix-collage includes rows, columns and many cells that each host a part of incoming data. In Figure 2, we depicted how we found rows and columns of the matrix and the methodology we deduced for analyzing the matrix.
In section 2 first we explain qualitative data analysis (QDA) and use qualitative metaphors to extract some rules and foundations for QDA. Two important qualitative metaphors are Kaleidoscope and Jigsaw Puzzle and two examples for them are Grounded theory and Framework analysis respectively. Synthesizing 12 Points(extracted from this section), led us to find a set of comprehensive sources and themes among data(Jigsaw Puzzle) and then analyze them iteratively through clustering and conceptualization (Kaleidoscope). We conclude this section with 12 rules and points of QDA.

In section 3, to find main themes among incoming data, we review problem-solving process and find it comprehensive as it covers all themes of incoming data through a social inquiry (Point#13). We find a conclusion on problem solving process and propose a general set of steps to be used as data themes (for rows) of our matrix collage (Table2 appendix).

In section 4 we find out interrelated themes and sources of data through ROWs and COLUMNs of a correlation matrix and build our matrix-collage(Point#14).

In section 5 we summarize extracted tips, conclude them into 14 points and present a methodology for matrix-collage construction and analysis.

In section 6 we briefly describe a praxis of using matrix-collage in a real case.

For the remainder, we present our discourse toward the mindware while concluding each part through a point $i$($i=1,...,14$) periodically.

2 Theory of Qualitative Data Analysis

2.1. Data collection sources, metaphors, and analogies for analysis

The word “analysis” has wide implications. It derives from the prefix “ana” meaning “above” and the Greek root “ysis” meaning “to break up or dissolve” (Bohm, 1983 cited by Dey, 1993). At each step of the problem-solving process, data is the raw material that should be analyzed. How this data should be analyzed is the second half of the discussion.

One viewpoint divides data collection and analysis into quantitative and qualitative methods (Schutt, 2015; Buchman and Schutt, 2015). Qualitative research and analysis entails thinking outside the box and generates and requires creativity in questioning, research processes, and solutions (Suter, 2012). The necessity of qualitative analysis and research, especially for social problems has been frequently discussed. We focused on and presume qualitative analysis and qualitative sources of data for this research. Scholars such as Schutt (2015) and Thorne (2015) believe that the main qualitative research designs are the case study, grounded theory, narratives, comparative analysis, ethnography, and phenomenology. The next section considers grounded theory and case study to obtain practical tips about construction of our mindware and reviews a recently presented method for QDA entitled framework analysis.

In practice, qualitative analysis includes documentation (recording data by methods such as interview, observation, and field notes), coding and categorizing (clustering and classification schemes),
conceptualization (attaching concepts to categories), linking and combining (integrating) abstract concepts, creating theory from emerging themes, and writing an understanding (Suter, 2012; Schutt, 2015).

- **Point 1:** QDA includes coding, categorizing, grouping, clustering, conceptualization, linking, integrating, and creating theory.

- **Point 2:** Cases (Figure 6) such as people interviewed, observed phenomena, or papers considered can be summarized as data collection sources. These sources are observations, interviews, documents, and focus groups (participatory approaches).

Thorne (2015) states that “what makes a study qualitative is that it usually relies on inductive reasoning processes to interpret and structure the meanings that can be derived from data”. "Induction, deduction and abduction are three forms of logical reasoning that are used in every type of research and they create the basis of all research" (Reichertz, 2014). "These forms of thinking are not concepts, nor are they methods or tools of data analysis, but means of connecting and generating ideas" (Reichertz, 2014). "Generally, inductive reasoning uses the data to generate ideas (hypothesis generating), whereas deductive reasoning begins with the idea and uses the data to confirm or negate the idea (hypothesis testing)” (Thorne, 2015).

Qualitative analysis relies mainly on analytical induction (Suter, 2012) or inductive reasoning (Schutt, 2015; 322). In induction analogy, a qualitative researcher first builds a structure to articulate his findings, then compares this structure against collected data while revising their models. As each new finding and possible explanation emerges, it is checked against other sources of data until a point of theoretical saturation is reached, thus completing the analysis (Schutt, 2015). Mostly defined by qualitative research, the saturation point signals a need to continue data collection and analysis, because incoming data will no longer contribute, but only confirm past-shaped understanding (Suter, 2012).

- **Point 3:** The main analogy used in QDA is induction, the process of constantly comparing a primary shaped structure against collected data and revising it until theoretical saturation.

The process of qualitative analysis can be well-interpreted using qualitative metaphors. A metaphor is a comparison between two indirectly-related things using their similarities and ignoring their differences. It serves as a template for organization and analysis of qualitative research data (Dye, Schatz, Rosenberg & Coleman, 2000). Suter (2012) has divided useful qualitative metaphors into kaleidoscope, jigsaw puzzle, and symphony, although all have been derived from the same basic analogy.

- **Point 4:** The process of QDA can be well interpreted by the qualitative metaphors of kaleidoscope, jigsaw puzzle, or symphony.

The kaleidoscope metaphor refers to grouping similar data bits together, then comparing bits within a pile (Figure 3). Differentiation creates subpiles, which eventually become connected by the pattern they share. This process requires continual back and forth refinement until a grand concept emerges (Suter, 2012). Figure 3 demonstrates a process of categorization and refinement between raw data bits to take category arrays. Dye et al. (2000) stated that this metaphor represents a constant comparison method that comprises the following stages (Lincoln and Guba, 1985, cited by Dye et al, 2000):

1. Comparing incidents applicable to each category
2. Integrating categories and their properties
3. Delimiting the theory
4. Writing the theory

One of the most well-known manifests of the kaleidoscope metaphor at QDA is grounded theory.

**Figure 3:** Kaleidoscope metaphor redrawn by authors based on Dye et al. (2000).
**Point 5:** The kaleidoscope metaphor for QDA includes coding, labeling, grouping and clustering data bits around piles and themes of broad scope.

Second qualitative metaphor entitles *jigsaw puzzle metaphor* (Suter, 2012, 348). Jigsaw puzzle is a picture cut up into fragments. One strategy to solving a jigsaw puzzle is to group all pieces that look alike and place them in their expected locations (Figure 4 (right)). To explain the jigsaw puzzle metaphor, LeCompte (2000) gave the example of *Crow Over a Wheatfield*, a 1890 painting by Vincent van Gogh. This tableau depicts a yellow wheatfield at the bottom and a dramatic, cloudy blue sky at the top that ranges from light blue to dark blue. Many stylized crows fly through this darkening sky. To complete a jigsaw puzzle based on this tableau, the puzzle solver usually groups the blue pieces and places them near the top, arranging and rearranging them to find a coherent pattern of the sky. Other objects that appear to be wheat are grouped together by similar characteristics (e.g., hachure, color) with properties making conceptual sense (LeCompte, 2000).

Figure 4: Symphony metaphor redrawn by authors based on Seidel (1998) (left); jigsaw puzzle (copyright free image extracted from https://pixabay.com/en/jigsaw-puzzle-a-piece-of-grandmother-497143/) (right).

QDA using the jigsaw puzzle metaphor eventually leads to a structure that is the model or theory that explains the phenomenon of interest. For example, consider a qualitative researcher studying socioeconomic development in a region (e.g., southeastern Iran). The desired structure for the researcher is an explanation for underdevelopment, causes, solutions, and practical implications for the region. This structure will gradually form a shape from the puzzle-shaped pieces of data including the problems, ideas, and other insights related to the region and gathered from different data collection sources. These sources include conversations, observations, documents, records, and journals. A high-quality QDA using the jigsaw puzzle metaphor will generate a rich and accurate description of underdevelopment as experienced, declared, and theorized by locals, experts, and the elite.

LeCompte (2000) has articulated this natural process (QDA using the jigsaw puzzle) in 5 stages:

- **Stage 1:** Tidying up available information by organizing it in the form of notes, memos, creating files of interviews, labeling, coding and indexing information, and reviewing questions if applicable.
- **Stage 2:** Finding items (puzzle pieces), which are things that must be coded, counted, and assembled.
- **Stage 3:** Creating stable sets of items.
- **Stage 4:** Creating patterns.
- **Stage 5:** Assembling the structure (puzzle), theory, or final explanation (pattern) about the phenomena.

Assembling the data into an explanation is akin to reassembling puzzle pieces (LeCompte, 2000). This job includes rearranging the puzzle multiple times before it emerges into a coherent pattern (explanation).

**Point 6:** The jigsaw metaphor for QDA includes arranging and rearranging of data pieces in a reciprocal way toward achieving a sensible pattern (theory, hypothesis).

A third metaphor has been presented by Seidel (Suter, 2012; Seidel, 1998), who claimed that QDA is a *symphony* based on three notes: *noticing things, collecting them, and thinking about interesting things* (Figure 4 (left)). These parts are interlinked and cyclical. For example, while thinking about things, you notice further things and collect them. Siedel's process has been described as iterative (a repeating cycle), recursive (returning to a previous point), and “holographic” (each “note” containing a whole) with “swirls and eddies” (Suter, 2012, 348).
Point 7: The symphony metaphor for QDA includes noticing, collecting, and thinking in a continuous and interrelated way.

The use of metaphors is a popular way to make sense and build a theory in qualitative analysis (Aubusson, 2002). Qualitative metaphors provide a good understanding using QDA and provides good tips for applied QDA. The next subsection describes three main QDA methods (grounded theory, case study, and framework analysis) using qualitative metaphors and extracts further points to developing and presenting our framework.

2.1 Grounded theory: from plurality to unity, a kaleidoscope metaphor

Grounded theory (GT), a popular research design, was developed by Barney Glaser and Anselm Strauss (Birks and Mills, 2011). Glaser’s definition of grounded theory is “a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area” (Glaser, 1992 cited by Evans, 2013). This means a “systematic theory developed inductively, based on observations that are summarized into conceptual categories, reevaluated in the research setting, and gradually refined, linked to other conceptual categories” (Schutt, 2015) and shaped empirical generalizations. GT is a main manifestation of a kaleidoscope metaphor using the constant comparison method as stated by Dye et al. (2000). GT is the most widely-used research method in a wide range of disciplines, including the social sciences, nursing and healthcare, medical sociology, information systems, psychology, and anthropology (Bryant and Charmaz, 2007).

GT is most often derived from qualitative (interpretive) data sources. Theoretical memoing is the core stage of GT methodology (Glaser, 1998). "Memos are the theorizing write-ups of ideas about substantive codes and their theoretically-coded relationships as they emerge during coding, collecting, and analyzing data, and during memoing" (Glaser, 1998).

Each memo comprises ideas shaped by coding about relationships between concepts. Codes of similar content are grouped into concepts. Broad groups of concepts shape categories and a collection of categories become a grounded theory. Writing memos, sorting, and integrating them are the heart of theory-building in GT. From memo to theory, unity in plurality is established systematically among notes and insights. Figure 5 shows how memos work in the real world. Writing memos and synthesizing them is critical. Our mindware was subjected to this collage mechanism (pasting data to a board).

Figure 5: Memos on a pin board (free copyright image extracted from https://pixabay.com/en/pinboard-communicate-communication-436478/).
GT and a more recent developed method, framework analysis, are so important that experts like Lacey and Luff (2009) and Crinson and Leontowitsch (2006) have described them as main approaches for QDA. GT focuses on analytic induction and framework analysis, as shown below, relies on thematic analysis.

- **Point 8:** In line with the kaleidoscope metaphor, grounded theory is based on memoing and systematic private note writing (Figures 3 to 5). This means little notes form the final theory, structure or explanations, finally.

### 2.2 Framework analysis: a jigsaw puzzle metaphor

Analytical induction has long been represented by GT as the prominent method for qualitative analysis. In this style of QDA, data management and interpretation are concurrent (NatCen, 2015). Developed by Jane Ritchie and Liz Spencer primarily for health research at the National Centre for Social Research (NatCen), framework analysis is a thematic framework used to classify and organize incoming data according to key themes, concepts, and emergent categories (Onlineqda, 2015). For each research study, “the framework identifies a series of exclusive main themes subdivided by a succession of related subthemes or topics. These themes and categories evolve and are refined as an iterative process through the researcher’s familiarization with the raw data and the subsequent cross-sectional labeling data (emerging issues)” (Onlineqda, 2015) or come directly from *a priori* issues. This thematic framework should be developed and refined during subsequent stages (Lacey and Luff, 2009). The process of applying the thematic framework to the data employs numerical or textual codes to identify specific pieces of data that correspond to the different themes (Lacey and Luff, 2009). Once researchers judge that they have reached a comprehensive list of main themes and subthemes, or saturation, they can construct or chart its matrix or chart the data (Figure 6) (Onlineqda, 2015).

**Figure 6:** Thematic chart (up); Case chart (down) based on NatCen (2012)

Headings from the thematic framework can be used to create charts of data so that it is possible to easily read across the whole dataset. Charts can be either specific to a theme across all respondents (cases) or by case for each respondent across all themes (Figure 6) (Lacey and Luff, 2009). Any response or incoming piece of data then is allocated to a row with each column representing a separate subtopic (Crismon and Leontowitsch, 2006). The final stage involves summarizing or synthesizing the original data from each case (subject) within the appropriate parts of the thematic framework (Ritchie and Lewis, 2003). This stage includes searching for patterns, associations, concepts, and explanations in the data aided by visual displays and plots (Lacey and Luff, 2009).

Unlike GT, the framework method is not necessarily concerned with generating a social theory, but can greatly focus on social problem-solving and facilitates constant comparative techniques by reviewing the data across the matrix (Gale, Heath, Cameron, Rashid, & Redwood, 2013) where data management and interpretation are sequential (Not concurrent) (NatCen, 2015). NatCen (2015) states that framework analysis is a case- and theme-based approach using a matrix display to reduce data through summarization and synthesis. The matrix retains links to original data and output allows comprehensive and transparent data analysis. Problem-solving orientation in framework analysis leads to a matrix framework and method. Among the main notes we found in our review was a good match between our matrix-based model as presented and applied independently in 2011 and framework analysis.

Framework analysis has limitations and pitfalls beside problem orientation and a well-grounded mechanism. It is time- and labor-intensive with no guarantee of an outcome. It is in danger of becoming process- rather than
outcome-focused, but is not as pragmatic as required for problem-oriented research. It needs to be reflexive, by not forcing square pegs into a round hole (NatCen, 2015).

- **Point 9**: Framework analysis is a case- and theme-based approach. In line with Jigsaw puzzle metaphor, this research design relies on finding key themes among data originated from a set of cases or sources.

### 2.3 Case study and detective method; examples of jigsaw puzzle metaphor

A case study is a common research design in social science, from sociology and political science to psychology, business, and economics. Suter (2012) defines it as "an approach to qualitative research that focuses on the study of a single person or entity using an extensive variety of data." Robert Yin (2003) theorized that the mental framework of case study research is the **detective method**. Mills, Durepos, & Wiene (2010) described the detective method as "a good analogy for case study research. When solving a crime, a detective's investigation occurs at two levels: the first involves collecting evidence (i.e., carrying out data collection) and the second involves simultaneously entertain hypotheses about how and why the crime occurred. The detective's hunches (i.e., hypotheses) and theories about the crime, tentative at first and later becoming firmer as more evidence is collected, may be considered the detective's mental framework. A case study investigator's mental framework exists and evolves in the investigator's mind and private notes. The investigator does not openly expose this framework when interacting with others." The methodology for case study research and its detective method is as follows:

- It is based on evidence collection and conclusion about evidence toward a hypothesis and theories about how, what and why is reality.
- It is formed gradually and evolves step by step.
- Private notes play a critical role in the detective method.

- **Point 10**: Like when solving a jigsaw puzzle, case study design uses the detective method to make hypotheses. The detective method is described as an evidence board of pasted pictures and collected evidences (like Figure 5).

### 2.4 Other proofs

This section briefly describes related stories that are not research design, but are a form of QDA and allow us to incubate and present our mindware.

**Police detectives:** In movies and in actual detective work, you may have seen *evidence boards*. Through the process of evidence collection and scrutiny, detectives paste pictures of evidence on a board and rearrange the elements mentally to try to develop and depict a relation between them. These evidence boards are used a graphical method to solve a multi-aspect problem. Detectives may set up this board in their minds and not reveal it to others until arriving at a final hypothesis or theories. "As the good detective may not reveal her or his crime-solving hypotheses until much evidence has been collected, the case study investigator also keeps the mental framework to himself" (Mille et al., 2010).

**Military intelligence operation:** Military intelligence is a military discipline that exploits a number of information collection and analysis approaches to provide guidance and direction to commanders in support of their decisions (IBP USA, 2011). This analysis consists of assessment of an adversary's capabilities and vulnerabilities (IBP USA, 2011).

Military intelligence operations are developed gradually using cumulative collected data from field (IBP USA, 2011). Hassan Bagheri, an Iranian military commander and top war strategist during the Iran-Iraq war was known for collecting various information from different sources and integrating these insights into maps of battlefields. Military intelligence operation is a good example of a symphony metaphor because intelligence officers try to notice and collect evidence from any reliable source and think about them to shape a picture of the battlefield.
• **Point 11:** The detective method and military intelligence operations use the jigsaw puzzle and symphony metaphors to evolve a graphical or mental map of the battlefield or problem based on data gathered from all possible and reliable sources. And in general we could say that;

• **Point 12:** QDA metaphors are usually iterative and evolving through time until theoretical saturation.

Now refer back to figure 2, based on the above-mentioned points we should find out a comprehensive set of themes (Point 9) among data and sources (Points 2 & 9) for data plus an iterative (Point 6), inductive (Point 3), detective (Points 10 & 11) method of analysis. This method includes clustering, conceptualization (Points 1 & 5), pattern recognition (Points 7, 6 & 11) and memoing (Point 8). In the next section, we continue this quest by finding main covering themes for data as is requested through Point 9.

### 3 Problem-solving and Decision-making: Pragmatism in Thinking

Karl Raimund Popper, a reputable Austrian-British philosopher of science, in his book *All Life is Problem-solving* asserts that the starting point of natural science as well as social science is a problem (Popper, 1999). He described problem-solving process as involving three steps: (a) problem recognition, (b) attempted solutions, and (c) elimination. The problem arises when a disturbance takes place. In Popper’s view, this means either an innate expectation or an expectation that has been discovered or learnt by trial and error (Popper, 1999). The second stage of Popper’s model is to try to solve the problem (Popper, 1999). This is where decision-making enters to select among alternatives and choices. The final stage in the model is elimination of unsuccessful solutions; this involves learning and feedback loops.

Before Popper, the most prominent educational philosopher was John Dewey (1910), who described problem-solving as the basis for a new paradigm in learning and education: *learning through problem-solving*. This is conducted using the critical thinking that Dewey and his colleagues believe should be developed in the educational system. John Dewey elaborated critical thinking and divided it into two stages. The first stage is sensing complexity, skepticism, and hardship. This leads to the second step: curiosity and the quest for a solution to eliminate the skepticism. In this quest, Dewey proposed five steps to problem-solving (Meyers, 1986):

1. Problem/need recognition
2. Information search and determination of problem cause
3. Generation of alternative solutions
4. Evaluation of alternatives and making decisions
5. Implementation and feedback

The ideas proposed by John Dewey and William James about critical thinking for prediction, action, and problem-solving formed an American philosophy referred to as *pragmatism*. From the beginning of the 20th century, pragmatism as a philosophy of modern education in the UK and USA was propagated for problem-solving-oriented learning and problem-solving in different fields of studies. As articulated by Max Weber, the thinking behind modernity and modern society known as instrumental rationality is on setting goals, analyzing the present situation, and searching among alternatives having much benefit and less cost. Since then (beginning of the 20th century), Dewey’s model has been used in fields from social science to engineering (Ranade and Corrales, 2013), medicine (Margolis, Jotkowitz & Sitter, 2004) and regional planning. It could be considered to be the backbone of every problem-solving framework in science and the humanities.

We start our framework construction from problem solving process. The fundamental importance of this process and its replication in different fields of social and applied science has been noted in many references where main themes of problem solving process could cover almost all steps of human inquires in social systems.

To apply problem-solving to applied science, we have synthesized the different perspectives about problem-solving process as reflected in Table 2 in Appendix 1. This brief synthesis comprises a comprehensive problem-solving process as follows:

1. Problem definition/opportunity recognition; includes status review
2. Collecting information and determining causes
3. Developing a hypothesis and/or using theories or frameworks on the issue
4. Generating alternatives and/or solutions
5. Assessing alternatives
6. Selection and implementation of a solution
7. Outcome evaluations and revision of plan, if necessary

These steps conform to the six steps of the problem-solving model described by Gobbo (2008, p. 240), plus an additional step (step 3) that generates and considers hypothesis and theories about the phenomena. As Gobbo (2008, p. 240) insisted, "Although all problem-solving involves some decision-making, decision-making does not always involve problem-solving."

The comprehensiveness and prevalence of problem-solving in social science means it does not seem wrong to consider its steps as major themes for all human inquiry based primarily on qualitative data; A human confronting a disturbance tries to recognize the problem, gather information about it, find and attempt solutions, implement the selected solution, and apply modifications based on outcomes.

- **Point 13:** In section 2, the problem-solving process as illustrated in Table 2 (7 steps) is manifested in many disciplines and could be used to cover main themes and milestones in applied social research. Considering framework analysis, these steps can be applied as a general themes Figure 6) of the matrix. On ther hand, the 7 steps of problem-solving could also be assumed to be a meta-theme that covers all aspects of an investigation.

Now we have found 13 points for qualitative data categorization and analysis. At section 4, we find the last point to interlink abovementioned points and rules.

### 4 Correlation Matrices and Diagrams

We are now going to conclude the notes and models discussed in the promised mindware. To integrate the concepts pragmatically (Points 1-13), in line with framework analysis, we have used a conceptual correlation matrix. In management and engineering, many models incorporate integration and interrelation of intentions using correlational matrices:

- **Quality management:** This has been initiated by companies like Ford and Toyota and includes graphical problem-solving tools like house of quality.
- **Strategic management:** The Ansoff matrix, BCG matrix, and mainly quantitative strategic planning matrix (QSPM) are reputable matrices in the field of strategic management. Ansoff and BSC categorize strategic positions held by a company and QSPM quantifies the SWOTs that may confront a company.

In both fields, matrices are employed to make correlations between and depict relations with two groups of concepts, one in the rows and another in columns. Sometimes a third dimension (triplet) is added; for example, in the form of radiant bubbles (in bubble charts) or a correlation triangle matrix (in house of quality).

- **Point 14:** with regard to section 4 matrices could be employed to make correlations between and depict relations with two groups of concepts.

### 5 Discussion, Model and Mindware: A Matrix-Collage Metaphor

Based on notes and insights presented in sections 2, 3 and 4, the following have thus far been learned about creating problem-solving mindware:

- **Point 1:** QDA includes coding, categorizing, grouping, clustering, conceptualization, linking, integrating, and creating theory.
- **Point 2:** Cases (Figure 6) such as people interviewed, observed phenomena, or papers considered can be summarized as data collection sources. These sources are observations, interviews, documents, and focus groups (participatory approaches).
- **Point 3:** The main analogy used in QDA is induction, the process of constantly comparing a primary shaped structure against collected data and revising it until theoretical saturation.
- **Point 4:** The process of QDA can be well interpreted by the qualitative metaphors of kaleidoscope, jigsaw puzzle, or symphony.
- **Point 5:** The kaleidoscope metaphor for QDA includes coding, labeling, grouping and clustering data bits around piles and themes of broad scope.
- **Point 6:** The jigsaw metaphor for QDA includes arranging and rearranging of data pieces in a reciprocal way toward achieving a sensible pattern (theory, hypothesis).
- **Point 7:** The symphony metaphor for QDA includes noticing, collecting, and thinking in a continuous and interrelated way.
- **Point 8:** In line with the kaleidoscope metaphor, grounded theory is based on memoing and systematic private note writing (Figures 3 to 5). This mean little notes form the final theory, structure or explanations, finally.
- **Point 9:** Framework analysis is a case- and theme-based approach. In line with Jigsaw puzzle metaphor, this research design relies on finding key themes among data orginated from a set of cases or sources.
- **Point 10:** Like when solving a jigsaw puzzle, case study design uses the detective method to make hypotheses. The detective method is described as an evidence board of pasted pictures and collected evidences (Figure 4&5).
- **Point 11:** The detective method and military intelligence operations use the jigsaw puzzle metaphor to evolve a map of the battlefield or problem based on data gathered from all possible and reliable sources.
- **Point 12:** QDA metaphors are usually iterative and evolving through time until theoretical saturation.
- **Point 13:** In section 2, the problem-solving process as illustrated in Table 2(7 steps) is manifested in many disciplines and could be used to cover main themes and milestones in applied social research. Considering framework analysis, these steps can be applied as a general themes (Figure 6) of the matrix. On ther hand, the 7 steps of problem-solving could also be assumed to be a meta-theme that covers all aspects of an investigation... covers main themes among data
- **Point 14:** with regard to section4 matrices could be employed to make correlations correlations between and depict relations with two groups of concepts.

Thus, a combination of these insights, points, and tools are provided in Figure7 (right) using a correlation matrix-collage(Point14). Points 2 and 13 show that this matrix is recruited to correlate between two groups of concepts: (a) problem-solving as introduced in section 3 (meta-themes for social research); and (b) data collection sources (meta-cases to feed the matrix). This matrix works for qualitative metaphors and analogies for analysis as described in sections 2 & 3.

![Figure 7](https://www.ejbrm.com)

**Figure 7.** Row and column arrangement + specified line-problem (left); general proposed mindware (right).

The primary idea and framework for this matrix was formed based on the author’s initiative about rural planning in southeastern Iran. As mentioned before, we needed an agile framework for land-use planning (Aménagement) that could reflect and react to fast-moving regional economic and social changes in the region and conclude large amounts of incoming data from different sources. The model depicted in Figure9 and Figure10 was implemented in the region and the results were presented to and accepted by the employer. Since then, the model has been retheorized and modified over years of collaboration. In the general model (Figure 7), the matrix builds a correlation between two dimensions:

---

### Tables

<table>
<thead>
<tr>
<th>Data Collection Source/Approach 1</th>
<th>Partial Conclusion 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Collection Source/Approach 2</th>
<th>Partial Conclusion 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Collection Source/Approach 3</th>
<th>Partial Conclusion 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Collection Source/Approach 4</th>
<th>Partial Conclusion 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
1. **Point13**: Problem-solving process concluded in 7 steps through Table 2 in column vectors (Figure 8 (left)).
2. **Point2**: Data collection themes and/or sources that form the matrix row vectors (Figure 8 (right)).

![Figure 8: Columns (left); rows in matrix-collage (right).](image)

In the mindware, the task is to complete the cells (entries) of the matrix-collage using as much reliable incoming data as possible (some cells may remain vacant) and then conclude each column of the matrix as described later using **Points 1 through 13**. For example, the phenomenon under study was “underdevelopment in southeastern Iran” (Figure 9 & 10). Using matrix-collage, each time during research when we come across a document (paper, report, etc.) about our topic, we try to discover:

- How this document defines the problem of underdevelopment in southeastern Iran
- How the document explains the phenomenon and regional environment
- What theories explain the problem, causes, and solutions in the document
- What solutions and/or alternatives are proposed in the document
- If and how the document evaluates or appraises alternatives
- If it provides advice for implementation of solutions and forecasts about challenges facing the proposed solutions
- How does it document the implementation of similar solutions and how are similar cases useful for this project

These issues are in line with the seven step comprehensive model of problem-solving shown in Table 2 (Point13). Each document (papers, reports, etc.) are divided by source; each could have answers to all issues or could answer just one (Point2). Each answer could form a row vector to be placed in the matrix-collage.

When we face an expert during an interview or make an observation in the region, we can ask the same questions in line with the seven steps of problem-solving about underdevelopment in southeastern Iran. We can bring up these issues for a document, interview, or observation for any other phenomenon under study (Point2).

In line with **point13**, each source that contains at least one answer to one of the issues will form a **problem line** and is placed as a row vector as depicted in Figure 7 (left). Each row in the matrix is a **problem line** that contains at least one piece of data and at most seven pieces (the puzzle icons pasted in each row in Figure 7 (left)). Note that, each data piece is entered into the matrix in the form of little memos (based on Point 8).
5.1 Arrangement of rows

The arrangement of the matrix rows is based on data collection sources or cases cited in Framework analysis (Point 9). With regard to point 2, the problem lines extracted from interviews are entered in the first row, the ones from observations in the second, problem lines sourced by documents in the third, and panel data that provides problem lines in the fourth (Figure 8-right).

To customize the matrix for a specific social issue under study, further closed classification and arrangement in rows is carried out for related literature and data collection sources. For example, the praxis in section 6 is land-use and development planning in southeastern Iran. Literature on land-use planning (Aménagement) advises four data collection themes or approaches. These are chosen for the classification of the rows of the related matrix. These themes are (Figure 9): cultural development, political development, economic development, and system sustainability. These data collection approaches form a general classification for the rows in the matrix related to underdevelopment in southeastern Iran.

5.2 How to conclude the matrix

First, we learned how to construct the matrix and fill it with pieces of data gathered from different sources. This is a synthesis of past metaphors giving birth to the new matrix-collage metaphor. The main question remains of how to analyze this galaxy of data pieces provided in the form of memos. The answer is to conclude each row by shaping notes, then distribute and redistribute the notes to all row vectors of matrices. We articulate this mechanism in the matrix-collage as follows (Figure 7-left) using the qualitative metaphors and Points 1, 3 and 12 as:

1. Based on Point 1, provide a conclusion for each group of rows under each data collection approach and place it in the subsequent partial conclusion row (rows 1, 2, 3, 4 at Figure7-left).
2. Based on Point 1, a conclusion for partial conclusion rows (row 1, 2, 3, 4 at Figure7-left) is placed in the general conclusion row at the bottom of the matrix (Figure7-left).
3. Insights gathered from step 2 (and stored in general conclusion row) are redistributed to whole rows and their entries. This is an inductive process of clustering, grouping and clustering and is based on Points 1, 3 and 5.
4. Steps 1, 2, and 3 are repeated to harmonize the matrix until theoretical saturation. This is a reciprocal, iterative and evolving process and based on Points 6, 10, 11 and 12.
5. Using the conclusion in the column vectors, we attain the problem definition, environmental analysis, advisable solutions and their appraisals, plus considerations and experiences of implementation for the issue under investigation respectively.

Detailed implementation of this process is presented at praxis (section 6). Suter (2012) states that the "qualitative researchers become skilled at coding and pattern seeking using analytic induction. Making sense of data in the form of graphics, video, audio, and text requires clear thinking that is aided by theory, models, constructs, and perhaps metaphor." Using its qualitative metaphor, data is classified and handled for analytical induction; this matrix-collage can serve decision-makers when building a research hypothesis, constructs, or solutions about a subject.

6 Praxis

In this section, a case using the matrix-collage is presented to demonstrate the mindware for development of a customized model of problem-solving and decision-making for a specified phenomenon. The case was about development planning in southeastern Iran (Sistan and Baluchestan Province). As shown, presented matrix-collage is customized for each phenomenon under consideration based on the literature available about data collection approaches and/or themes for that issue.

6.1 Regional planning: Aménagement du territoire

An application of matrix-collage model in development planning was presented for development policy-making in southeastern Iran for the first time in 2011. A framework (Figures 9 & 10) was designed that includes problem-solving processes and shapes a system of simultaneous socioeconomic equations. To find a suitable solution, this complex should be completely analyzed and resolved. This was achieved through a reciprocal or
iterative method for the system of socioeconomic equations based on the method presented in section 5.2. The steps can be summarized as follows (Figures 9 and 10):

- 1. Model socioeconomic system
- 2. Collect qualitative and quantitative data
- 3. Harmonize the matrix
- 4. General conclusion
- 5. Redistribution
- 6. Conclusion to column 2
- 7. Conclusion to column 3
- 8. Conclusion to column 4
- 9. Conclusion to column 5
- 10. Conclusion to column 6
- 11. Conclusion to column 7
- 12. Conclusion to column 8
- 13. Conclusion to column 9

Figure 9: A system of socioeconomical equations and iterative method for solution

1-Model socioeconomic system; model socioeconomic system in a n×m matrix including the problem-solving processes (problem-lines) that should be solved together (Figure 9).

2-Collect qualitative and quantitative data; collect qualitative and quantitative knowledge, concepts, and insights from different sources to complete the collage of problems in the matrix and form socioeconomic equations (problems-lines \(xx-y_1\), \(xx-y_2\), ..., \(xx-y_n\)). When we came across a document (paper, report, etc.) or interview/observation memos about an underdevelopment issue in southeastern Iran, we called it a problem-line, assigned each problem-line an identification code (\(xx-y\)) as reflected to column No.1 and through which we tried to discover;

1. How this document defines the problem of underdevelopment in southeastern Iran? Any answer to this inquiry was placed at column No.2.
2. How the document explains the phenomenon and regional environment? Insights gathered in this regard were placed at column No.3.
3. What theories could be found to explain the region’s problem, causes, and solutions into the document? Answers to this question were placed at column No.4.
4. What solutions and/or alternatives are proposed in the document through that problem-line? Answers to this question were placed at column No.5.
5. If and how the document evaluates or appraises alternatives? Any appraisal for solutions were stated at column No.6.
6. If a problem-line provides advice for implementation of solutions? Such advice were stored at column No. 7.
7. If problem-line forecasts opportunities or challenges in front of the proposed solutions? Extracted predictions were placed at column No.8.
8. Finally, for the post-implementation period, any experience or feedback could be stored at column No. 9. This could be used for future revision of matrix collage and its solutions.

These issues are in line with the seven-step comprehensive model of problem-solving plus a further column for future studies and hypothesis for region (Futurology). Note that each problem line contains at least one piece of data.

Based on data collection approaches in this case, we grouped each problem-line at one of four main cultural, political, economic and sustainability branches of rows at Figures 9 &10.

As an example look at Figure10, a part of the original matrix is depicted that contains just 8 problem lines (refer to column one and codes; 2-4, 30-5, 56-4, 19-4, 45-4, 29-5, 14-5, 15-4). They equal with 8 sources of data, include at least one data piece( ) and are extracted from a paper, interview or observation. We labeled each problem line with a two-digit code xx-y. From the left to right xx is number of source and y is its perceived importance of source in relation to development of the region based on Five-Point Likert scale (five for most importance and one for least importance). For the group of problem lines in our research, we also provided a table like Table1 to clarify labeling, type and origin of each problem line. For example based on Table1, code 56-4 (budgeting inefficiency) is 56th problem line extracted from a paper and we appraised its importance, 4 on Likert scale.

Table1: A sample table of problem lines and their codes provided for matrix-collage

<table>
<thead>
<tr>
<th>No.</th>
<th>Concept name</th>
<th>Source type</th>
<th>Data theme</th>
<th>Other notes</th>
<th>Its code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>out-group social capital</td>
<td>Paper/report</td>
<td>Cultural</td>
<td>-</td>
<td>2-4</td>
</tr>
<tr>
<td>2</td>
<td>entrepreneurial culture</td>
<td>interview</td>
<td>Cultural</td>
<td>-</td>
<td>30-5</td>
</tr>
<tr>
<td>3</td>
<td>budgeting inefficiency</td>
<td>Paper/report</td>
<td>Political</td>
<td>-</td>
<td>56-4</td>
</tr>
<tr>
<td>4</td>
<td>radicalism</td>
<td>Observation</td>
<td>Political</td>
<td>-</td>
<td>19-4</td>
</tr>
<tr>
<td>5</td>
<td>Inconsistent capabilities</td>
<td>interview</td>
<td>Economics</td>
<td>-</td>
<td>45-4</td>
</tr>
<tr>
<td>6</td>
<td>Cluster development</td>
<td>Paper/report</td>
<td>Economics</td>
<td>-</td>
<td>29-5</td>
</tr>
<tr>
<td>7</td>
<td>Poverty</td>
<td>observation</td>
<td>Sustainability</td>
<td>-</td>
<td>14-5</td>
</tr>
<tr>
<td>8</td>
<td>Insecurity</td>
<td>observation</td>
<td>Sustainability</td>
<td>-</td>
<td>15-4</td>
</tr>
</tbody>
</table>

3-Harmonize the matrix: harmonize the problem-solving processes through each row (in this example rows 2-4, 30-5, 56-4, 19-4, 45-4, 29-5, 14-5, 15-4) by concluding columns vertically and writing conclusions in harmonizing (partial conclusion) rows. Harmonization produces new notes and insights that will be stored vertically in lower rows (harmonizing rows). Consider our example (Figure10), look at blue elbow arrow connectors at the right side of the matrix (figures9 and 10).

- A conclusion on problem lines 2-4 (out-group social capital) and 30-5 (entrepreneurial culture) is stored in its lower partial conclusion row (cultural theme of data); Building a community of development deans powered by government based on regions and tribes where deans could work among their tribes and propagate an entrepreneurial thinking among their community. These people should be selected from among respected elders who are and/or interested in being an entrepreneur!
- A conclusion on problem lines 56-4 (budgeting inefficiency) and 19-4 (radicalism) is placed in its following partial conclusion row (political theme of data); Making regional authorities to some extend independent to be able to customize regional budgets based on regional needs and conditions. A considerable part of the budget should be targeted to inject a controllable amount of modernization among local families and tribes to make them immune against radicalism as a disease.
- A conclusion on problem lines 45-4 (Inconsistent capabilities) and 29-5 (cluster development) is placed in its following partial conclusion row (Economic theme of data); Uniform development at the region is impossible because resources and capabilities are highly scattered. However, development at some clusters where minimum capabilities are provided, could be generated which then leaks to peripheral area. These clusters are implemented into two groups of producto-polises or capillary value adding networks.
- A conclusion on problem lines 14-5 (Inconsistent capabilities) and 15-4 (cluster development) is placed in its following partial conclusion row (Sustainability themes of data); Providing basic needs
including job, security and standard level of welfare for local people could end vicious circle of Misery in the region.

4-General conclusion; Notes stored in Partial conclusion rows will be concluded and synthesized as new concepts to be stored in the last conclusion row of the matrix entitled General conclusion (Figure 9). Look at blue elbow arrow connectors at the right side of the matrix (figures 9 and 10). In our example (Figure 10), this conclusion was as follows; Providing basic needs and a standard level of welfare at selected regions entitled producto-polises (cluster cities) or capillary value adding networks could attract local people to work there in a low-wage and tax system of production that could be competitive. In which development deans facilitate entrepreneurship initiatives among tribes and families, local people get modernity, development stream leaks to peripheral area and clusters could end vicious circles of misery.

5-Redistribution; we Redistributed concepts extracted from the last row (General conclusion row) to all of problem-solving rows and repeat steps 2 through 4 to attain theoretical saturation. Look at green elbow arrow connectors at the left side of the matrix (figures 9 and 10).

This cycle finally led to a Policy statement extracted from general conclusion row at the final cycle. This statement was an elaboration on our two extracted macro-policies; Producto-polises (cluster cities) or capillary value adding networks to end vicious circle of misery in the region. Moreover, we achieved to more insights from the final conclusion on columns of matrix.

6-Conclusion to column 2, led to a problem definition; this region suffers from Low out-group social capital, Low entrepreneurial culture, radicalism, Inconsistent development capabilities, Poverty, unemployment and insecurity.

7-Conclusion to column 3, led to a comprehensive environmental analysis. In this regard for example we found that local people have more trust within their tribe than beyond. Local people don’t have business mind and entrepreneurial thinking in general. Budgeting is not compatible with region’s conditions and remarks. Some local people are threatened by radicalism, extremism or membership in gangs. Economic development sources like water, mines and fertile soil are very sporadic and poverty, unemployment and insecurity form a vicious circle of misery in the system. However there many scattered capabilities in the region in terms of agriculture or mines or commercial transportation and logistics that could be leveraged toward region’s development.

8-Conclusion to column 4, led to a well-grounded theory or set of theories about regional development. Based on Figure 10, among them we attained to Social capital theory, theory of Entrepreneurial thinking, concepts of Regionalism and federalism, Modernization, Cluster development, and basic needs theory.

9-Conclusion to column 5, leads to solutions and policies for socioeconomic development in the region; Making competitions among families in terms of development and entrepreneurship could be managed by a group of development deans among families and tribes. Building development clusters in the form of Producto-polises (cluster cities) or capillary value adding networks could end vicious circle of misery in the region and inject a controllable amount of modernization to alleviate extremism and anarchy. For this purpose, government should facilitate federalism in planning and budgeting.

10-Conclusion to column 6, evaluates policies or solutions extracted from step 9. We eliminate this part from our example!

11-Conclusion to column 7, summarizes expert forecasts and futurology about region. For example we forecasted that development deans could shape an entrepreneurship atmosphere at the region.

12-Conclusion to column 8, indexes considerations necessary for implementation of policies. Among these considerations are; Empowering local elites who have had entrepreneurship experience is necessity to play the role of development deans at region, Imposed levels of modernization should be controlled to prevent consumerism and alienation at the region and location studies are needed to find suitable places for producto-polises (cluster cities) or capillary value adding networks.
13-Column 9 is dedicated to experiences gathered during and after implementation of policies and revisions takes place after evaluation.

<table>
<thead>
<tr>
<th>Problem Approach</th>
<th>Problem Definition</th>
<th>Immersion in system</th>
<th>Related theories</th>
<th>solutions</th>
<th>Evaluation ...</th>
<th>futurology</th>
<th>organizing for implementation</th>
<th>Implementation &amp; feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach 1</td>
<td>Cultural</td>
<td>Low-out group social capital in the region</td>
<td>Local people have more trust between their tribe than beyond</td>
<td>Social capital theory</td>
<td>Making competitions among families in terms of development and entrepreneurship</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach 2</td>
<td>Political</td>
<td>Budgeting inefficiency</td>
<td>Budgeting is not compatible with region's remarks</td>
<td>Regionalism and federalism</td>
<td>Federalism in planning and budgeting</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach 3</td>
<td>Economic</td>
<td>Inconsistent development capabilities</td>
<td>Economic development sources like water, mines and fertile soil are very sporadic</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach 4</td>
<td>Sustainability</td>
<td>Poverty and unemployement</td>
<td>Poverty, unemployment and insecurity and ... form a Vicious cycle in the system</td>
<td>Basic needs theory</td>
<td>To ending this Vicious cycle we need a breakdown initiative</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Building a community of development deans powered by government based on regions and tribes where deans could work among their tribes and propagate an entrepreneurial thinking among their community. These people should be selected among respected elders who are and/or interested to be entrepreneur!

Approach 2

Making regional authorities to some extend independent to be able to customize regional budgets based on regional needs and conditions. A considerable part of budget should be targeted to injected a controllable amount of modernization among local families and tribes to make them immune against radicalism as a disease.

Approach 3

Uniform development at the region is impossible because resources and capabilities are highly scattered. However, development at some clusters where minimum capabilities are provided, could be generated and then leads to peripheral area. These clusters are implemented into two groups of producto-polices or cassical value adding networks.

Approach 4

Providing basic needs including job, security and standard level of welfare for local people could end vicious cycles of misery in the region.

Figure 10: Matrix-collage presented in figure 9 is filled for 8 problem lines.

This framework was implemented in the region over the course of 12 months and led to problem elaboration, two macro-policies, and a detailed policy package including problems of region, related insights and development theories, future studies, main solutions, their evaluation and consideration for implementation.

7 Conclusion

The quest for qualitative mindware started with qualitative metaphors (mainly Kaleidoscope and Jigsaw Puzzle) and problem-solving process as articulated by John Dewey and other theorists. Problem-solving process has been used in fields of science and the humanities from land-use planning and policy studies to management and industrial engineering.

The main component of problem-solving is data and how to analyze data for problem-solving objectives. The focus on creating qualitative mindware requires qualitative data collection and QDA. The main metaphors for understanding QDA are kaleidoscope, jigsaw puzzle, and symphony. These metaphors introduce QDA as a reciprocal, iterative, evolving, and inductive procedure for collecting data pieces and memos and extracting a pattern from them. Suter (2012) emphasized that “qualitative data analysis is often performed during data collection with emerging interpretations—a working hypothesis—guided by a theoretical framework.” While QDA evolves throughout the research project and works like a kaleidoscope or jigsaw puzzle solution, we designed a general theoretical framework for handling QDA.

Using a correlation matrix, we created interaction between the problem-solving of the columns and data collection methods or approaches of rows to be analyzed using the 14 points explained in section 5. The
proposed model and mindware theorize, then systematize and combine these two axes using qualitative metaphors and the innovative procedure in section 5.2.

Figure 7-left shows that the matrix-collage works like a collage of data pieces that produce order from chaos or unity from plurality. Looking at the procedure we implemented at section 6, in alignment with QDA theory, qualitative metaphors and the detective method, matrix-collage works like an evidence board. It exhibits gradual growth and is reciprocal, traceable in procedure, and refreshable by new incoming data.

As explained in section 6, we implemented a form of this methodology in 2011 for development planning in the south-east of Iran. The results were appreciated by the employer (Center for Strategic Studies; www.css.ir) and was used for agenda setting before the trip made by the Iranian president, Hassan Rouhani to Sistan and Balochestan Province. Despite most of the past initiatives, this research could consider almost all inquiries about the region and any form of related data. Moreover, it is possible for matrix-collage to be updated, harmonized and modified with later incoming data, after the research is completed. The model could be implemented with any level of available resources (researcher, money and informants' participation) although fewer resources affect the comprehensiveness of the findings and conclusions.

In general as cited by Thorne (2015), there is deep need for qualitative methods of data analysis especially when huge volumes of data are gathered from different sources. We tried to invent and implement a new framework for analysing such data qualitatively.

The novel mindware is a new qualitative metaphor called matrix-collage. This methodology serves as a case study protocol for formal problem-solving initiatives as required by Yin (2003). It can be used as a qualitative data analysis and classification method or a comprehensive method for problem solving in organizations and social systems. Our main contribution is to invent a methodology to organize data gathered from different sources and analyse them semi-systematically towards problem definition, environmental analysis, theory construction and incubating the solutions for each phenomenon under study.

This model must be developed in theory and practice. To do so, the framework should be used by other practitioners for problem-solving in different fields. In this regard, we welcome all collaboration and assistance.

Acknowledgments

The authors would like to express their profound gratitude towards EJBRM's Editor and the anonymous reviewers for their very helpful comments.

References


Thorne, S. (2015). Data analysis in qualitative research, Downloaded from http://ebn.bmj.com/ on May 12, 2015 - Published by http://www.group.bmj.com


### Appendix1-a general Problem Solving Process

#### Table 2: Extracted steps of problem-solving process for different fields

<table>
<thead>
<tr>
<th>Name</th>
<th>Visual model of managerial problem solving</th>
<th>Systems Decisions Process</th>
<th>Problem-solving process</th>
<th>Problem-solving model</th>
<th>The classic approach to decision making</th>
<th>Wilson's problem-solving model</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Management</td>
<td>System Science</td>
<td>Engineering</td>
<td>Behavioral science</td>
<td>Social Science</td>
<td>Social Science</td>
<td>Present study</td>
</tr>
<tr>
<td>Steps;</td>
<td>Problem Identification (Opportunity detection)</td>
<td>Problem Definition</td>
<td>Recognition of problem existence and determining its importance</td>
<td>Review Status and Identify Problems</td>
<td>Define the objective</td>
<td>Problem Identificatio</td>
<td>Problem recognition &amp; definition (Opportunity detection)</td>
</tr>
<tr>
<td>Determination of Cause</td>
<td></td>
<td>Identifying, defining &amp; recognizing the problem</td>
<td>Collect relevant information</td>
<td>Problem Definition</td>
<td>Collect information, determination of causes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation of alternative solutions</td>
<td>Solution Design</td>
<td>Constructing &amp; finding alternative solutions</td>
<td>Develop and refine hypotheses</td>
<td></td>
<td></td>
<td>Develop and refine hypotheses</td>
<td></td>
</tr>
<tr>
<td>Evaluation of tentative choice</td>
<td>Decision Making</td>
<td>Assessing alternatives &amp; selecting one of them</td>
<td>Discuss and select solutions</td>
<td>Make the decision</td>
<td>Assessing alternatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Problem Analysis</td>
<td>Solution Implementatio</td>
<td>Imposing the selected solution</td>
<td>Develop and implement action plan</td>
<td>Solution Statement</td>
<td>Final Choice and Implementatio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Choice and Implementation</td>
<td></td>
<td>Evaluate and revise action plan</td>
<td>Implement and evaluation</td>
<td></td>
<td>Evaluate and revise action plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools</td>
<td>Brainstorming, Fishbone, AHP method</td>
<td></td>
<td></td>
<td>Case-based reasoning</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appropriate Conceptualisation: The Foundation of Any Solid Quantitative Research

David Onen
Makerere University, Kampala, Uganda
donenotoo@cees.mak.ac.ug

Abstract: This paper discusses the importance of conceptualisation in quantitative research. It explains in simple terms what conceptualisation entails, and indicates where and how the researcher should apply the techniques of conceptualisation. The paper has been prompted by the recurring challenges higher degree students and early career researchers face in enabling the readers of their research reports (dissertations or theses) to gain a common understanding of what they have written about. Problems with this have caused some dissertations or theses to be rejected for reporting on something other than what the candidate purports to have studied. In this paper, conceptualisation is examined as a multi-dimensional concept, starting with the process of forming concepts that describe the identified research problem, and proceeding to the derivation of agreed-on meanings of concepts, as well as the operationalisation of study variables, in order to avoid ambiguity and misinterpretation in a researcher’s work. In the paper, the author attempts to explain in some detail how misconceptionalisation can lead the researcher to err when conducting research, and the implications of this at each stage of the quantitative research process. In short, the paper demonstrates that a solid quantitative study cannot be conducted without appropriate conceptualisation. The paper may thus be used as a guide in planning and conducting quantitative studies by higher degree students and early career researchers.

Keywords: Concept, conceptualisation, research, variables, operationalisation, dissertations

1 Introduction

Over the years during viva voce examinations, I have sadly witnessed several candidates pursuing their masters or doctoral degree programmes being told outright to change the titles of their dissertations (or theses) in order for the titles to match what their reports contain, or else being asked to return to the field to collect fresh data and write altogether new reports that are in tandem with their study topics. Surprisingly, this particular recommendation has often shocked the candidates, as well as their supervisors, who are rudely brought to face the fact that what their candidates purport to have studied differ from what the reports contain. Sometimes, even when the dissertation (or thesis) topic seems suitable, one may still discover shortcomings with the dimensions and indicators of the concepts (or variables) studied. Quite often, these shortcomings might have already significantly compromised the derivation of study objectives and the quality of study instruments used to gather data, as well as several other aspects of the study. Such a scenario may prompt the following questions: why may a researcher report on something other than what he/she purports to have studied? How is it possible in the first place for a researcher to do such a thing? How can a researcher succinctly capture (in words or figures) what he/she perceives to be the question of his/her study and build an agreed-on meaning of the concept(s) (or terms) used in the study? The purpose of this paper is to answer these and many more related questions - the answers to which mostly lie in the inappropriate conceptualisation of the issues (or concepts) under investigation. In this paper, the author attempts to explain in some detail how misconceptionalisation can lead the researcher to err when conducting research, and the implications of this at each stage of the quantitative research process.

The paper has been prompted by the recurring challenges higher degree students and early career researchers face in enabling the readers of their research reports (dissertations or theses) to gain a common understanding of what they have written about – a scenario which has led to the rejection of some dissertations or theses for reporting on something other than what the candidate purports to have studied.

The paper is structured in the format of answers to four core questions, namely: (1) what is conceptualisation in research? (2) How does conceptualisation occur? (3) How is conceptualisation used in quantitative research? (4) What are the limitations of conceptualisation?
2 Understanding conceptualisation in research

The term conceptualisation is a hyponym for concept. Therefore, to get a clearer understanding of what conceptualisation is in research, it is desirable to first consider concepts and variables. Ideally, a concept is an idea or area of thought formed in the mind of someone (Collins Thesaurus of the English Language, 2002). It is what someone thinks about something or a phenomenon or situation which can be expressed in a language and externalised by writing or drawing (Collins English Dictionary, 2009). It is thus a construct derived by mutual agreement from mental images to describe something or a situation (Sequeira, 2014). For example, if someone notices, through a review of literature or personal experience, that members of the academic staff of University X often resign or abscond from employment and new ones have to be recruited to replace the departed staff members, he/she may form the idea that this in-and-out flow of employees could be costly to the university in many ways, including disrupting the flow of teaching and learning. As a researcher, one can proceed to derive appropriate concepts that succinctly capture the problem scenario described above, such as labour turnover, staff attrition or staff retention. These three 'issues' (or concepts) could be used to depict the observation that University X could be experiencing the problem of high labour turnover, or high staff attrition, or low staff retention. All three concepts describe the scenario or state of losing (or not retaining) employees in an organisation. In research, forming the appropriate concept is crucial for avoiding ambiguity in understanding what a given study is all about. In our day-to-day life, there are several concepts we use for describing almost everything we know of, or think about, including words such as socio-economic status, poverty, knowledge, performance, efficiency, and many others referring to objects, situations or phenomena. In research, however, these same words are generally often referred to as variables; yet concepts and variables do not necessarily mean the same thing.

Generally, a variable is a statistical term, meaning a quantity that can take on different possible values. It can also be looked at as a characteristic (or an attribute) that can take a variety of forms (or values) at different times, or in different people or places, or in different circumstances. Examples of variables include educational status, marital status, gender, religion, ethnic group, ability, and temper, among others. If the values of a variable are expressed in numbers to indicate the amount, degree, quantity or magnitude of the attribute, then it is called a quantitative variable. But if a variable is expressed in terms of qualities, then it is called a qualitative variable. However, it is possible for one variable to be expressed in qualitative and quantitative terms at the same time. Table 1 illustrates that scenario.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Levels</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (m)</td>
<td>21 - 30, 31 - 40</td>
<td>Short, Tall</td>
<td>2</td>
<td>Binary</td>
</tr>
<tr>
<td>Distance (km)</td>
<td>0-4, 5+</td>
<td>Short, Long</td>
<td>2</td>
<td>Binary</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>15 - 19, 20 - 44, 45 - 79</td>
<td>Young, Youth, Old</td>
<td>3</td>
<td>Polychotemous</td>
</tr>
<tr>
<td>Monthly Income (Shs)</td>
<td>≤20,000; 20001-49,000; 50,000+</td>
<td>Low, Moderate, High</td>
<td>3</td>
<td>Polychotemous</td>
</tr>
<tr>
<td>Religion</td>
<td>Christianity, Muslim, Hindu, Buddhist</td>
<td></td>
<td>5</td>
<td>Polychotemous</td>
</tr>
</tbody>
</table>

As researchers, we need to remember that there are relationships between concepts and variables; that is, concepts that describe phenomena, situations, or things that have different dimensions or aspects are called variables. As variables, such concepts contain different dimensions and indicators. For example, in a study of how home environment affects the performance of students in school, home environment is one of the concepts being studied. But because this concept has different aspects, it is also a variable. In fact, ordinarily, it is referred to as the independent variable of this study. In conceptualising home environment, we can identify some of its dimensions, such as availability of reading books, availability of television sets, etcetera. But to measure the concept, indicators of the dimensions are required. In this particular case, the following could be the indicators of home environment: number of TVs, time spent watching non-academic programmes on TV, number of books in the home, etcetera. However, in general, both dimension and indicator can be variables. This is true if a concept has only one dimension with one indicator. After conceptualising what concepts and variables are, the meaning of conceptualisation in research will be discussed.

The term conceptualisation is a multi-dimensional concept which can take different meanings depending on the context in which it is used. However, as a hyponym to concept, the word conceptualisation is often first used to describe the process of forming a concept (Collins English Dictionary, 2009). In the example used
above about University X, the process of forming the appropriate concept that captures succinctly what one perceives to be the problem is called conceptualisation. It is appropriate in research to form appropriate concepts because they enable the researcher to communicate in words his/her mental image (or picture) of the problem or issues under investigation. Inappropriate conceptualisation, or misconceptualisation, can result in a researcher studying and reporting on something else other than what he/she purports to have studied. In practice, once a researcher has already formed the concept (or variable) to be investigated, he/she must ensure that this concept is understandable to others. The researcher must therefore further conceptualise the issue (or variable) under investigation in order to derive a specific agreed-on meaning for that concept. In this regard, the process by which the researcher specifies what he/she means (or does not mean) when using particular concepts or terms in research is also referred to as conceptualisation (Sequeira, 2014). It is very important for a researcher to appropriately conceptualise the study variables (or concepts) because we cannot meaningfully answer a question about something, or understand an explanation about it, without a working agreement about what it is or what its outcome would mean. In the example about staff attrition (or labour turnover or staff retention) at University X, the researcher would need to conceptualise what staff attrition is, in order to let others know what it will mean in the study. Conceptualisation, in this regard, occurs in phases. First, the researcher needs to consult experts in his/her area of research, and this is why the review of the literature in a given field of knowledge is so important. For instance, the researcher can look out for the meaning of staff attrition from other scholars who have defined it, before focusing on what the concept will mean in the current study.

After obtaining the scholarly definitions of a concept, the researcher then needs to operationalise the meaning of the concept in order to make it measurable. In this case, operationalisation can be regarded as the last phase of conceptualisation. However, the concept operationalisation is often used to refer specifically to the process by which the researcher defines a concept or variable in terms of its dimensions and indicators. Dimension in this regard, is the specifiable aspect of a concept, while indicator is the observation that we choose to consider as a reflection of a variable we wish to study. For example, in a study on socio-economic status (SES), the researcher can look at SES in terms of family income, and level of education of parents as dimensions; and the specific measures of SES could thus include mother’s highest level of education, father’s highest level of education, mother’s annual average level of income, father’s annual average level of income, etcetera. If the researcher does not conceptualise his/her study variables well, it will negatively affect the entire research project because, in quantitative research in particular, the derivations of appropriate objectives, research questions or hypotheses largely emanate from appropriately conceptualised study variables.

3 Process of conceptualisation

Although there are different methods of conceptualising issues in quantitative research, scholars agree that conceptualisation takes place in different contexts and phases. For instance, regarding context, Srinidhi (2013) noted that a researcher can conceptualise the research problem on the basis of a single-entity approach, or a game theoretic approach. In the single-entity approach, the researcher looks at the issues to be investigated in an organisation without considering the influence or presence of other organisations. This kind of conceptualisation is suitable where the organisation or firm being investigated has market influence that outweighs the others. However, conceptualising research issues based on this approach is not realistic, since the environment in which organisations or firms operate has influence over their operations. In the game theoretic approach of conceptualisation, when conceptualising issues that need investigation, the researcher assumes the presence of other firms (or organisations) that influence the behaviour of the firm to be investigated. This seems to be a more realistic approach to conceptualising issues in research than its counter-part, the single-entity approach.

This paper focusses on the process of conceptualisation in terms of the steps (or phases) followed when conceptualising issues in research. In terms of phases, Sequeira (2014) noted that the process of conceptualisation generally occurs in five phases, namely: Phase one – forming concepts; Phase two – definition; Phase three – indicator selection; Phase four – operationalisation; and Phase five – observation (or measurements), as illustrated in Figure 1.
Figure 1: Conceptualisation Process

Source: Adapted from Sequeira (2014)

Figure 1 illustrates that conceptualisation occurs in a cyclical pattern, starting with forming a word to describe the idea in one’s mind. This is followed by defining the concept formed. After definition, the researcher selects the dimensions and indicators that the concept will mean. Then, the researcher will give the operational definition of the concept and, finally, will identify how the concept will be measured or observed. According to Sequeira (2014), this whole process is termed explication; that is, the process of moving from definition to measurement and back to the definition. In other words, when conceptualising, one does not always start with a clear, observable, complete and useful conceptual definition and then attempt to observe (measure) that variable. The process of explication indicates that the final conceptualisation and measurement results from interplay between these two activities.

4 Application of conceptualisation in quantitative research

There are a number of areas in quantitative research where, without appropriate conceptualisation, a researcher cannot correctly perform the right task. The different scenarios of quantitative research will be discussed next in which there is a requirement to apply, step by step, appropriate conceptualisation.

4.1 Formulating the research problem

Any research often begins with the identification of a research problem. A research problem may have been identified in the literature, theory, or in practice which is ‘not as it should be’, and requires investigation in order to obtain a better understanding of the problem and propose solutions. The research problem may arise from issues, difficulties, current practices or problems that need to be solved or better understood, or from deductions from existing theories related to current social or political issues, practical situations or personal experiences. In defining a research problem, a researcher must form appropriate concept(s) that succinctly capture his/her mental image of what he/she perceives to be the problem. Forming those concepts is part and parcel of conceptualisation. If a researcher fails to conceptualise the research problem correctly, he/she will end up studying something other than what he/she truly perceives to be the problem. In the example given on staff attrition (or labour turnover or staff retention) at University X, if the researcher instead uses ‘labour mobility’ as the concept to describe the problem scenario, it may be misleading, not only to the researcher but also to everyone reading the research report because, while labour mobility involves movement of workers from one place to another, it does not describe the same scenario (or invoke the same picture) as if staff retention (or staff attrition or labour turnover) was used. In other words, the concept ‘labour mobility’ means something else, while the other three concepts induce a similar mental image of the situation, except that labour turnover and staff attrition are antonyms of staff retention. From this illustration, we can deduce that if a researcher fails to form correct concepts to succinctly capture what the research is about (or...
misconceptualises the study), then the study report will be on something other than what he/she purports to have investigated.

4.2 Deriving an agreed-on meaning of a concept

In practice, there are thousands of concepts we use to describe various objects, phenomena or situations, but their meanings often vary depending on the context in which we use them. Therefore, every researcher needs to specify what is meant when using particular concepts (or terms) in his/her study in order to avoid individuals misinterpreting or failing to understand what they are saying. For example, if someone decides to study, for instance, the effect of management on the performance of academic staff of University X, the researcher will need to specify what is meant by management in his/her study because the concept of management means different things depending on the context in which it is used. Drucker (1980), for instance, defines management as “Management is tasks. Management is a discipline. But management is also people” (p.4). This definition looks at management as a function, a process, a discipline, and as a profession. First, as a function, management is what is responsible for directing and running an organisation. Second, as a process, management incorporates activities by which the internal and external resources are combined to achieve the objectives of the organisation. Third, as a discipline, management is a body of knowledge that provides ideas on the theories and practice of management. Finally, as a profession, management is a type of higher-grade, non-manual occupation joined by individuals after an advanced period of training and education. In that regard, when a researcher is investigating ‘management’, he/she should then appropriately specify what management means in the current study in order to avoid ambiguity in understanding what he/she is talking about.

4.3 Formulating study objectives

In research, there are usually two categories of objectives: the general (or purpose) and specific objectives. The general objective of a study is a description of the overall intention of the study. It elaborates on the information implied in the title of the study by presenting a quick overview of what the problem is, the target population, design, and broad expectations of the study in unambitious and largely immeasurable terms. However, in order to make a good purpose statement, the researcher needs to have appropriately defined concepts that he/she intends to investigate. This is because a purpose statement describes what the researcher intends to achieve with the use of particular variables (or concepts).

Meanwhile, objectives are specific aims or goals arising directly from the purpose of the study (Makerere University, 2011). They are statements of the intended outcomes of the study and of what the researcher is going to do. Therefore, they are statements that clarify the purpose statement, as specific small units that add up to the purpose, or more specifically, as the breakdown of the purpose into small manageable units. Each objective requires a method designed to achieve it (Makerere University, 2011). Generally, a good objective should be S.M.A.R.T (specific, measurable, attainable, realistic and time-bound), and should clearly indicate the target population, context and the variables to be investigated.

Research objectives are often derived from conceptualised study variables (or concepts). In practice, once the study variables are conceptualised (or operationalised), the researcher can then express the relationship between the independent and the dependent variables in a manner that points to the purpose of the study, using words that imply action, and in observable and measurable terms. There are usually five approaches (or models) to writing quantitative research objectives, based on the operationalisation and the placement of the independent and the dependent variables. These models are often described as: the many-to-one, the one-to-many, the many-to-many models, the model without breaking variables (Amin, 2003), and finally, the model for mediation studies (Baron & Kenny, 1986). These models can be illustrated as follows:
In Figure 2(a), Model 1, the independent variable is separated into operational units but the dependent variable is retained as a unit. This is termed as the many-to-one approach. It is the most preferred model because the researcher is linking different dimensions of the explanatory variable with the problem (or dependent) variable to establish whether it can explain the problem.

In Model 2 (or the one-to-many model), the independent variable is retained as a unit and relates to each operation of the dependent variable as illustrated in Figure 2(b). Such an approach is mostly suitable where the independent variable cannot easily be operationalised, as in experimental research. The model is also
suitable for relationship studies that do not imply causality.

In the third model (or the many-to-many approach), each individual operation of the independent variable is related to each operation of the dependent variable, as illustrated in Figure 2(c). The disadvantage of this approach to writing research objectives is that it generates too many objectives and makes the study cumbersome. But, on careful analysis, Model 3 is just a duplication of Models 1 and 2.

Model 4 objectives comprise a kind of a free approach to writing study objectives and is particularly suitable in exploratory and one variable studies, and in qualitative research. In this model, as illustrated in Figure 2(d), the objectives are generated without focusing on specific operations of the variables. However, studies with such objectives are not as easy to focus or carry out as studies with Models 1, 2 or 3 objectives.

Finally, Figure 2(e) illustrates a study involving mediations. As a result, the researcher is expected to derive study objectives that link the different study variables without necessarily breaking down the variables. In this case, there can be specific objectives targeting relationships a, b, c, d and e, as shown in Figure 2(e). This model is associated with the work of Baron and Kenny (1986) and other scholars who have investigated mediation effects.

In summary, if a quantitative researcher fails to appropriately conceptualise his/her study variables, he/she will certainly also fail to derive suitable general and specific objectives of the study.

4.4 Formulating the conceptual framework

A conceptual framework (or a concept map) is a schematic presentation (or diagram) of a theory as a model where variables (or concepts) and their relationships are translated into a visual picture to illustrate the interconnections between the independent, extraneous, and dependent variables, as well as with any other variables significant to the study. It is a conception or model of what is out there that one plans to study, and what is going on with these things, and why. A good conceptual framework informs the rest of the design of the study. However, to formulate an appropriate conceptual framework, a researcher needs to fully conceptualise the study variables by identifying all the dimensions and indicators of the concepts (or variables) under investigation; and if this is not done, the researcher will develop a shallow conceptual framework.

There are general conventions and rules for developing conceptual frameworks that are designed to simplify and standardise the process of conceptualisation, facilitate keeping track of where one is, where one wants to go; the requirements for getting there, and allow for communication with others. According to Cresswell (1994), the following conventions should be adopted when developing a conceptual framework:

1. The independent variable is placed on the left and the dependent variable on the right, separated by extraneous variables at the centre, in unit boxes or circles connected by lines and arrows.
2. A straight line indicates different levels of a variable. Thus $A \rightarrow B$ indicates that $B$ is an element (or an operation) of $A$.
3. A one-way arrow ($\rightarrow$) leading from a determining variable to a variable dependent on it suggests causality. The symbol $A \downarrow B$ indicates that if $A$ is manipulated in some way, then $B$ should change correspondingly, but not vice-versa. Variables described in a framework in the manner of 2 and 3 are endogenous variables because they have hypothesised causes in the model.
4. A two way arrow ($\leftrightarrow$) shows dual causality. Thus $A \leftrightarrow B$ indicates that if $A$ is manipulated in any way, then $B$ should show corresponding changes, and vice-versa.
5. A curved double-headed arrow shows unanalysed relationships between variables not dependent on the system.
6. $A \rightarrow B$ indicates that it is not yet hypothesised how $A$ and $B$ could be casually related to $B$, but there is evidence of a relationship between $A$ and $B$ not dependent on others in the system. $A$ and $B$ are therefore exogenous variables.
7. Broken arrows \( \rightarrow \) or \( \leftarrow \) leading from a determining variable to a variable dependent on it indicates feedback.

8. An open box with a bent arrow leading out of it \( \llbracket \, \rrbracket \) shows information received from outside the system.

9. The strength of a relationship is indicated by inserting valence signs on the pathways, or by using lines of different thicknesses. The pathways with the same valence could have the same number of signs (e.g., +++ or ---) or lines of the same thickness.

A general model of a conceptual framework should take the form depicted in Figure 3.

![Figure 3: A General Model of a Conceptual Framework](source: Oso & Onen (2009))

In the framework in Figure 3, \( IV_1, IV_2, IV_3, \) and \( IV_4 \) are the operations of the independent variable; and \( DV_1, DV_2, DV_3, \) and \( DV_4 \) are the operations of the dependent variable. \( EV_1, EV_2, \) and \( EV_3 \) are the extraneous variables. \( D \) represents other matters, unrelated to the variables but which could inform the findings of the study. If the researcher has confidence that all the extraneous variables have been adequately controlled and will therefore not influence the dependent variable significantly, then they may be omitted from the model so that only the independent and the dependent variables are related directly. It is important for the researcher to provide a brief explanation of the interconnections between the variables immediately after the scheme.

4.5 Reviewing the literature

One of the major requirements of scientific research is a demonstration by the researcher of having a thorough understanding of the issues and facts surrounding the problem under investigation. In order to understand the problem at hand, a researcher must obtain and extensively read information materials that relate directly to the topic under investigation. This is referred to as a literature review (Oso & Onen, 2009). To do a thorough literature review, the researcher needs to identify related scholarly works. One way of identifying the related literature is to establish if the other authors talk about any of the concepts, and their dimensions and indicators that are similar to those the current study is based on. For instance, if someone studied the concept ‘management’ (as in section 2 above), if he/she defined management in a different way from that of the current researcher, then that literature may not be relevant to review for the current study. Therefore, conceptualisation is important in guiding the researcher when selecting literature for review.
4.6 Choosing the research design

The importance of design in research does not need to be over-emphasised here. According to Trochim (2005), the design of a study is the ‘glue’ that holds all the elements in a particular research project together and gives it direction. The choice of a study design is very important in any research. However, to make an appropriate choice of research design, the researcher must take into consideration firstly the concepts he/she is investigating and, secondly, their dimensions and indicators, because the design should ensure the systematic collection and analysis of data appropriate for those dimensions and indicators of the concepts studied.

4.7 Constructing data collection instruments

In research, it is not enough to identify an appropriate research design, determine a representative sample size and take care of all the other logistical requirements, without ensuring that appropriate data collection techniques and tools are identified and used in a particular study (Trochim, 2005). In simple terms, the researcher must choose from the array of data collection techniques the appropriate method(s) and corresponding instruments that can able him/her to achieve the study objectives. However, it is not easy to develop valid and reliable study instruments, such as questionnaires and interview guides, without appropriate conceptualisation of the research variables under investigation. This is because the questions (or statements) set in a questionnaire or interview guide must focus on the indicators of the concepts studied, in order to make them measurable and researchable. Without appropriate conceptualisation and operationalisation, the researcher cannot construct a valid and reliable questionnaire or interview guide (or schedule). For example, a doctoral student, who investigated the process of decision-making at one university where the author was a panel member during her defence, was heavily criticised for using in her questionnaire statements such as “There is order in decision-making at this University”; “There is coordination in the making of administrative decisions at this University” and many other such statements with which she asked respondents to agree or disagree. Words such as ‘order’ and ‘coordination’, which the student used in her questionnaire, were themselves concepts that were prone to different interpretations by the individual respondents. The student should have conceptualised further what ‘order’ and ‘coordination’ meant, in order to formulate suitable statements that could measure what she was investigating. Despite the glaring anomalies detected in the questionnaire, the student was marginally passed and still awarded the degree of Doctor of Philosophy of that university. This kind of scenario could have been avoided if the candidate had fully conceptualised the concepts (or variables) that she investigated. Misconceptualisation of study variables can lead a researcher to make mistakes when conducting research.

4.8 Testing for validity and reliability

Validity and reliability play a vital role in research. Validity is often measured in several ways, and tests whether the results yielded by the research are credible and trustworthy. The three types of validity are content validity, construct validity and criterion-related validity (Shuttleworth, 2008). Content validity is the extent to which an empirical measurement reflects a specific domain of content, while construct validity is concerned with the extent to which a particular measure relates to other measures in ways consistent with theoretically derived hypotheses. Criterion-related validity determines whether a measure predicts other measures that can be measured more objectively. To ensure content validity, the researcher must ensure that the items contained in an instrument, such as a questionnaire or interview schedule, are based on the constructs (indicators) that measure the study concepts. Consequently, this means that the researcher must have fully conceptualised and operationalised the study variables if the study instruments are to have high content validity indices.

Reliability assesses whether the research yields consistent results. Researchers often use different methods to test reliability, which include the test-retest, alternative, split-halves and internal consistency methods (Shuttleworth, 2008). The instruments used in data collection and analysis should be tested to ensure that the results are reliable. These tests are performed on the instruments basing on each concept with its dimensions and indicators. Without appropriate conceptualisation, it would therefore be difficult to measure both the validity and reliability of study instruments.
4.9 Data presentation, analysis and interpretation

Upon collecting data, the researcher is expected to present, analyse and interpret the data. All these tasks should be carried out bearing in mind the concepts, and their dimensions and indicators investigated. It is important at this stage for the researcher to be aware of the concepts of the study to avoid reporting results on something other than what has been studied.

4.10 Composing the discussion, conclusions and recommendations

During the discussion of study results, the researcher needs to cross-reference his/her results with the work of other scholars in order to detect the similarities and differences in their findings. This is important in order to tease out the contribution of the current study to the generation of new knowledge. In the same vein, the researcher should draw conclusions and make the necessary recommendations on the basis of the findings made with regard to the concepts (or variables) and their dimensions and indicators studied. This means that the application of conceptualisation runs throughout the entire process of conducting a particular study.

5 Limitations of conceptualisation

Despite the enormous benefits of conceptualisation, in practice, it is not always easy to conceptualise issues in research. This is because the concepts formed and used in a given context must never be arbitrary but should match with reality. But the question is – does reality exist or is reality just a creation of society? Nonetheless, researchers cannot just proceed to form a concept and claim this concept means this or that, when others experience that concept differently. This partly explains why a researcher must consult experts in the field when conceptualising issues in research so that his/her conceptualisation is consonant with that of the wider society or, at least, his/her peers. Again, the challenge here is to determine who is an expert in the field and who is not. Take the case where a researcher is investigating the effect of management on the performance of workers in an organisation; who should the researcher regard as an expert on management? Is it on Peter Drucker’s, Henri Fayol’s or Michael Armstrong’s definitions that he/she will base the conceptualisation of management? Fortunately, the conceptualisation of management as a concept has been incremental over the years; that is, whoever defined management after another scholar has considered the previous definition while adding his/her views on the concept. This approach to conceptualisation avoids misconceptualisation, and helps to create new insights that build on existing knowledge. According to Squeira (2014), the data-gathering process is, generally, a complex interplay between the conceptual process and the actual observation or measurement process. Therefore, conceptualisation and measurement are often limited by physical, psychological, cultural and technological limitations. However, he (Squeira) counsels that, when conceptualising issues in research, the researcher must be cognisant of these challenges, so that he/she can avoid misconceptualisation and addressing something other than what society or his/her peers understand/assume to be the topic.

6 Conclusion

In conclusion, several points can be made. Firstly, credible research should not only gather information on a given phenomenon, but should also derive ways and means of addressing that phenomenon. Secondly, a good research study will have clearly defined goals and objectives that guide the researcher throughout the research. Thirdly, good research should portray validity and reliability, and its results should be replicable in other studies. All these can be achieved only if the researcher forms appropriate concepts to succinctly capture his/her study problem; identifies the dimensions and indicators of those concepts that are under investigation; and finally, develops the study objectives, conceptual framework, research instruments and all the other parts of the study in tandem with the concepts investigated.

References


www.ejbrm.com 37 ISSN 1479-4411
Makerere University (2011) Guidelines for writing research proposals and dissertations, Kampala.
Using Phenomenological Constructivism (PC) to Discuss a Mixed Method Approach in Information Systems Research

Fenio Annansingh\(^1\) and Kerry Howell\(^2\)
\(^1\)York College, City University of New York, Department of Business and Economics, Queens, New York, USA
\(^2\)Plymouth University, Plymouth School of Business, UK
fannansinghjamieson@york.cuny.edu

Abstract: This paper used phenomenological constructivism to demonstrate and evaluate a mixed method approach for conducting information systems research. It evaluated the implementation and implications of mixed methods approach as an exploratory and inductive research method. A case study which made use of in-depth interviews was used to provide the dominant qualitative (QUAL) method. Following this, a questionnaire survey was used to provide the results for the less dominant method which is the quantitative (QUAN) data. The mixed method approach was adopted to enhance the completeness and accuracy of the interpretation of the study. It provided a number of recommendations for the use of mixed methods approach for IS projects.

Keywords: Case study, Information systems, Mixed methods, Phenomenological constructivism

1 Introduction

Information systems (IS) projects typically adopt a positivist approach, which primarily focus on the development process associated with the technology rather than the perception and perspectives of the people involved (Bharadwaj, 2004). The constructivist paradigm (CP) focuses on the understanding of the social world through subjective experience. Burrell and Morgan, (1989) claim that such a perspective “seeks explanation within the realm of individual consciousness and subjectivity, within the frame of reference of the participant as opposed to the observer of the action”.

This paper discusses an IS research project that adopted a phenomenological constructivist approach, which seeks to interpret, understand as well as explore a number of socially constructed phenomena (Howell 2013) in human activity systems, namely to understand the sociological aspects in the software development setting as it focuses on human thought and action in social and organizational contexts. It tries to understand all the nuances of the phenomena at issue, in order to obtain clarification and insight into the situation, namely the identification of risks and knowledge leakage (KL) in virtual environments. The underlining premise of the study is based on a case study approach supported by risk typologies and conceptual understandings drawn from the literature review, exploratory interviews and a survey. This study aimed to detect and appraise the necessary security and risk management issues surrounding the development and acquisition of virtual environments and this was achieved using this approach. Interpretation of the data was used to understand social constructions and develop a risk identification technique which can be used for comprehending how people deal with risks in organisations and business. Furthermore, since not much has been written about the risk of knowledge leakage resulting from virtual reality environments (VREs), obtaining both the perceptions and perspectives of various individuals, as well as reaching a consensus within a population, assisted with the generalisation of the findings. However, using a mixed method approach should depend on the research objectives and/or questions rather than a particular preference for a method or field of study. Thus, it makes the case for using an IS case study with a mixed method approach which not only extracts the perceptions and perspectives of participants but also provides trustworthiness and validity regarding individual perceptions of the VR environments. The discussion employs levels of reflexivity and acknowledges the multi-faceted reflections this engenders.

2 Methodology: Phenomenological Constructivism

Phenomenological constructivism (PC) embraces a wide range of philosophical and sociological stances, which share the common characteristics of attempting to understand and explain the social world from the perspective of the actors directly involved in the social process (Burrell and Morgan, 1989). It assumes that

knowledge, within the domain of human action, is a necessary social construction and therefore inevitably subjective (Walsham, 1993). “Phenomenology provides us with interpretations regarding the distinctions between the internal and external world as well as levels of objectivity and subjectivity … for phenomenology there is a general comprehension that there is a relationship between mind and world” (Howell, 2013, p.55). Constructivism considers that reality is based on shared experiences and research results are “created through consensus and individual constructions, including the constructions of the investigator” (Howell, 2013 p.87). PC perceives the social world as a social process that is continuously developing and evolving – which consists of a network of assumptions and shared meanings. In this paper, through PC we seek to understand the perceptions and perspectives of the people who are involved with the development and use of the IS and recognising that organisations and subgroups will develop shared meanings or perceptions that are more subjective in nature than objective.

From an ontological perspective PC views the social world as extremely complex and problematic, where the researcher seeks to interpret, understand, experience or produce the very basis and source of social reality (Burrell and Morgan, 1989; Howell, 2013). Fundamental motivations for adopting PC for this study are based on the idea that the success or failure of an IS and the delivery of benefits is dependent on utilisation and the people using the technology. Based on a phenomenological perspective Feenberg (1991, 1999) argued that technological objects enter experience when we notice them as useful and the design of the said technology involves ontological decisions each of which has political consequences. Technology may be analysed on two levels, original function as well as design and implementation. This study concentrates on the latter and considers that technology is not autonomous to human existence, it is socially constructed. Indeed, such enables a constructing subject to be involved in the formulation and more importantly subsequent implementation of technology. Consequently, this approach seeks to understand management, developers, users, customers, and suppliers’ perception of the IS. These human participants affect the system as their interpretation of reality and shared experiences create complex interacting contexts and meanings upon which the system is developed. PC is therefore complementary to the central theme of this study, which considers the perspectives and perceptions of developers, customers and users concerning knowledge risk exposure in 3D photographic databases and the probability of the risks arising from this use and their interpretation of reality, shared and contested knowledge. It deals with the abstruseness of research in complex human activity systems under enquiry (no repeatable experiments, continuously evolving systems composed of a myriad different motivations, behaviours and constraints). Avison et al., (1999) argues that the exclusion of human factors in past research may have contributed to the dissatisfaction of users with conventional IS development. This is supported by Standish report (2005) in Sharma, et al., (2008) which purports that software project failure rates continue to be high with 71%, of software projects failing in 2004. Based on these arguments and the need to extract the perceptions and perspectives of participants in the research, a PC stance was appropriate as the objectives were to:

- characterise and identify risks from the literature through extensive review;
- characterise and identify risks from the case study as well as validate from the literature review;
- use questionnaire surveys to validate and assess risks identified in the literature review and case study.

Consequently this study describes a case study which developed a conceptual framework on knowledge management, risk management and risks identification techniques from theoretical frameworks. From the extensive literature review performed on the aforementioned concepts, the researcher is able to conceptualise the findings from the data collected in relation to the existing theories (Kumar, 2005). Thus, in order to perform the risk assessment required, it was necessary to perform the usual set of activities:

- Identification of the base-events
- Identification of the risks
- Ranking of the probability of each event occurring—with those with the highest probability at the top of the chart
- Determine the frequency of each event
Determine the risk impact
Determine the relative importance of the impact caused by the risk
Prioritise the risks relative to each other.

This type of risk analysis study usually involves in-depth study of work practices, usage of the artefacts produced and experiences of agents using them. Since the trigger for this research emerged from practice within a particular organisational environment, the natural approach for the research was a case-study approach. Additionally, the problem to be investigated is an emergent and contemporary phenomenon, in which context and boundaries are not entirely clear, and thus are best researched within its real-life context.

3 Case Studies

The use of case studies as a research tool has become increasingly important in recent times. This is because case study research is excellent at simplifying complex issues or objects and can draw on experience and/or add to the strength of information from other researchers. A case study strategy, however, can be used for either one of three purposes – exploratory, descriptive or explanatory (Yin, 2003; Walsham 1993). This study describes an exploratory strategy.

During the design phase of case studies, theory building is very important. Thus the research design consisted of a “theory” of what is being studied which served as the blueprint of the study. Yin (2003) argued that theory development can be a long and difficult process.

Nonetheless, case study research is particularly well-suited to IS research in general since the interest has shifted to organisational rather than technical issues. According the Gomm, et al., (2000) good case studies allow for:

- the recognition of complexity and the embeddedness of social truths;
- the generalisation of either a solution or instances of that solution;
- the presentation of research or evaluation of data in a form more accessible than other types of research, thus making it more understandable and credible for practitioners and interested parties;
- the direct interpretation of results and transferability of solutions (Yin, 2003).

However, one of the major problems with case-study analysis is construct validity, that is, the establishment of appropriate understandings and correct operational measures for the concepts being studied. Thus, the investigator usually begins by establishing a conceptual framework, which is used to guide the project. This conceptual framework usually employs accepted theoretical constructs and artefacts as the foundation of the study. Consequently, at the end of the study the researcher is able to either support or disprove the construct, or suggest ways of modifying the theory or applying the theory to new situations which were not previously addressed. Since the study is exploratory, it was important that a good theoretical framework was developed as it not only helps in defining the appropriate research design and in data collection but is the main vehicle through which the generalisations of the results of the case study can be achieved (Yin, 2003).

A single case study was used since it is considered typical of other small and medium enterprises (SMEs) involved with 3D models. Owing to this, a case-study research design was implemented based on the triangulation of methods. Exploratory interviews were conducted which were primarily done to gain a better insight of VREs, their functionalities as well as the stakeholder’s perceptions and perspective concerning general development and use of the software. The timeline for the study was from 2007 to 2012 as seen in Figure 1.
4 Research Design

Figure 1: research Timeline

The rationale for integrating a PC with a mixed methods approach is based on the fact that the phenomenon under scrutiny needs to be understood, as little research has been done in the area of KL in VREs. Hence understanding the perceptions and perspectives of the people involved with the development and use of the IS would be significant, as within the organization subgroups will develop shared meanings or perceptions that are more subjective in nature than objective. A mixed methods design according to Creswell (2008) is useful when either the quantitative or qualitative approach by itself is inadequate to understand a research problem. The qualitative portion was useful in this case since the researcher did not know the important variables to examine and because existing theories do not apply with the particular group under study.

Hence in order to both generalize the findings to a population as well as develop a detailed view of the meaning of a phenomenon, a mixed methods approach was employed.

Consequently, the research design comprised two stages. First, an exploratory case-study approach was used for discovery and identification purposes. The strategy for the case-study data collection and exploration of stakeholders’ views were devised as an iterative, consultative study. Second, a cross-sectional sector wide questionnaire survey was used in order to validate the findings emerging from the first phase.

This research developed and used the practice-based information systems research (PB-ISR) framework presented in Figure 2.0. This framework was designed adapting a general IS research framework proposed by Galliers (1992). This PB-ISR framework is particularly useful for projects, where research questions emerge from real-life organisational processes and problems encountered in practice. However, in order to extend the body of theory in IS, there is a need for research to be informed by extant theoretical constructs and understandings and supported by a thorough methodological approach, which is possible through the adaptation of the PB-ISR framework as presented.

Figure 2: The PB-ISR framework: a research framework to support practice-based IS research questions
Hence as seen in the ‘theory building and testing’ section of Figure 2.0, methodological triangulation was adopted as it involves the use of multiple methods to study a single phenomenon. Methodological triangulation ideally includes both qualitative and quantitative data. This type of triangulation involves the combination of methods which is based on the dominant—less dominant qualitative and quantitative methods referred to as: QUAL—quan, QUAN - qual triangulation (Creswell, 2007). Accordingly, a dominant qualitative method with a supporting quantitative method (QUAL – quan) was employed. The qualitative study was exploratory (interviews) and involves the use of a case study, followed by a sectional questionnaire survey for validation purposes (Tashakkori and Teddlie, 2009; Creswell, 2007). Triangulation was used to enhance the accuracy of the interpretation of the study. It was also used to test the validity and reliability of the study by confirming that the data collected is not due to circumstances or chance (Creswell, 2009).

Since not much has been written about the KL risks resulting from VREs, obtaining both the perceptions and perspectives of various individuals as well as reaching a consensus within a population assisted with the generalisation of the findings.

4.1 Research Aims and Objectives

In this study, the problem emerged from the fact that using VREs may result in KL risks. Despite the many advantages offered by VREs, their very nature poses clear knowledge exposure risks. The fact that the environments produced are intuitive, realistic, browsable by association and link to comprehensive specialised and technical databases, poses clear knowledge exposure and security risks. For the case organisation, the problem was particularly complex, since they produce these virtual environments on behalf of very specialised and high-tech companies. These companies in turn make these 3D models available both internally and externally to their customers, either to individuals or third party companies. Thus the aim of the project is to identify and assess the KL risks associated with the design, development and use of VREs.

4.2 Research Data

Data can take two forms: quantitative and qualitative. Qualitative data is generally concerned about people and their social reality. This constructed reality has already been interpreted by the individuals, thus the investigator must understand the motivation behind an individual’s interpretation of the situation as well as the activities based on these interpretations (Bryman, 2003). Therefore, through the use of in depth interviews and observations the researcher is able to provide deep, rather than broad set of knowledge about the phenomena under scrutiny. Consequently, exploratory interviews were undertaken with the Technical Director, Development Director, Security and Database Administrator and the Sales and Marketing Director, Lead Software Developer and Software Programmer. Interviews were the primary exploratory tool and were conducted in order to gain a better understanding of the product and the risk management issues surrounding its functionalities, stakeholders’ perceptions and perspective during development and use of the software. The interviews were conducted to provide a more technical description of the software development process.

On the other hand quantitative data is typically exemplified by the use of surveys and experimental investigations, tends to investigate cause and effect (Bryman, 2003; Creswell, 2009). Quantitative data was obtained from a small scale customer’s survey as well as a cross sectional survey and were used to rank and prioritise the risks identified from the interviews. Hence the researcher examined the probability and frequency of risks occurrence as well as the impact to the organisation. Questionnaires were employed to further explore any ambiguous aspects in the data collected as well as to serve as validation tools. Based on the results the data were grouped into a number of categories. These were namely:

- Organization Characterization
- Risks Associated with the Design and Development
- Risks Associated with the Use
- Inherent Risks Associated with the Nature of the software
- Knowledge Leakage
- Risk Management

Although there are clear differences between qualitative and quantitative data authors such as Bryman (2003), Creswell (2007), Onwuegbuzie and Leech (2005), Brannen, (2005) and Hathaway (1995) have argued that the choice between using qualitative or quantitative data has less to do with methodologies than it does with positioning oneself within a particular research paradigm. Therefore, rather than discounting either approach
for its drawbacks, one should seek the most effective ways to incorporate elements of both to ensure that their studies are as accurate and thorough as possible (Onwuegbuzie and Leech 2005).

5 Mixed Methods Approach

Since both qualitative and quantitative data have strengths and weaknesses a combination of both focuses on the strengths of each. The mixed method approach has a number of distinct advantages, namely:

Triangulation: involves combination of different data sources to study the same phenomenon. That is the researcher is seeking a convergence of results thus increasing the validity of the findings;

Complementary: entails examining overlapping facets of the phenomenon. For example, it is often helpful to conduct focus groups to inform the development or selection of a questionnaire;

Initiation: involves discovering the paradoxes, contradictions, and fresh perspectives on the issues surrounding the phenomenon;

Development: using the methods sequentially, so the results from the first method inform the use of the second method;

Expansion: is adding breadth and scope to the project;

In addition, mixed methods promote greater understanding of findings. That is, quantitative data can demonstrate that change occurred and by how much, qualitative data helps the researcher to understand why this change occurred (Brannen, 2005). A mixed method approach provides the researcher with a better understanding of a research problem (Tashakkori and Teddlie 2009; Creswell, 2009). Therefore, in order to minimise the weaknesses inherent in a single approach, convergence of the results was sought by using a mixed method approach (Brannen, 2005).

5.1 Quality Criteria

With the rise of an audit culture and the concern for assessing quality in mixed methods research it important to note the type of quality criteria that were applied to this study. Typically qualitative studies are less desirable than quantitative research, which is widely agreed and accepted. This cause for concern is due to a number of factors: firstly, is the lack of rigidity which tends to influence its findings and conclusion. Secondly, it is believed that there is very little basis for scientific (nomic) generalization. Bryman et al., (2008) and Sale and Brazil, (2004) suggest that criteria for using a mixed method approach should be based on the criteria of the individual components.

Consequently, by using the PB-ISR framework, theory building and theory testing were performed via triangulation of literature review, case-study analysis and questionnaire survey. Literature review was required for construct validity and the survey for external validity. Internal validity issues were addressed within the design of both the case-study analysis and questionnaire survey. Therefore, the first part of the research consists of in an in-depth literature review, followed by further elaborations on the methodology and case studies. These two activities correspond to the first section of the theory building section in the PB-ISR framework.

Following the theory building the results of any case-study is always difficult to validate and generalize, in order to achieve theory extension there is the need to address problems of external validity. This is a major problem when doing case study, as critics typically believe that a single case is a poor basis for generalization beyond the immediate case. However, according to Yin (2003) this criticism is unwarranted as during a survey research the use of a sample is readily accepted as a generalization of a larger universe. This generalization, however, is not automatic as a theory must be tested through replication of the finding or combination with other methods of research. Here, generalization of the results was achieved through a sector wide cross-sectional questionnaire survey. This survey forms the third section of the theory building triangle in the PB-ISR framework as seen in Fig, 1.0.
5.2 Triangulation

Triangulation was used to enhance the accuracy of the interpretation of a study. It can also be used to test the validity and reliability of the study by confirming that the data collected is not due to circumstances or chance. There are four basic types of triangulation identified by Lincoln and Guba (2000).

Data source triangulation: this involves the use of a variety of data sources and determining whether the case being studied remains the same at all times or interacts differently. Data source triangulation is employed to determine if what is being reported is the same as what is being observed. Lincoln and Guba (2000) suggest an additional value to source triangulation is contextual validation. In this the authors propose “the validity of evidence can be assessed by comparing it with other kinds of evidence on the same point”.

Investigator triangulation: several researchers are employed to observe the same phenomenon or scene.

Theory triangulation: use of multiple perspectives to interpret a single set of data. Since no two researchers will observe and interpret things entirely the same way, whenever the data of these researchers are compared and similarity exists, then there is some theory triangulation.

Methodological triangulation: is the most recognised type of triangulation and involves the use of multiple methods to study a single phenomenon or program. With multiple approaches to a single case study the researcher is likely to clarify or annul some extraneous influences. It ideally would include both qualitative (observations and interviews) and quantitative (descriptive statistics).

The purpose of triangulation in this study was twofold. Firstly, two or more methods were employed to address different areas of the same research question, thus extending the breadth of the study. This allows for the cross validation of the information – as the information is collected from several sources regarding the same event. This inevitably increased the quality of the research therefore conclusions drawn were more likely to be correct and accepted. Secondly, by using different research paradigms the researcher is able to compensate for inherent weaknesses in any of the chosen methods – especially when qualitative methods are used in conjunction with quantitative methods.

Hence the rationale for using a mixed method research was based on the research questions guiding the study. The findings from the study were also integrated and not left to the distinct component (Bryman et al., 2008).

5.3 Exploratory Interviews (QUAL)

Supported by risk typologies and conceptual understandings from the literature, exploratory interviews were undertaken with key management and technical personnel within the case company. Semi structured interviews were used in addition to the predetermined questions, as it provides the interviewer the freedom to probe for answers (May, 2003). These interviews allowed for an early identification and analysis of risks and were conducted to provide a more technical description of the software design and development process. Even though interviews are useful sources for providing insights into people’s experiences, opinions, values, aspirations, attitudes and feelings (May, 2003), the data gained from these interviews are generally limited to the knowledge, experience and perspectives of the respondents.

Data analysis of qualitative data begins with the identification of key themes and patterns (Coffey and Atkinson, 1996). Based on the interviews, initial data analysis was conducted via a question by question summary. Following this, open coding was used to identify, name, categorize and describe significant themes and issues found in the interview scripts. The codes emerged from actual terms used by the participants as well as those in existing theory and the literature (Saunders et al., 2000). Consequently, for open coding each sentence in the interview scripts was scrutinized in relation to risks identification and KL risks in VREs; this enabled the broadening of the research focus while keeping within the exploratory confines.

Following this, axial coding was used to identify the relationships between the categories of data that emerged from the open coding process. As the relationship between categories were identified they were rearranged based on a hierarchical system with sub categories emerging (Saunders, et al. 2000). Hence, axial coding was used to determine the risks arising from each vulnerability as well as the consequences associated with the risks identified (Coffey and Atkinson, 1996). Here, based on the key concepts and the associated risks, the
properties or consequences of each were examined via a combination of inductive and deductive thinking. From the categories emerging from the open codes, selective coding was used to categorise the different types of risks into key concepts (Saunders et al., 2000). The decision to assign concepts to the data was done to facilitate data condensation, thus making it more manageable. However, in addition to data reduction these concepts are used to link different sections of the data together.

The key concepts identified from this set of data were:

- Knowledge leakage
- Risks
- Risk management
- Knowledge management
- Security

From these concepts, relevant phenomena and examples were identified and selected to support such occurrences. Here similarities and differences were identified with a number of emerging patterns and structures, thus facilitating a more diverse analytical scrutiny (Coffey and Atkinson, 1996).

Based on the risks and key concepts identified from employing open, axial and selective coding, testing of these phenomena was done via the use of a questionnaire survey

5.4 Cross-sectional Survey (QUAN)

The research employed a questionnaire survey which was used to validate the findings of the case-study by querying the industry sectors that are involved in the design, development and use of 3D virtual models. The aim was to determine whether the risks identified from the case study were a true representation of perceptions in the sector. When it was determined that the questionnaires met the required standards, via a series of pilot tests, they were distributed. It is believed by the researcher that by testing and establishing relationships between the variables identified from the case study, sequential triangulation is achieved. As the first phase of the research – the case study -- was used to inform the second phase, -- the survey (Creswell, 1994). Therefore the survey was used to determine the differences or similarities in the perspectives and perceptions obtained in the case study thus validating the findings from the case study (Tashakkori and Tweddle, 2009). Additionally, in terms of the PB-ISR framework, this cross sectional survey forms the third and final vertex for the triangulation of methods outlined in the theory building and testing phase of Figure 1.0.

Questionnaires were sent to small and medium size companies and targeted a wide target group within the organisation with different job functions. The questionnaire followed a similar format to the case study questions; the initial questions were geared toward developing a profile of the respondents to determine the level of experience and expertise a particular individual may possess.

Unstructured open-ended questions were used in order to encourage participants to construct their own meaning of the phenomena – meanings that have been forged through discussions and interactions with other individuals within the organisation. Thus participants were able to express their views as there were no predetermined sets of responses. This increased the likelihood of receiving more useful and insightful suggestions, as it is impossible to predict the full range of opinion. This is especially useful in exploratory research, such as this, where the researcher was validating and investigating the KL risks arising from VREs (Saunders et al., 2000).

Closed questions were employed to validate the risk identified in the case study and its primary customers as well as the risks mitigation strategies and/or security technologies employed to protect the organisation from the KL risks in the VREs. The majority of these closed ended questions were multiple choices, where participants were required to consider all possible responses.

Data analysis for the survey was done using univariate and bivariate descriptive data analysis, both techniques involves the use of a number of tools which includes: frequency counts and distributions, summary values for frequencies and/or comparison between categories, pictorial representations of distributions and contingency tables/correlations.

In order to assess the strength of the relationship between two variables a non parametric test was employed, the Spearman’s rank correlation coefficient determine the significance of the cross tabulations (Somekh and...
The coefficient of this rank correlation varies between -1 and +1 therefore it provides information on both the strength and direction of the relationship. Owing to the fact that this rank is a non-parametric test it can be used in a wide variety of contexts as it makes fewer assumptions about the variables (Bryman 2003). Spearman’s rank correlation coefficient is especially useful with small numbers or when the items have unique ranks and categorical data (Blaikie, 2003).

6 Discussion and Reflection

A phenomenological constructivist approach which focused on the perceptions and perspectives of stakeholders and end users, involved in the design, development and utilisation of the VREs was employed for this study. It was perceived by the researcher that these viewpoints were essential not only for risks identification purposes but also for the purpose of theory testing and development. With qualitative and quantitative data sources the researcher was able to clarify as well as annul extraneous influences, which became apparent from the analysis of the case study. For example, a number of surprising issues arose during analysis of the interview discussions, such as the as the verisimilitude nature of the software. Since models for the system were developed using photographs, in a dynamic environment changes will be imperceptible. This is particularly important, for example, for maintenance work and health and safety issues, where every detail is significant to determine the difference between life and death. These virtual environments also needed constant updates. Likewise, no formal mechanisms existed for the identification and protection of strategic knowledge within the organization. Having this information available to the different employees increased the risks of knowledge leakage, as inadequate security mechanisms open the organisation to unauthorised access or systematic downloading of the information as data within these environments were readily interpreted.

However, even though management were aware of risks, formal risk management strategy was not adopted. Thus, management had an over-optimistic or even seemingly lax attitude towards risks and security incidences. Therefore, it was necessary to determine whether these risks were unique to the subject of the case study. Consequently, these perceptions of the risk identified and their impact were tested in the wider UK population with companies that are involved in similar developments and uses of the VREs.

It soon became apparent that utilising mixed methods data heightens the complexity of the study as the researcher had to sift and analyse different types of data. However, this was worthwhile as by using different sources in the data collection and analysis stage the researcher was able to build on the strengths of each type of approach, thereby minimising the weaknesses of any single approach. For example, the case study provided the developer’s point of view, which focused primarily on the design and development of the VREs. These were relatively novel, with new and emerging challenges. This made the development cycle quite demanding and as a result longer. Hence developer’s primary concerns and risks varied from their customers. Consequently, the questionnaire was used to identify primary customers’ perspective on the use of the VREs and the cross-sectional survey to validate and rank the outcome of both perspectives.

Therefore, not limiting oneself to a particular approach provided a better opportunity to understand the phenomena under scrutiny, thus separating the unique from the generalisable. Consequently, this approach was invaluable in capturing the best of both qualitative and quantitative data. It not only allowed initial exploration into participants’ perceptions of the associated risks of VREs but facilitated their validation in the survey. This approach was useful for the generalisation of a finding as well as to develop a detailed understanding of a phenomenon. In addition, since all research methods have limitations that prevent a researcher from simultaneously achieving high external validity, accuracy in construct measurement and the creation of realistic environments for observations, employing a mixed method approach adds to the rigour of the research methods. The PB-ISR framework was developed as it offers support for theory building and theory testing via triangulation of literature review, case-study analysis and questionnaire survey. Literature review ensures construct validity for both the case study and the survey. The latter ensures external validity and generalisation of the findings. Internal validity issues, on the other hand, were considered within the design of both the case-study analysis and questionnaire survey. Therefore, the development and testing of PB-ISR frameworks ensured construct, internal and external validity.

By using triangulation researcher was able to address different areas of the same research question thus extending the breadth of the study. This allowed for the cross validation of the information – as the information was collected from several sources regarding the same event or behaviour. This inevitably
increases the quality of the research; therefore conclusions drawn would be more likely to be robust. Consequently, the underlying principle driving this research was the qualitative method as interviews provide the bulk of the information, in addition to the use of both open and closed ended questions in the questionnaires.

In sum, using a mixed method approach in this IS research was quite useful in building and extending theory. From this study the researchers were able to identify and assess the risks associated with VREs as well as provided relevant rich descriptions of the how and where they may occur.

7 Conclusions

There are a number of prejudices against the use of phenomenological constructivism in general and case study research in particular. Evidence of this is reflected by the notion that qualitative methods cannot access some of the phenomena to which IS researchers are interested. Consequently this area of research has been dominated by the positivist model of investigation. Hence, based on the paradigmatic differences concerning the phenomenon under study, we propose using PC to discuss a mixed-methods approach that we believe is both methodologically and philosophically sound. While using a positivist approach for guiding research is crucial for a rapidly evolving field like IS, by being too restrictive, it would result in unfocused and fragmented research. By employing the PC and mixed method the researchers were able to provide a complete and robust understanding of the phenomenon under scrutiny.

Developing and testing of relevant frameworks such as the PB-ISR guaranteed construct, internal and external validity, which are paramount in order to produce validated and reliable empirical findings necessary to establish a solid IS research field. Therefore, the theoretical framework and the mixed method data used in this study ensured the accuracy of triangulation and clarification or annulment of any extraneous influences, thus validating results and interpretation.

References


Researchers Beware of Predatory and Counterfeit Journals: Are Academics Gullible?

Shawren Singh and Dan Remenyi
School of Computing, University of South Africa
Singhs@unisa.ac.za
dan.remenyi@academic-publishing.org

Abstract: Academic standards are being assaulted by cyber criminals who have been introducing fake academic journals, which can look to the uninitiated to be publications that comply with the established standards of the academic community. This new form of cybercrime, predatory and counterfeit journals, has impacted the academic publishing landscape and has resulted in some unsuspecting academics being defrauded and having an indelible black mark on their publishing record. It is critical that all members of academic community be made aware of these new phenomena in order to avoid being associated with them. It is also critical that universities monitor these developments and keep their staff fully informed of the developments in such criminal activities.

Keywords: Academic standards, counterfeit journals, predatory journals, fake journals, hijacked journals, academic fraud, cybercrime, gullible academics, paywall, Directory of Open Access, Beall’s list, academic publishing, vanity publishing

1 Introduction

Cybercrime is a well-established phenomenon (Ablon, & Libicki, 2015; Herley, 2014). Depending on how it is defined, there are examples of attacks on computers and computers being used by criminals to facilitate illegal activities dating back many decades. However it was only the arrival of the Internet that allowed cybercrime to burgeon into a major worldwide activity (Federal Bureau of Investigation, 2015; Interpol, 2015; McAfee, 2014; Williams, 2014).

Since the arrival of the Internet, the catalogue of cybercrime has flourished and the list of the ways in which criminals can use the Internet to further their ends, including the soliciting or the extortion of money from unsuspecting individuals and corporations, is now quite substantial (McAfee, 2014). It is not the intention of this paper to address this long list, but rather to focus on one of the latest developments which directly affects academic researchers, namely the proliferation of predatory journals and counterfeit journals in Open Access publishing. This paper will establish the current and likely future severity of the threats to academic researchers from the development of these new types of pseudo journals spawned by the open access movement and propose some ways for researchers to avoid these threats.

There is still an active debate in some academic circles about the wisdom of Open Access publishing. Those who oppose it see it as the cause of the problem of predatory and counterfeit journals. They argue that the traditional approach practiced by the large highly profitable publishing houses has ensured high quality scientific publications for many decades and that this has to be paid for in the usual way. On the other hand, the cost of access to the traditional journals has become a major concern and it is perceived by many as being an inhibitor to knowledge creation and development.

Open Access is a growing movement and is seen as a solution to the journal cost problem. It is now clear that Open Access Journals are not a passing fad. They will increase in significance over the forthcoming years. Page charges, which are their method of funding will become even more common. The problem is that this form of payment will continue to deliver opportunities to cyber criminals and some academics will inevitably fall victim to this type of predatory scam. However, it is important to note that the traditional academic publishing model has its own set of problems as well, see for example Broad and Wade (1982), W5 (2008) and Radford (2003).

2 A Brief Background to Academic Publishing

These new forms of criminality are the result of a change in practice in the academic publishing world. Traditionally the research conducted by academics has always been formally recorded by its being published in peer-reviewed scientific journals, which ensured that the papers submitted to them where rigorously

scrutinised by competent readers or reviewers familiar with the subject (Cargill, & O’Connor, 2013). This process often took quite some time and incurred some amount of expense on the part of the publisher (Worstall, 2012). In the traditional publishing model academic authors are not paid for their papers nor are reviewers paid for their commentaries (Gatti, 2012). The costs incurred relate to the editorial staff employed by the journal. As a result the publisher charged a substantial fee for access to the journal, i.e. the reader paid. The cost of a single journal was often quite reasonable, but the cost of a university library acquiring the rights to give access to the papers in the journal for all the students could be quite substantial (There are examples of such access to journals costing tens of thousands of pounds) (Albert, 2006). This meant that not all university libraries could afford access to the journals they wanted to offer. The cost of journals is now regarded by many as having become a barrier to the distribution of research findings (Braman, 2014; Liesegang, Schachat, & Albert, 2005), which is a prime raison d’etre of a university. Table 1 is a summary of some of the criticisms of the traditional publishing model in terms of the key stakeholders, who are the commercial publishers, researchers, universities, funders/government and society.

### Table 1: The Traditional Publishing Model for Academic Journals

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Offer</th>
<th>Recoup Cost</th>
<th>Criticisms</th>
</tr>
</thead>
</table>
| 1. Commercial publishers | • Publishing platform – editorial staff, type setting and distribution  
|                       | • Development of journals in new subject areas                          | • These costs are covered by subscription and page fees                     | • Research cedes intellectual rights to the publisher                    |
|                      |                                                                       |                                                                            | • Journals are expensive                                                   |
|                      |                                                                       |                                                                            | • Libraries forces to purchase bundle of journal and higher prices          |
| 2. Researcher        | • Conducted the research                                              | • Free service                                                             | • Does not have access to the work they reviewed                           |
|                      | • Involved in the peer review process                                 | • Receives no royalties                                                    | • High subscription fees to journal                                      |
|                      | • Do editorial work                                                   |                                                                            | • Research cedes intellectual rights to the publisher                      |
| 3. University        | • Resources for the research                                          | • In some cases from government grants                                    | • Due to shrinking budget cannot afford to subscribe to the journals      |
|                      | • Funding                                                             | • In some cases from business incubator                                   |                                                                            |
|                      |                                                                       | • Licensing royalties from patents                                         |                                                                            |
| 4. Funders/Government| • Funding                                                             | • Taxes from citizens                                                     | • Results of research are behind “paid wall”                              |
| 5. Society           | • Taxes                                                               |                                                                            | • Results of research are behind “paid wall”                              |

The term paywall (Yess, 2014) has been used to describe the fact that some journals can be inaccessible to anyone other than those who are especially well funded. Furthermore even those universities that are well funded have found that the cost of journals have been rising faster than their budgets (Wellen, 2004). Of course, there are universities that can find the money required and therefore the large scientific publishers have been able to make very substantial profits (Monbiot, 2011). These profits are in part due to the fact that in general scientific journals do not pay a fee or honorarium to reviewers or to members of their editorial boards.

### 3 Neither in the Public nor the Author’s interest

In the latter part of the 20th century the traditional publishing business model, which had been so successful for the publishers, began to be questioned (Rodrigues, & Abadal, 2014; Shortliffe, 2015). Those objecting to it pointed out that academic research was largely paid for by the public purse, as most universities are publicly funded institutions, and that the publishers were therefore asking society to pay a second time to have printed access to the research conducted by their staff when it was formally published. It seemed to some observers that this effectively meant that the universities were paying twice for access to the research. Also at this time
it became apparent that the Internet and the web were particularly good at delivering digital products such as
printed material, and thus online publishing would be completely acceptable to the academic community.

Starting in the early years of the 21st century there was a substantial impetus towards making access to
published research free of charge to scholars and universities through the Open Access movement (see for
example: The Budapest Open Access Initiative in 2002, The Bethesda Statement on Open Access Publishing in
2003, The Berlin Declaration on Open Access in 2003

With Open Access journals the reader does not pay. The content of journals becomes available to anyone who
is interested in reading them free of charge. In addition there is no restriction to how the content of a paper is
used in the pursuit of scholarship. The cost of the editorial services in producing the journal may not be
materially less than in the old traditional publishing model, but it is not paid for by the reader. As a result it
was necessary to have the researchers pay a fee for having the paper published. Many, if not most, universities
will cover this cost for the individual academic. The intention was that the fee should cover costs and make
some return for the publisher, but that enormous profits would not be generated in the same way as could be
done using the traditional publishing model. Many academics initially found this uncomfortable as there was
and still is a general feeling that if a researcher pays for research to be published then this has to constitute
some sort of vanity publishing.

Traditional academic publishing is also not in the author’s interest. A published academic paper is a report of a
research project or a research process which has been concluded by an academic researcher and the more
visible this report is the greater the prospect of the researcher’s work being noticed and obtaining feedback.
Furthermore academic performance is increasingly measured in terms of the impact factor of the research
produced. The impact factor is a measurement of the extent to which the results of published academic work
is referenced by other researchers in further published papers. If scientific journals are free to read and use
then there is a greater chance of research results being seen and influencing the thinking of others. This results
in the original academic’s impact factor being increased.

4 Covering the cost of Publishing

To cover the cost of academic publishing, several strategies have been adopted by publishers and the most
notable are page charges and web sales of journal papers.

4.1 Page charges

Paying for publishing is not entirely new. Even under the traditional publishing regime, there had always been
small, specialised journals who were not able to summon up enough paying readers to cover the cost of
production of the journal, and in these instances, the authors of papers were required to pay what was called
“page charges” for the privilege of being published. In these cases page charges were set to cover the cost of
producing the journal, as the revenue from subscriptions was not adequate for this purpose. However, in the
larger picture of scientific publishing most academics were not asked to pay for having their research
published and there remained to some degree a general suspicion that anyone who did pay may have been
engaging in some sort of vanity publishing, which was not academically respectable. However, in most cases
these suspicions were unfounded as many open access journals maintain the same high level of academic and
publishing professionalism as the traditional journals did and still do (Xia, 2010).

4.2 Web sales of journal papers

From the 1990s the major scientific publishers began to intensively developed website portals for the sales of
papers either on a whole journal issue basis or on a paper by paper basis. This improved convenience for their
readers and the charges they placed on this service ensured that their profitability would continue. In some
respects this shifted the paywall from the university library to the individual researchers who wanted to read a
particular paper (Truth, 2012).

Academic and other key stakeholders, however, became increasingly concerned about the barriers to
accessing scientific literature and began to investigate alternative publishing models.
5 The Open Access movement

Dissatisfaction with the cost of scientific journals and the profits made by the publishers spurred on the Open Access movement. This was supported by some national governments and research institutions, which insisted that if University research was to be recognised for funding purposes, then it had to be published in a way in which it was accessible to anyone who wished to read it i.e. an Open Access format. The Open access format is a viable approach because of the advancements in internet technologies and the challenges associated with the traditional publishing model. Table 2 is a brief outlines of some the issues that affect key stakeholders.

Table 2: Open Access Publishing (Geib, 2013; Heller, Moshiri, & Bhargava, 2013; W3, 2016; W4, n/d; Worlock)

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Benefits</th>
<th>Challenges</th>
<th>Cost Factor</th>
<th>Concerns</th>
</tr>
</thead>
</table>
| 1. Publisher | • transparent business model  
| | • wider distribution channels  
| | • complexities of intellectual property rights and copyright issues  
| | • Publication fees  
| | • Sustainability  
| | • Expensive to setup and maintain  
| | • May compromise the review process to remain afloat |
| 2. Researcher | • immediate visibility  
| | • possible increase in impact of research  
| | • freely available academic literature  
| | • publication fees  
| | • possible lack of quality control  
| | • researcher is now paying to publish  
| | • Predatory journal  
| | • Counterfeit journal |
| 3. University | • increased return on investment  
| | • increased visibility  
| | • reduction in library subscription fees  
| | • unrestricted access to material  
| | • ensure access to digital archives  
| | • complexities of intellectual property rights and copyright issues  
| | • research-intensive universities may end up subsidising access for other organizations with lower research outputs, including commercial companies  
| | • publication fees  
| | • fraud  
| | • Predatory journal  
| | • Counterfeit journal |
| 4. Funders/Government | • increased return on investment  
| | • fraud  
| | • taxes lost to fraud  
| | • Predatory journal  
| | • Counterfeit journal |
| 5. Society | • enhanced and accelerated research cycle  
| | • greater access to scientific literature  
| | • greater access for researchers in developing countries  
| | • Improved education  
| | • Information overload  
| | • free access to scientific literature  
| | • specious science in the form of Predatory journal and Counterfeit journal |

It is important to note that the Directory of Open Access Journals (W2, 2016) today claims that there are 10,529 journals and 2,012,745 articles available without charge. Many of these journals now only exist in Internet format as the cost of producing paper journals is too great. However, the processing costs of having an article reviewed, typeset, proofread the uploaded to the Internet in an Open Access Journal can range from £100 to about £2,000. Thus there are large sums of money involved in this industry.
Further, the academic standards of most of these Open Access Journals are regarded by many academics to be just as high as the standard of the traditional journals (Miller, 2009). However as is discuss later in this paper, this is not universally the case.

6 Pressure to publish

There has been for a considerable time pressure on academics to have their research published in scientific journals. The term Publish or Perish originated in the USA in the 1930s (Association of American Colleges, 1938) and it progressively spread throughout academe around the world in subsequent decades. But in the last 20 years it has become essential for nearly all academics to be able to demonstrate a material publishing record.

Traditionally, having a paper published in a scientific journal has been and still is a substantial challenge for most academics. The research has generally had to be both relevant and rigorous. It has had to be written in academic language with a relatively easy accessible style. In many cases when a researcher submitted a paper to a scientific journal reviewers asked for revisions and these could result in a considerable amount of additional work and perhaps took many months or even in some cases a couple of years to complete (With some leading journals there is a publishing backlog and it may take a year or more after the paper has been finally accepted before it appears in print.). Becoming a published academic researcher was a significant challenge over and above all the work that was necessary in conducting the research and obtaining useful results. On top of this, with the new Open Access publishing regime a researcher also had to find the money required to pay an open access journal to accept and publish the paper.

7 A new business model and academic journals

The change in the publishing business model which resulted from the acceptance of the Open Access movement facilitated by Internet and web technology offered opportunities for small scale publishers to establish themselves with relatively low levels of investment and on-going costs. The substantial costs of print runs and the distribution of paper journals are eliminated. The cost of marketing to libraries is substantially reduced. Direct contact with authors, reviewers and readers is much easier through the Internet.

As a result many small publishers began to appear on the scene. Of course, there was a learning curve facing such entrants especially with regards to the delivery of competent editorial services and the quality of work they produced varied. Even in the most reputable journals there have always been the occasional typographical problem but in the new small journals there are sometimes many language problems which professional editorial services would have identified and eliminated. This is especially true of journals produced in non-English speaking countries with the involvement of very few if any native English speaking individuals. In this environment cybercriminals perceived an opportunity to defraud gullible academics.

8 Specious Academic Publishing

The definition of a predatory journal (Beall, 2012; Singh, 2015) is complex and there are many dimensions to this issue. But at the heart of it is the fact that a predatory journal will not maintain the academic standards that are expected of a reputable scientific journal. The objective of the predatory journal is to make money for the owners without concern for the quality of the research published (Beall, 2012). In one or more of a number of different ways a predatory journal will pretend to follow the essential editorial processes required for authentic academic publishing, but will not do so. This is often, but not exclusively, related to double blind peer reviewing. A predatory journal will generally publish whatever is submitted by the author/s with little or no review. Thus the quality of the research published in a predatory journal is likely to be low. Predatory journals can be identified by a number of characteristics, the most important of which is perhaps the fact that they tend to market themselves through intensive e-mailing to invite selective victims (Tamnurri, 2013) who might otherwise have difficulty in having their research published in reputable journals.

The issue of counterfeit or hijacked journals is much simpler. A counterfeit or fake journal is a fraudulent misrepresentation of an established journal. This it is an act of identity theft. A counterfeit journal solicits papers, but will not publish any that are submitted. It will take money from an aspiring author and deliver nothing (Beale 2015). The modus operandi of counterfeit journals differ but they will generally require an early payment from prospective authors of a substantial amount of money but will not deliver the editorial services for which the payment was required. The paper submitted may or may not be published but if it is then it will
have no standing in the academic community. It has been estimated that there are now scores of counterfeit journals in operation.

8.1 Predatory journals

Unfortunately the new business model and the technology behind it suggested to certain unethical individuals that easy money was to be made out of inexperienced academics who did not understand the quality controls which were essential for reputable academic publishing. This lead to the development of what has become known as the predatory journal (Beall, 2013), which for a fee paid by the author delivers a completely unscrutinised and unedited piece of writing purporting to be a high quality report on a piece of rigorously conducted scientific research. These journals are then presented to the public as Open Access journals.

Since 2011 Jeffery Beall, a librarian and associate professor at Auraria Library, University of Colorado in Denver has been publishing a list of what he regards as potential, possible, or probable predatory scholarly open-access publishers (see http://scholarlyoa.com/about/). This list, which started with 18 publishers in its first year, now contains 693. This list is updated on an on-going basis and thus the number is continually changing. Beall’s interest in this subject started in 2009 when he was first inundated with offers from obscure journals to publish his research.

The list claiming to identify predatory publishers is not uncontroversial, with a number of important institutions and individuals arguing that Beall has a bias against open access publishing and that not all publishers on his list should be regarded as predatory (Crawford, 2014). Esposito (2013) questions the political ethos behind Beall’s opinions. On a more practical level The Canadian Center of Science and Education, a company based in Toronto that publishes many open-access journals threatened to sue Beall if he did not withdraw their name for his list (Butler, 2013). The OMICS Publishing Group based in India have threatened to sue Beall for $1 Billion for including them in his list (New, 2013). Nonetheless Beall is still in operation.

Indeed there are problems with Beall’s list but it is recognised that many of the entries on this list are publishers which cannot be regarded as standard bearers of academic rigor or excellence.

Beall’s blog also contains a list of characteristics of predatory publishers and as such it is useful to anyone who suspects that a publisher who has been soliciting a paper may not be entirely genuine (See http://scholarlyoa.com/2012/11/30/criteria-for-determining-predatory-open-access-publishers-2nd-edition/). But there is an important caveat needed in the use of Beall’s list of the characteristics of predatory publishers (Anderson, 2015; Berger, & Cirasella, 2015; W1, 2014). If this list is used to judge publishers, then small and inexperienced publishers who are in the process of creating a genuine high quality publishing house might appear to be predatory. These small publishers who are still facing a steep learning curve could easily fall foul of Beall’s criteria. It is for this reason that Beall refers to his list as Probable Predatory Journals. Table 3 below is an extract from Beall’s website.

Universities are increasingly aware of predatory publishers and they have requested academics to withdraw their papers from such publications. However it is difficult to see how a paper can be withdrawn. Even if the paper has only been published in an electronic form it is not possible to entirely eliminate it presence from the web. This can turn out to be an indelible black mark on an individual’s publishing record if for no other reason than being published in a predatory journal shows a lack of sound judgment or at least a level of naivety concerning established academic standards.

8.2 The Counterfeit Journal

Predatory journals are fraudulent money making devices, but they do require some of the organisation of a respectable publishing house. A counterfeit journal (Mehpour, & Khajavi, 2014) does not.

The counterfeit journal operation is simply one of theft of the publishing fees which may be levied for page charges or monies paid to the fraudsters purporting to be for obtaining academic reviews. To this end a fake website is created which exists in parallel to the original website. The URL will be very similar to the original journal but the website will be located on a computer in some far away country which does not have the resources or the inclination to police fraudulent websites. The identities of the editor and the editorial board are stolen or hijacked without their knowledge. The unsuspecting author/s submits a paper which is accepted
for publication. A request for payment to the unsuspecting academic is made and the appropriate funds are transmitted to a bank account in a country where there is little financial regulation.

Obviously there are a number of different counterfeit journal business models. Sometimes no publication takes place. On other occasions the paper is unloaded to the fake website but it is of no value to the academic. The author/s are out of pocket and the fraudsters are enriched.

Beall also supplies some examples of counterfeit journals as does Jalalian & Dadkhah (2015) and an extract from their lists is supplied in Table 4.

**Table 3: List of Some Probable Predatory Journals (Beall, 2015b)**

<table>
<thead>
<tr>
<th>Journal Name</th>
<th>URL</th>
</tr>
</thead>
</table>

9 Are academics gullible?

In general it would not be disingenuous to suggest that academics as a group are gullible but inexperienced academics anxious to be published are quite vulnerable. Indeed the pressure on academics to publish is substantial. An appointment to a University is increasingly dependent on publications. Confirmation of a University post is also contingent on publication. Without an adequate number of publications promotion is all but impossible. Thus achieving and sustaining a high publication rate is all important to career academics. As a result, when an academic is invited to submit a paper to journal, he or she is often flattered and grateful. It seems like an opportunity which should not be passed up, even if the journal is rather obscure. But being published in a predatory journal is counterproductive and there is anecdotal evidence of academic careers being adversely impacted because of claiming publications in such journals (Beall 2014a&b).

What the predatory and the counterfeit journal have in common is the ease with which they accept a paper for publication. Academic publishing has always been competitive. There have always been more papers presented to journals than there has been space in these journals. This competition for space means that the quality of the papers presented to publisher has to be high. Furthermore the quality of most papers will be materially improved if they have been reviewed by competent and responsible academics. Therefore, it is seldom the case that the paper is accepted by a reputable journal without any suggestions for changes or modifications proposed by reviewers.
If a paper is accepted by a journal without any revisions and if the author is not an internationally recognised authority in the field of research, then this should be cause for some suspicion. As mentioned above if it is a counterfeit journal then only the loss of money is involved. It is a predatory journal, then the likely outcome is both the loss of money and damage to the reputation of the individual, and indeed the university.

Table 4: List of Some Counterfeit Journals (Beall, 2015a)

<table>
<thead>
<tr>
<th>Authentic Journal</th>
<th>URL</th>
<th>Counterfeit Journal</th>
<th>URL</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Namibia Scientific Society</td>
<td>NAMIBIA Scientific Society currently does not have a website.</td>
<td>JOURNAL NAMIBIA SCIENTIFIC SOCIETY</td>
<td><a href="http://jnes.zu.mv/">http://jnes.zu.mv/</a></td>
<td>Active deceptive website</td>
</tr>
</tbody>
</table>

10 Avoiding predatory and counterfeit journals

Beall’s list of the characteristic of predatory and counterfeit journals is long and may not be that useful to novice academics as it may confuse them. Also there are likely to be journals on this list which are not predatory but which are new and still working through the learning curve of what is required to be a competent publisher. Following a few guidelines will avoid much of the problems which may be encountered.

Firstly, research the journals in the field of study. Consult websites such as UlrichsWeb (See http://ulrichsw eb.serialssolutions.com/login, this is a subscription based service.) and Harzing (See www.harzing.com, this is a free service.) to establish the authenticity of any particular journal. Only publish in journals which are relatively well known to the academic community. Obscure journals should be avoided, especially obscure journals published in remote parts of the world. This does mean that there will be a bias against new journals but it is perhaps wise to allow others to experiment with these new comers.
Secondly, do not publish in journals which contain any significant number of typographical errors, spelling mistake or grammatical mistakes. These are the primary signs that there is little or no editorial service being delivered.

Thirdly, be careful of fees. Do not pay any fees in advance. Page charges may be required when the paper has been peer reviewed and is ready for publishing. Furthermore do not pay excessive fees. What is excessive can be determined by doing some research among similar journals.

There are other issue to look out for but these three are useful heuristics which really get to the heart of the matter. It is further argued that the universities themselves need to become proactive with regular intelligence supplied to academics about what new criminal initiatives are taking place in the academic publishing space.

11 Conclusion

Predatory and counterfeit journals pose an interesting challenge to academic researchers. The counterfeit journal is a sophisticated short life cycle criminal enterprise that clones any journal and to the uninitiated appears to be a legitimate journal. The modus operandi of these cyber criminals is to cast a wide net out and someone will surely take the bait.

The weapon at the academics and universities disposal to counter the cyber criminals is the knowledge of how predatory and counterfeit journals operate and the whole academic community has to be made aware of these fraudsters. This can be done with joint action by academics and universities in the form of papers and articles, by blogs and vlogs and by engaging in general discussion about these crimes. Although it may be problematic to prosecute predatory journals it should not be such a big problem to take legal action against counterfeit journals which are simply devices for theft.

But finally the message that needs to be delivered and reinforced is a very old one which dates back to Roman times in the form of Caveat Emptor which translates into Let the buyer beware. In modern day academe the Latin expression Caveat Sciscitator translated as “Let the academic researcher beware” needs to be foremost in the researchers mind. In the end the old English aphorism is most apposite, “A fool and his money is easily parted”.

References


Beall, J. (2013). Predatory publishing is just one of the consequences of gold open access. Learned Publishing, 26(2), 79-84.


A Reflection on Intercept Survey Use in Thailand: Some Cultural Considerations for Transnational Studies

Chanchai Phonthanukitithaworn¹ and Carmine Sellitto²
¹Business Administration Division, Mahidol University International College, Thailand
²College of Business, Victoria University, Australia
chanchai.pho@mahidol.ac.th
carmine.sellitto@vu.edu.au

Abstract: How people respond to research surveys has been of long standing interest to investigators. In this paper, we reflect on our experiences in using the intercept survey as part of a study that examined m-payment in Thailand. The paper does not report the findings of the original m-payment study, but highlights how the cultural features of the target population were an important consideration at the survey translation, pilot testing and data collection stages. We propose that cultural features such as face-to-face interaction, the intrinsic notion of politeness (Kreng Jai) and conveying respect to potential participants (giving the Wai) as significant elements in achieving a relatively high participation rate. Survey translation occurred via moderated discussions where the cultural dimensions of collectivism and personal status (relevant in high PDI societies) were observed to influence group dynamics. In the field, the intercept survey promoted direct engagement with people (preferred amongst collectivism cultures), with respondents observed to be highly considerate of investigator needs and thus more likely to participate in the study. The paper’s contribution is one of highlighting the importance of considering national culture in the initial survey translation stage and later when collecting data in the field. Although a reflective piece, we believe that the findings have the potential to inform and assist researchers to improve the quality of their survey instruments and data responses in similar cultural settings.

Keywords: Culture, intercept survey, Hofstede, Thailand, data collection, methodology, Kreng Jai, The Wai

1 Introduction

In recent times, research undertaken in non-Western countries has highlighted the importance of accommodating national culture in explaining findings, particularly when considering behavior at the group and individual level (Hofstede et al. 2010). Indeed, there is an increasing incidence of transnational research being undertaken, where theories developed in Western countries are subsequently replicated in culturally diverse non-Western settings— researchers often spending considerable effort in adapting their Western-derived concepts, questionnaires and methods to the cultural setting of the new country (Smith et al. 2011). According to Davidov et al. (2014), the collecting of data for transnational research has its challenges, as participants may be influenced by a myriad of contextual issues based on cultural diversity. Furthermore, although studies can be modified to adapt concepts to accommodate cultural differences, Smith et al. (2011) suggest that researchers need to pay more attention to their choice of sampling frames and data collection modes, as certain approaches are capable of improving the quality of data collected for analysis.

In examining studies that are adapted for use in non-Western countries, especially those in Asia, it is our observation that while meticulous care is taken to adapt Western-originated theories and concepts, the same amount of attention is not paid to cultural issues when actually collecting data. This notion follows from Smith et al. (2011), who indicate that survey data collection across cross-national studies aims to be meaningfully and comparable with the unfortunate consequence that “…this requirement has at times been thought to imply that identical surveys must be uniformly fielded— using identical methods— in all countries” (p.485). Arguably, the use of identical methods can potentially lead investigators to overlook the influence of national culture on practical data collection. For instance, Davidov et al. (2014), re-iterate good survey design for cross-cultural studies to address translation, appropriate sampling, high response rates, the same mode of data collection and instrument validity. It is not clear as to whether the reference to the same mode of data collection relates to practical on-the-ground approaches that might be influenced by cultural factors. Riemer & Shavitt (2011) report response differences amongst people from collectivists or individualist backgrounds—noting the that collectivists had different approaches when answering surveys. Their study collected data from US, Hong Kong and Singapore students through a replicated approach— not mentioning if the influence of cultural orientation was accommodated in the actual practical collection of data. Investigations by Fang et al.
(2016) noted that collectivist cultures are more likely to disengage when undertaking online surveys, compared to people in individualistic cultures. The study used the same data collection approach—however, in collectivist societies, group interaction and participation is an important social norm (Hofstede et al. 2010). Given that the study used an email invitation to solicit responses, Collectivists in the study may have performed/responded differently should they have been invited to take the online survey as part of a group—for instance in a classroom setting. In these examples, there is replication of western-originating concept in different cultural settings, using the same data collection approach—an issue overlooking respondent cultural issues that may have potentially impacted the collection of the data.

In this paper we reflect on the practical issues behind the use of the intercept survey as a data collection instrument when investigating the adoption of mobile payment (m-payment) services in Thailand. The motivations for the original study (Phonthanukitithaworn et al. 2016) were premised on a mismatch between the Thai government’s significant investment in mobile payment infrastructure and the relatively low levels of adoption of mobile services by the Thai population. The original study’s research design and methodology followed a typical transnational replication process where Western-derived theories of innovation diffusion (Rogers 2003) and technology acceptance theory (Davis 1989) were used to explore the adoption of mobile services in a South East Asian country. Indeed, the intercept survey used in the original study was found to be convenient and direct—enabling the interviewer to further engage with participants (Churchill et al. 2008). However, in retrospect, the authors were able to conclude that the intercept survey was a data collection instrument that was relatively compatible in accommodating the specific cultural features encountered in Thai society—subsequently improving data collection process. Although focused on Thailand, the intercept survey method is potentially relevant for investigators that undertake research in Asian countries—where similar cultural characteristics are encountered (Niffenegger et al. 2006).

The paper’s contribution is one of highlighting the importance of considering national culture in the initial survey translation stage and later when collecting data in the field. Although a reflective piece drawing from investigator experiences, we believe the findings have the potential to assist researchers in improving the quality of their survey instruments and data responses in similar cultural settings.

2 Literature Review

Appropriately designed surveys and questionnaires are a common and important data collection method used in research (Tourangeau et al. 2000; Bradburn et al. 2004). Indeed, the traditionally administered survey method is credited as a quick, inexpensive, efficient and accurate instrument of gathering information from a sample population that can be easily administered (Bradburn et al. 2004). Survey methods can range from traditional post-out and return mail questionnaires, online surveys and cold-calling using the telephone (Tourangeau et al. 2000; Harzing et al. 2013). Surveys have been argued as embodying various social features, as well as having various perceived cognitive tasks (Sudman et al. 1996). A survey may be typically self-administered, or may involve listening to questions posed through an interview—scenarios that are reflect a diverse situational factors that may impact data collection, participant behavior and subsequent research results (Wright & Ogbbueho 2014). Clearly, when considering data collection methods, each will have its own strengths as well as limitations, and selecting an appropriate survey method depends on the research objectives and the study’s design (Hackett 1981). In recent times, the use of online surveys has received a great deal of attention from many researchers, as it is an inexpensive and enables the capture of people’s views and perceptions in a relatively short period of time (Harzing et al. 2013). However, such online surveys can have inherent limitations in cultures where there is preference to engage with other people in a face-to-face manner.

2.1 Transnational studies

According to Harzing et al. (2013), large-scale international studies often use online or traditional mail surveys to collect data. The authors note that face-to-face and telephone surveys may not feasible in international investigations due to cost and language issues. Uskul et al. (2010) suggests that people will interpret survey questions based on their cultural background and inclination—where answers are potentially shaped or directed by these cultural preference and features. Indeed, they argue that participants might draw certain pragmatic inferences from reading questions—potentially altering or modifying their response accordingly. Seemingly, there are certain considerations needed when it comes to conducting transnational surveys which are aimed at obtaining consistency across survey groups. Transnational (or cross-national) studies generally...
involve the extension of Western-oriented research to non-western countries in order to expand pre-existing
knowledge through the inclusion of new perspectives. Furthermore, the cross-national differences reported in
such studies may be of concern should they be influenced by survey collection modes reflecting artifact of
methodology rather than actual national differences (Smith et al. 2011). Clearly, there is also the need to
consider the implications of the person’s national culture and setting in regards to how to refine research
questions and even collect the data.

In terms of transnational survey outcomes, even the most meticulously designed survey can result in
frustration or failure when the data collected is non-representative of the target population and/or delivers a
poor response rate (Bradburn et al. 2004). In general, it has been shown that response rates for traditional
mailed questionnaires can be poor, particularly when the topic is of low interest or the questionnaires too long
(Sellitto 2006). Apart from these traditional drawbacks, survey research can have some inherent limitations in
a transnational setting such as encountered in Asian countries, where response styles, attitude and behavior
influences data collection (Dolincar & Grun 2007; Smith et al. 2011; Davidov et al. 2014). For instance, the use
of online surveys can have inherent limitations in cultures where there is a preference to engage with other
people in a face-to-face manner. This preference for face-to-face contact tends to be encountered in
collectivist cultures which are prevalent in Asia (Uskul et al. 2010). Smith et al (2013) identify certain data
collection methods that were being commonly used for transnational studies ranging from self-administered
surveys, face-to-face interviews or a combination of these. Although the authors note the challenge of these
data collection approaches in cross-national study, they allude to accommodating cultural preferences of the
surveyed population as a means for improving the quality of data response.

2.2 The intercept survey

A data collection approach used in the field is the intercept survey (or interview). The intercept survey allows
the investigator to undertake a personal face-to-face interview that is generally conducted in an open public
area where potential respondents are politely stopped and asked to participate (Churchill et al. 2008). An open
area might include a location such as a university campus, the environs surrounding a sport stadium, a public
thoroughfare or a shopping mall. Hence, the intercept survey in such an open area enables a researcher to
conveniently access a large random pool of potential participants and moves away from a self-administered
situation where participants potential control the flow and tempo of the response process (Wright
& Ogbbueho 2014). The intercept survey technique has proved very useful in studies involving new products or
services where respondents might need to visualize or try a product before they can express meaningful
feedback (Malhotra et al. 2002). Furthermore, since the interaction occurs in real time, prospective
respondents are able to raise queries regarding themes covered in the questions—the interviewer being able
to provide further information to clarify any concerns. Hence, the important characteristics of the intercept
survey include:

• Being able to be conducted in public areas as a personal or face-to-face interview
• Allowing potential respondents are politely stopped and asked to participate
• Significant cost savings compared to other types of surveys where data capture is difficult
• Being a frequently applied tool in marketing research
• The opportunity for respondents to visualize, touch or try a product before giving feedback or
  opinions
• Being also known as an intercept interview or the central location personal interview

The personal face-to-face nature of the intercept survey and the polite nature needed to engage with potential
respondents can be argued as being well suited to collectivist societies commonly encountered in Asia. Some
research bodies, such as the European Social Survey, use face-to-face surveys in order to minimize errors and
subsequently ensure data quality (Smith et al. 2011). Clearly, the face-to-face and error-minimization features
of the intercept survey intrinsically align with being used in transnational studies where it is culturally adaptive,
as well as focused on data quality.

3 The Research Study

The paper reports the personal experiences and reflections of the primary investigator in the conduct of an
intercept survey in the Thai capital of Bangkok in 2012. The use of personal reflection and experience is well
documented in the research literature, and is particularly important in social science, teaching and education
(Larrivee 2000; Scanlan et al. 2002; Sellitto 2010; Rich 2014), where an introspective review of the practical
activities one undertakes can be implicitly or explicitly used to explain certain findings and/or be subsequently
reshaped for future actions (Sellitto 2010). Furthermore, first-hand author experiences have been shown to make import contributions in understanding on-the-ground aspect of data collection and have provided insight in multidisciplinary and culturally sensitive research (Wardale et al. 2015); cross-cultural interviews (Hill 2004); the influence of culture when investigating Indian adults (Miltiades 2008) and the potential impact of socialization with interviewees (Wong 2015).

3.1 The study details

The survey itself collected data that would allow subsequent modelling of mobile services adoption in Thailand and involved conducting some 500 intercept survey interviews over a 3-4 month period. In the original study, a significant success rate was achieved at the pre-study pilot testing stage (95% people approached participated), whilst some 75% of all the people approached during the intercept survey proper agreed to participate. After the study, the primary investigator was able to reflect on the practicality of the data collection and concluded that his background and understanding of Thai culture was implicit in the success of the relatively high participation and response rates associated with the survey.

3.2 The application of the intercept survey method for this research

In terms of the study, the reflective views of the primary investigator when translating the survey instrument for use in Thailand, and also during the practical conduct of the research are seen as being the two main points were cultural factors were important to consider and act on. These practical points included—

3.2.1 The translation of the Intercept Survey for use in Thailand

This involved aggregating questions from the relevant western literature and then checking the suitability for inclusion in the study. Several iterations of question development occurred. The initial development of the questions was in English and used a one-on-one feedback approach with native English speakers to check for clarity and representativeness. Once the questions were translated, they were presented to a group that included Thai-speaking nationals in order to gain feedback on any ambiguities that may have occurred in the translation and also on the suitability of questions.

3.2.2 The Intercept Survey in the Field

Local conditions needed to be explored before running the survey proper. This allowed the primary investigator to determine how to best approach people in a public space, so as to engage with them appropriately and get them to undertake the intercept survey. At this point any practical challenges of running the survey were able to be identified, such as the suitability of locations, adherence to local regulations and the time needed for completing the survey.

These above practical points reflect a pre-data collection stage and the collection of data in-situ that are typical of most survey research studies. However, when reflecting on these processes after the study, it became apparent that Thai cultural features were implicitly considered in the initial translation and subsequent practical running of the intercept survey.

4 The Implications of Thai Culture When Using the Intercept Survey

There are various approaches to explaining national culture however, the one used in this paper is Hofstede et al.’s (2010) five cultural dimensions. Culture reflects the unwritten, tacit aspects of a person’s environment and can be viewed as the “collective programming of the mind that distinguishes the members of one group or category of people from others” (Hofstede et al. 2010:6). Notably, some five dimensions can be used to distinguish different national cultures which include a power distance index (PDI), individualism versus collectivism (IDV), the country’s uncertainty avoidance index (UAI), masculinity vs femininity (MAS) and whether a culture has a long-term orientation (LTO) in regards to achieving future objectives and values. Many national scores for each cultural dimension have been calculated including those relating to Thailand. Hofstede et al.’s (2010) five dimensions of national culture for Thailand are now succinctly summarized (this summary also gives comparative examples of selective Asian-based nations to show similarity).
4.1 Power distance

Power distance reflects the extent to which a member of a society passively accepts that the power controlled and authorised in institutions is distributed equally among individuals in the society. Thailand scores moderately high in terms of authoritative distribution of power apportioned to people, organisations and leadership with a PDI of 64. High PDI societies tend to value status and authority and there is an inclination for people to respect as well as obey directives that might be given by others in a position of perceived leadership, power or authority. Status and authority are very important in Thai society with Thais potentially more willing to undertake certain tasks when they are directed to do so, since they are inclined to show respect for authority and conform to the expectations of superiors. Moderately high PDI in the Asian region tends to be commonly encountered with countries such as Singapore (74), Malaysia (104) and Japan (54) all having scores much higher than encountered in Western-based countries that typically have low PDI index scores. Western-based countries tend have a culture that considers community status and authority differently than might be expected in Asian nations.

4.2 Individualism versus collectivism

Thailand is considered to score relatively low with respect to individualism, having an Individualism index (IDV) score of 20. Individualism reflects the extent to which people emphasize qualities such as loyalty, solidarity, interdependence and identification with others that form part of a group. In individualist societies people are "I" conscious—where individual decisions are valued more greatly than group decisions. A low IDV score tends to indicate that a society is collectivist in nature where people are "we" conscious—where identity is based on the whole social system of relationships and interactions, rather than individual needs. Thailand is a collectivist society and there is a primary tendency to build and maintain relationships by people amongst their social group. Hence, people’s opinions play an important role in affecting an individual’s behavior. In general, countries in the Asian region tend to have low Individualism index scores as seen in countries such as Singapore (20), Malaysia (26) and Japan (46)—scoring lower than countries such as the USA (91), Australia (90) and Denmark (73). In western countries, personal needs and interactions tend to revolve around the individual and are more focused on ‘me’ (immediate needs, close family and friends). This sharply contrasts to Asian cultures, where there is a decidedly ‘we’ focus of people that tends to underpin the social and cultural fabric of society.

4.3 Uncertainty avoidance

Thailand scores moderately high when it comes to uncertainty avoidance having a UAI of 64. Uncertainty avoidance reflects the extent to which people in a society feel threatened by ambiguous situations and attempt to avoid such situations through the enactment of particular rules, regulations and religions. People in high UAI cultures are more interested in the process of how a things works—rather than in final outcomes. Thais potential may perceive unusual request as threatening and hence will draw on the expected societal norms when dealing with such scenarios. This cultural feature for Asian countries sees a diversity of UAI scores across nations—some countries having a relatively low score such as Malaysia (36) when compared to the highest score in Japan (92). A similar observation can be made for western-based countries with significant diversity being found across countries—the USA (44), Australia (51), Great Britain (35) and Denmark (23). Arguably, the UAI between Asian and western countries does not appear to be a distinguishing cultural factor.

4.4 Masculinity versus femininity

The cultural issue of masculinity-femininity refers to the general disposition of individuals in a society as characterized by the features of assertiveness or nurturance—features that reflect the extent to which people adhere to societal expectations of gender roles. Thai culture embodies femininity attributes—reflected in one of the lowest Masculine index (MAS) scores in Asia of 34. The masculine-feminine dimension embodies the extent to which people value feminine values such as relationships, equality, caring for others and preserving the environment—in contrast to masculine values which are the opposite. Groups that score low on the MAS index are more service-oriented and have a strong people focus. The strong human orientation in Thai society is likely to make personal face-to-face conversations an important element of Thai culture. Other countries in Asian all have higher MAS scores than Thailand however, there is decidedly common femininity feature noted amongst many of these countries when compared to a majority of western-based nations such as the USA (62), Australia (61), Great Britain (66). Some outlier MAS scores are noted with the western nation of Denmark (16) having a lower score than Thailand, whilst Japan (95) has one of the highest scores.
4.4 Long-term orientation

Thai society has cultural characteristics that are considered to reflect a moderately-high value in regards to long-term orientation (LTO index of 56). Long-term/short-term orientation refers to the attitudes and beliefs held by people of different cultural groups with regard to the future, and this determines how they behave. A high LTO index reflects the extent to which people give greater consideration to thrift, cost saving, stability and continuity in planning for the future. Thais are more likely to be resourceful and potentially engage in activities they perceive as beneficial to them or their society in the long run. Such activities might include planning a child’s education, saving for later life, or investing in buying the latest tools. Long-term orientation is typically underpinned by the foundations of Chinese Confucius teachings that reflect a set of pragmatic rules that people can use to direct their everyday life. As expected other Asian nations whose people have historical links to Sino-based values have a relatively high LTO index— for instance China (118), Taiwan (87) and Singapore (48). For Western-based nations such as the USA (29), Australia (31) and Great Britain (35) with relatively low LTO indexes— the observation can be made that such countries tend to be more short term oriented in regards to how people might plan their future needs.

4.5 Thai culture and the intercept survey

As a general summary, Thai society is characterized as having a relatively high PDI, high LTO and a high UAI. Conversely, Thai society scores relatively low on cultural features relating to individualism (IDV) and masculinity (MAS). These scores for Thailand can be argued to typically be representative of some of the cultural dimensions that distinguish Eastern societies from their Western counterparts. The five cultural dimensions are now discussed in the context the main features and characteristics of the intercept survey.

A power distance index (PDI) reflects the extent to which a member of a society passively accepts that the power controlled and authorised in institutions is distributed equally among individuals in the society. Thailand has a high PDI score and people tend to respect and obey certain directives of people with perceived status or in a position of authority— hence, there can be an assumed willingness of Thais to feel that they need to comply. A feature of the intercept survey is to approach and politely request people’s participation to undertake an important survey task. This particularly cultural dimension may be an influencing aspect for Thais being more conducive to participation in the survey. Arguably in a society with a high PDI, people may be more willing to participate in a survey when they are directed to do so, since they are inclined to show respect for authority and conform to the directives of a leader or manager when asked to do so. Some researchers have used this directed approach as a method for gathering data (Murphy et al. 2010).

Thailand has a low individualism index (IDV) and people exhibit collectivist attributes that highly value social interactions. The collectivist cultures of South East Asia have been noted to have inherent societal values that stress the importance of a person being interconnected with other individuals as well as being accepted within a group, thus having a sense of belonging (Niffenegger et al. 2006; Uskul et al. 2010). Thais tend to value relationships within groups and perceived opinions influence individual’s behavior. The intercept survey requires face-to-face interaction in order to engage prospective participants and collect data. This face-to-face aspect of the intercept survey lends itself to social engagement which aligns very well to the relationship features encountered in collectivist society. Hence, the use of intercept survey amongst low IDV scoring cultures as a direct face-to-face method may be a better fit than traditional and online surveys that have limited social engagement.

The Uncertainty avoidance index (UAI) of Thailand is relatively high and as such people may view any unusual request as potentially challenging, drawing on the expected societal norm of politeness when in this situation. Perceived uncertainty suggests that Thais are considerate of anticipated future ramifications of their actions, trying to avoid ambiguous situations or risks (Hofstede et al., 2010). Because the intercept survey involves an approach and request scenario, Thais may perceive this as a relatively uncomfortable situation. Part of their reaction may involve politely participating in the survey in order to not offend. The culturally dimension of uncertainty avoidance amongst Thais appears to have a synergy with the PDI cultural dimension where being polite is also noted.

Thailand has a low Masculine index (MAS) and embodies elements of femininity— reflected in values of caring, relationships, equality and concerns for nature. The feminine nature of Thai society is an indicator of Thais preferring informal and personal relationship-based communication (Sammapan 1996). Low scoring MAS
societies have a strong people and human orientation—placing significance on personal face-to-face conversations. Clearly, the intercept survey with its fundamental face-to-face approach would fit well with this Thai cultural dimension. Indeed, the feminine nature of Thai society aligns acutely with a preference for informal and personal relationship-based communication promoted via the intercept survey approach.

Thailand’s high cultural dimension score associated with long-term orientation (LTO) reflects how people consider various future aspects their actions. These actions tend to be directed by personal thrift, stability, resourcefulness and planned endeavors. This cultural dimension does not appear to align with any of the features of the intercept survey per se.

Clearly, an understanding of Thai national culture in the translation and testing of research instruments and at the data collection stages serve to address some of the challenging issues encountered when needing to accommodate a country’s purviews, preferences for engagement and even history (Smith et al. 2011). Furthermore, by considering various cultural elements, particularly when collecting data in the field, researchers can potentially overcome bias and improve the quality of data collected (Miltiades 2008).

5 Identifying Issues in Administering the Intercept Survey

The study involved the initial development of survey questions in English, and the subsequent translation of the questions into the Thai language. The translated questions were then tested amongst a cohort of native Thai citizens. Subsequently, the finalized survey was field-tested in Bangkok before being rolled proper across several areas of the city.

5.1 The translation of the Intercept Survey for use in Thailand

The initial proposed survey questions were tested for clarity in a one-on-one discussion scenario using native English speakers. This allowed the survey questions to be checked for context and clarity issues with native English speakers—who were deemed to be most appropriate for this exercise. Once clarity and context issues were finalized the survey questions were translated into Thai.

When it came to determining the integrity of the Thai translation, the primary investigator’s understanding of Thai cultural behaviour favoured a discussion group approach over one-on-one interaction. Having grown up in Thailand, the decision to use a group approach was supported by understanding that Thais tend to prefer working in a pleasurable atmosphere, wishing to avoid conflicting situations and having a desire to foster harmonious social relationships. These attributes demonstrate a feminine (low MAS) aspect of Thai culture which had been personally experienced by the primary investigator across a life-time of family, community and group interaction. Having lived in a collectivist culture, the lead investigator’s personal experience suggested that there needed to be an emphasis on collaboration, saving face, tradition and community. Indeed, researcher experience suggested that group discussion was more conducive environment to facilitating greater exchange and interaction amongst Thai nationals. Such a group scenario would allow direct exchanges with the moderator (primary investigator) as well as group interaction, allowing feedback on survey questions. The discussion group approach also facilitated an important degree of useful informal dialogue which provided insight and cues to the nuance of wording in certain questions. This type of group activity reflects the collectivist aspects encountered in Thai society that emphasizes collaboration, tradition and community. Indeed the strong human orientation in Thai society is likely to make personal face-to-face conversations an important element of Thai culture noted through the country’s low MAS. Group dialogue can also be argued to align with a society that embodies collectivist (reflected in a low IDV as encountered in Thais) where people tend to be “we” conscious and value social interactions—rather than focus on an individual.

An interesting aspect of using the group discussion approach was noted when it came to getting participants to give feedback. Some of the younger participants, even though previously active in group discussion, became quiet and subdued. However, the more senior participants were seemingly more dominant in giving their opinion and tended to influence other members of the group, thus potentially shaping overall views and feedback. Indeed, the younger participants tended show emotional neutrality in their behaviour and adhered to agreeing with the senior participant’s ideas by avoiding comments or views that may have contradicted the more senior person. This example of emotional neutrality fits with the Thai’s going out of their way to avoid confrontation as part of their traditional values. This provided a challenge for the moderator in needing to get a balanced viewpoint of the outspoken dominant members of the group, as well as encouraging the more shy
members to speak up. Even with dominant members of the group, there was a need to not openly challenge their views in case it may have been seen as confrontational and potentially offending. For example, one senior participant (even more senior in age than the moderator) confidently suggested that more questions should be added to garner further information—even though these questions were not relevant to the research. With this issue, the moderator was reluctant to directly argue with him in front of the other people—as this might cause him to lose face, which in turn might potentially result in him being reluctant to give further feedback. In this situation, the primary investigator responded “That’s a good point. I will take this into consideration and discuss about this issue with my supervisor”. This circumvented the situation of still acknowledging his contribution (paying him respect) and whilst not causing him to be embarrassed (to lose face) in front of his Thai colleagues.

Thai society has a moderately high PDI, hence there is a cultural expectation and practice that individuals that are perceived to have low societal status, need to show respect to those deemed to have a higher status. Societal status can be determined by appearance, education, family name, job, and age. Therefore, younger participants would adhere to respecting older participants by following (and not challenging) their suggestions or ideas. Arguing against people perceived to have a high cultural status can potentially be interpreted as being impolite and disrespectful. With this behavioural situation it could be seen that Thais emphasize working in a pleasing atmosphere—avoiding conflicts and paying more attention to harmonious social interactions (reflected in the cultural attribute of a moderate UAI). These harmonious interactions are also closely aligned with feminine cultural characteristic (low MAS) among Thai people, whilst a preference for community or group settings aligns with collectivism (low IDV). Collectivist cultures tend to emphasizes collaboration within a group, being polite, avoiding embarrassment (saving face), adhering to traditional values and fostering community. We introduce the term *Kreng Jai* as applied to an attitude and behaviour associated with saving face in Thai society. *Kreng Jai* is a term that draws its basis from the Buddhist religion which is relatively widespread in South East Asia countries (Niffenegger et al. 2006). Most of Thais always feel considerate to others—they do not want to cause any embarrassment, inconvenience or hurt someone’s feelings. This behaviour can be noted in high UAI cultures, in which people try to avoid situations that might cause discomfort to others. This situation we propose as being implicit with a *Kreng Jai* attitude, which reflects a situation where individuals, in order to maintain relationships, restrain their own views or values (an emotional neutrality) wherever there is possibility for conflict. The issue *Kreng Jai* was evident in the interaction between younger members of the discussion group not challenging the more respected older people in the group. *Kreng Jai* was also practiced by the moderator in subtly ameliorating the outspokenness of one of the members of the discussion group, without creating offence to them (or revealing their own views/thoughts).

5.1.1 Recommendations

Clearly, the questions associated with trans-national studies require translated surveys to be a subsequent validation for integrity, potential bias and inconsistency. This is an important process and it is recommended that a *discussion group* approach be used, with participants being drawn from the country or culture in which the research will be undertaken. The person moderating the group feedback needs to also have a confident understanding of the cultural characteristics and sensitivities of the people that compose the discussion group. Indeed, the group moderator also needs to be aware of the culturally important practice of *Kreng Jai* amongst the participants and anticipate possible behaviours and interactions. Importantly they themselves need to have experience in *Kreng Jai* allowing appropriate moderator-to-participant interaction.

5.2 The Intercept Survey in the Field

An important aspect of undertaking research surveys is the need for pilot testing the instrument under field conditions in the country of interest. In this study, the primary investigator had confirmed that the questions finalised were clearly understood and properly interpreted by the Thai target audience. The aim of the pilot testing activity was to gain familiarity with the respondents in the field and to further check for survey question issues. Being a native Thai, the direct understanding of cultural values enabled the lead researcher to inform several field aspects of the study. Clearly, the values associated with collectivism and the high PDI and UAI dimension of Thai culture had a natural fit with interacting face-to-face with respondents. This instilled confidence and sureness in the lead researcher that the personal face-to-face approach would be the most culturally successfully way to talk to people. This type of engagement was something he experienced amongst friends, colleagues and community and was warmly reciprocated by other Thais. Moreover, it was felt that
understanding values associated with Kreng Jai (aligned with high UAI cultures) also supported the scenario of engaging people face-to-face which would lead to a situation where people would invariably be polite and obligingly cooperate.

Pilot testing of the survey involved approaching 50 people— of which only 2 declined to participate. Notably, the majority of people intercepted during the pilot testing of the survey questions were willing to participate in the study. A significant factor for the high co-operation rate was that after people were told that the survey was part of the primary investigator’s doctoral study— many people became very keen to help. The declaration that the survey was part of a person’s doctoral studies was a significant point in getting participation. Thai society values the notion of improving one’s education as an important pathway to elevating an individual’s status. Indeed, an enhanced status in Thai society can be reflected through one’s educational achievements and a person’s professional vocation. Thailand has a moderately high PDI which fits with this type of behaviour where recognition of societal status (or trying to improve one’s status) may entice a duty of cooperation. The other cultural feature noted in this scenario was that of Kreng Jai which aligned with endeavours to be polite and considerate of others (reflective of high UAI cultures). Hence, people did endeavour to assist and cooperate with a request to complete the survey. However, the obliging nature of people’s behaviour that is reflected in Kreng Jai did also provide important insight into the actions of a small, but notable group of respondents. Because of people felt obliged to cooperate, it was observed that a small but identifiable group of respondents did not at times heed fully the nature of completing the questionnaire properly. For instance, this group was noted to provide the same answer across many questions for expediency purposes. This suggested that even though agreeing to assist, this small group of people may have actually been unwilling to help, but agreed to participate because they did not wish to cause the primary investigator lose face or be negative toward them— especially when they knew that the research survey was of educational importance. Clearly, the issue of Kreng Jai was a feature that did assist with increased participation in the survey. However, the pilot stage allowed the researchers to become aware that Kreng Jai did have the propensity in a small group of participants to provide what could be bias responses— responses that needed to be noted when potentially encountered in the broader study.

Different cultural meeting and greeting styles were also identified as important in the survey collection process. It was relatively straightforward to approach younger respondents to request cooperation from them. The primary investigator being typically under the age of thirty-five fitted with the same social demographic as many younger respondents. However, when approaching people that were seemingly older, it was important to acknowledge a level of respect commonly accepted in Thai society. People that were deemed to be older participants were given the Wai first before they were engaged in conversation. The Wai can reflect values of respect and gratitude, or even be an apologetic notion when used. The Wai is a gesture where both hands are joined together and placed on one’s head or chest. It has religious symbolism and is a strong cultural feature of Thai society and falls under the realm of societies having a moderately high PDI— where in this instance there is respect and recognition directed at people perceived as being notably important.

These two important issues were fundamental in running the intercept survey. Because the survey was undertaken at different locations around Bangkok it became important to leverage the observed culture characteristics noted in the initial pilot testing. This included clearly articulating that the intercept survey was part of a doctoral project, highlighting the educational nature of the study, which potentially reflected improving one’s status in Thai society— a cultural feature associated with a high UAS. Importantly, the ability to get a sample that included an ‘older’ set of participants was enhanced by the primary investigator using the culturally important gesture of giving the Wai when approaching and engaging with this group— a feature important in a moderately-high scoring PDI culturally environment. The final survey proper achieved a 75% participation rate, which in hindsight allows the researchers to conclude that many of the aspects of Thai culture that intuitively informed the initial refinement of the survey questions and the pilot testing were significant in the final overall study’s successful response rate.

5.2.1 Recommendations

Notably, the practical aspects of engaging in the face-to-face intercept survey indicate that clearly articulating the reason for the data collection is important. Fang (2016) in recent work indicates that Collectivist cultures are more likely to disengage than Individualist cultures when undertaking online/paper surveys. Indeed,
declaring that the study was associated with educational outcomes appears to have been a powerful element in getting people to cooperate. This initial declaration tends to impart a certain status value to the person undertaking the research which is recognised and respected in Thai society. Kreng Jai can also be encountered in the field. Hence, the data collector needs to be aware that this cultural practice although important in assisting in survey participation, might also result in certain selective negative situations.

The use of the Wai is a significant cultural greeting when engaging with older-aged participants and reflects respect and gratitude for this particular group. This becomes important when data sampling needs to include such a group for completeness. The greeting has strong societal value and religious links that will improve this particular group’s response rates.

6 Conclusion

The paper reflects researcher experiences and provides important insights into practical data-collection issues associated with using the intercept survey. The intercept survey was a data collection instrument that was relatively compatible in accommodating the specific cultural features encountered in Thai society—subsequently improving data collection response rates. The researchers identified that face-to-face interaction, a focus on cultural politeness reflected in Kreng Jai, and practicing respect through the traditional enactment of the giving the Wai were factors that led to increased survey participation. These features were also argued as being aligned with several of Hofstede’s dimension commonly found in Thai natural culture. The paper’s contribution is one of linking features of national cultural with the practicalities of undertaking the survey in situ—an issue that is seldom reported by researchers.

The paper places a strong and unique focus on Thai cultural factors and how it affected the process of conducting fieldwork research. Although identifying a number of key factors associated with collecting data, further work in other Asian countries will potentially confirm and extend our observations. Indeed, future research will potentially focus on a comparison study across a panel of Asian countries. This will allow researchers to identify if the concept of Kreng Jai, and the practice of the giving the Wai are also identifiable in other countries and/or hold similar importance when undertaking the intercept survey to improve data collection and response rates. Indeed, the notion of Kreng Jai draws from the Buddhist religion which is relatively wide spread in South East Asian countries. Hence, the tenets of this cultural feature can be expected to be relevant in other areas of Asia that embody a high UAI cultural dimension and/or where Buddhism is encountered. Future research may also highlight any differences in regards to expected behaviour that one may assume to be associated with a country’s national culture. For instance, we noted that there as a relatively high diversity of Hofstede’s UAI scores across Asian nations and it would of interest to see if this factor was more significant in some countries compared to others when it comes to data collection.

7 The Limitations of Reflection

The paper was a reflective piece based on the retrospective examination of our original m-payment study. Through reflection the authors identified what we judged and perceived to be an important and under-reported methodology topic. Hence, the main limitation of the paper in that it reflects our personal experiences and viewpoints. Bradburn et al. (2004) suggests personal experience as a reporting mechanism can be limiting in that certain aspects of a topic can be incomplete or not evident. One of the incomplete issues in the paper is that we have not been able to provide a greater number of culturally-relevant themes encountered at the various stages of survey translation, pilot testing and data collection.

Personal reflection informed the paper’s findings which did require elements of researcher judgement. Hence, the researcher’s subjective judgement was needed to determine what to include and the value of the themes identified. Judgement was thus important in being able to deem what may have been novel, interesting and worth reporting. Another set of researchers undertaking the same reflective activity may have approached the task differently with diverse outcomes. Hence, the papers findings cannot claim generalizability per se. Reflective pieces also tend to be reliant on individual recall and the retrospective question of ‘why didn’t I record that?’— which are also limitations. However, we believe that the identified issues recorded provide important cultural insights for researchers to consider at the practical stages of survey translation and data collection when undertaking transnational studies.
References


