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Mixed methods: a research design for management doctoral dissertations

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Abstract

Purpose – This paper seeks to examine two management doctoral research projects to highlight the advantages in mixed methods as the primary research design.

Design/methodology/approach – This paper summarises the methods of data collection and analysis which were used by two doctoral students in their management research. The researchers used mixed methods approaches (quantitative and qualitative) to explore different areas of management.

Findings – The paper supports the view that triangulation of research methods strengthens the findings and inferences made for understanding social phenomena in more depth, compared to using a single method.

Research limitations/implications – The paper relies excessively on two doctoral research projects which utilise sequential mixed methods. Therefore, arguments made in the paper are specific because other doctoral projects that have used different methods from those employed in the two projects were not considered.

Practical implications – Early researchers, in particular students commencing doctorate studies, should apply mixed methods research because it develops skills in the two most dominant data collection methods used in management research. This paper is a practical guide on how this could be done effectively.

Originality/value – The paper is drawn from two unique doctoral research projects. The paper's originality and value is in providing experiences and practical insights on how mixed methods research is undertaken.

Keyword(s):

Quantitative methods; Qualitative methods; Theses; Data collection; Strategic alliances; Leadership.
Introduction

Management research is becoming increasingly complex and intricate, requiring new techniques for examining research problems and analysing data to explain and clarify social phenomena. In the past, management research only focused on adopting either a quantitative or a qualitative methodology. Quantitative dichotomy is dominant in management studies and has been a reasonably unquestioned method for exploring social and behavioural sciences since the twentieth century. However, qualitative research began to gain interest in the mid to late twentieth century as an alternative approach to a quantitative method. Qualitative methods, with a focus on interpretive and narrative analysis of information gathered through communication and observation, provided an option to the numerical confidence attached to a quantitative style.

More recently, a third methodology known as mixed methods has begun to gain researchers’ confidence. The mixed methods approach, also referred to as the third path (Gorard and Taylor, 2004), the third research paradigm (Johnson and Onwuegbuzie, 2004) and the third methodological movement (Tashakkori and Teddlie, 2003) is widely used and recognised by management scholars. Mixed methods, being the third research paradigm, is known to be a profoundly comprehensive technique for research in social sciences through integration of thematic and statistical data (Tashakkori and Teddlie, 1998). Divergent findings created through differing data collection and analysis techniques appear to lead to greater depth and breadth in overall results, from which researchers can make more accurate inferences with increased credibility.

Traditionally, management researchers have based their choice of methodology on suggestions recommended in academic books and journal articles. The academic resources largely focus on building complex theoretical models through numerically intensive research designs, because researchers seek out sophisticated, comprehensive analysis using methods that are deemed thorough (Aigen, 2008a, b; Carter, 1999b; de Weerd-Nederhof, 2001). On this basis, the use of rigorous and rigid methods of research and psychometric tests are often proposed without sufficient practical insights on the application of such a methodology (Carter, 1999a).

In this paper, we draw on two completed doctoral research management studies that utilise mixed methods, combining quantitative and qualitative dichotomies. We argue that such a combination is epistemologically coherent and useful for verification as well as for generation of findings. We draw on our joint experience in undertaking management doctoral research to advocate mixed methods as a possible methodological design that rigorously integrates statistical and thematic data to expand and enhance the findings (Jack and Raturi, 2006; Pansiri, 2005, 2009), and to better understand and explain a social phenomenon (Gubi et al., 2003).

Mixed methods for management research

Mixed methods as a research design is linked to two fundamental issues. The first is a theoretical concern related to any particular discipline in management, that is, the capacity for mixed methods to benefit a variety of research disciplines such as strategic alliances, human resources, psychology, sociology, education, organisational behaviour and health sciences, to name a few. Second is the extent to which the research questions determine the research approach (Brause, 2000; Calabrese, 2006; Finn, 2005; Phillips and Pugh, 2005) whereby
researchers must be able to make a rational justification for choosing a particular method or methods which would ensure reliability and validity of the overall research findings.

In addition, mixed methods advocate the use of both inductive and deductive research logic which is a great strength in itself. Having an inductive-deductive cycle enables researchers to equally undertake theory generation and hypothesis testing in a single study without compromising one for the other. With matching deductive-inductive dichotomies, researchers can provide better inferences when studying the phenomenon of interest. In fact, it is essential that we move to more sophisticated research designs, multiple data sources, and analysis that create divergent views and findings.

Furthermore, data analysis using mixed methods will amalgamate statistics and thematic approaches. Through techniques of combining and comparing multiple data sources, analysis, and processes, we allow triangulation to take place. Triangulation will strengthen the findings (Jack and Raturi, 2006) and, subsequently, the inferences we make because multiple techniques were utilised within a single research problem. On this occasion, mixed methods have complementary strengths and no overlapping weaknesses. For example, “hard” data generated through questionnaire administration are unlikely to capture the soft-core views and experiences (Parkhe, 1993) in social settings. Therefore, by undertaking mixed methods we avoid such occurrences.

By employing mixed methods, researchers are possibly reducing over-reliance on statistical data to explain a social occurrence and experiences which are mostly subjective in nature. It is acknowledged that whilst validity and reliability are predominantly derived from quantitative research, qualitative studies provide meaningful in-depth insights through subjective interpretations of experiences that provide plausible answers in relation to social phenomena. The consistency between the experiences of participants in relation to their social settings and life course, which are statistically described in questionnaires, is matched with their subjective interpretations and explanations of those experiences in interviews and focus groups. Therefore, mixing the data collection techniques will only enhance the findings so that researchers can make inferences with confidence.

Furthermore, Pansiri (2005) argues that, traditionally, most of the research undertaken in management promotes the belief that a natural scientific approach is most appropriate to understanding organisational life. For instance, Bettis (1991, p. 316) observes that:

[…] current norms of the field [strategic management] seem strongly biased toward large sample multivariate statistical studies. This leads to a large database mentality, in which large-scale mail surveys and ready-made databases such as Compustat, CRSP, and PIMS are often favoured.

This is supported by Mendenhall et al. (1993) whose research reveals that, of the International Journal of Management issues between 1984 and 1990, only 14 per cent utilised qualitative approaches, and only 4 per cent used joint methodologies.

However, despite the advantages offered by mixed methods, limited numbers of researchers are considering mixed methods in their management research (Anderson and Bateman, 2000; Bansal and Roth, 2000; Egri and Herman, 2000). For example, Gupta and Govindarajan (1984) used both questionnaires and interviews in their exploratory empirical study of the effects linking managerial characteristics to strategic business units (SBU) and strategy on
SBU effectiveness on implementation. In another study, Bourgeois III and Eisenhardt (1988) combined observation, interviews and questionnaires to investigate how executives make strategic decisions in industries where the rate of technological and competitive change is so extreme that information is often unavailable or obsolete. Geringer and Herbert (1991) used pre-tested questionnaires followed by semi-structured interviews to confirm responses while assessing the performance of international joint ventures. Other examples that employed mixed methods in strategic alliances consist of studies that combined quantitative and qualitative measures (Thakur and Srivastava, 2000), or interviews and archival data (García-Canal et al., 2002; Yan and Duan, 2003).

There are several types of mixed methods identified in the literature (Creswell et al., 2003; Pansiri, 2005; Tashakkori and Teddlie, 1998, 2003). Figure 1 shows different types of mixed methods using designs of quantitative and qualitative dichotomies. These methods are used with equal status or with one dominant approach, and quantitative and qualitative approaches can be conducted concurrently or sequentially. In concurrent mixed methods, qualitative and quantitative data collection techniques are undertaken at the same time as the analysis of the data. In contrast, using a sequential approach, the researcher conducts either a qualitative phase of a study first, then a separate quantitative phase, or vice versa (Tashakkori and Teddlie, 1998) with the expectation that the latter technique will assist in explaining and interpreting the findings of the former technique. For example, where the researcher used the QUAN—QUAL sequence, data of equal weight is collected by starting with quantitative data, followed by qualitative data collection (Creswell, 2003; Pansiri, 2005). In other words, qualitative findings were used to explain quantitative results.

In both the doctoral projects highlighted in this paper, mixed methods allowed qualitative findings to explain quantitative results thereby enhancing the validity and reliability of the study. Therefore, the potential limitation of one method was counterbalanced by the strength from the other method (Tashakkori and Teddlie, 1998). The two PhD research projects discussed in this paper also presented evidence of practical knowledge that will be illuminating for researchers considering mixed methods as a research design. Figures 2 and 3 illustrate the stages involved in the two studies. The quantitative data collection stage using survey instruments preceded the qualitative data collection phase which utilised in-depth semi-structured interviews.

As shown in Figures 2 and 3, data were collected sequentially, initially with quantitative data gathering. Both the researchers believe that mixed methods have allowed the expansion of the statistical data interpretation because qualitative findings have helped to elaborate on the quantitative results in order to fully address the research questions, and have profoundly elucidated the “real” social phenomenon encountered by respondents in an organisational setting. In addition, mixing the methods also allowed deeper examination of the research problem because qualitative methods were used to re-examine research questions, research objectives and the assumptions underlying each component proposed in the study. In essence, mixed methods achieved the two major goals of theory verification and theory generation (Creswell, 2003; Tashakkori and Teddlie, 1998) in these two doctoral dissertations. The following sections will discuss the doctoral projects in detail.

**Discussion – PhD project 1**

The first PhD research project explores cultural influences on the workplace participation behaviours of female and male managers in two diverse cultures. The primary aim of the
study is to investigate the universality of Western theories and models in other cultures by exploring two measurable areas of workplace participation behaviours, namely, leadership styles exhibited in contemporary organisations, and managerial career aspirations of female and male middle managers in Malaysia and Australia. The research design is shown in Figure 2. The research was developed on the premise that the present Western theories and models in the literature may not be fully applicable to explain and describe the experiences or address the culture-specific expectations and constraints faced by women and men in middle management in diverse countries.

The review of academic documentaries and sources highlighted that Western research still dominates in the areas of literature that describe leadership styles, and managerial career aspirations (Hofstede, 2001; Shahin and Wright, 2004). Despite the recognition that diverse cultures foster the manifestation of different values, attitudes, and behaviours, there still appears to be an assumption that Western perspectives and findings will be applicable across various cultural settings. This assumption is further validated by the limited number of studies that has been carried out outside Western countries. For instance, in emerging cultures such as Malaysia, apart from the labour force data, there is no real empirical evidence to explain and clarify the experiences of middle managers, the way they lead and manage in an organisational setting or the cultural constraints faced by female and male middle managers.

A decision was made to develop a research study to compare the similarities and differences in these two areas of workplace participation. It is also the contention of this doctoral research that in the twenty-first century, owing to the globalisation process, we will, more than ever, require an understanding of cross-cultural knowledge. This is particularly the case because global business operations need to be aware of culture-sensitive issues while carrying out effective business practices by respecting and acknowledging the differences in people. As a result, global organisations will be able to incorporate more culturally-responsive planning, and organising of their human resources as well as operational management.

The cross-cultural management literature further suggests that the understanding and interpretation of organisational behaviours, career theories and leadership attribution differ significantly around the world. These differences are possibly impacted on by influences created by the various cultures which shape values, attitudes and behaviours of people in specific cultural environments. Assumptions and over-reliance on Western organisational theories and understandings alone are not appropriate because Western findings may not be transferable to all cultural surroundings (Hofstede, 2001; Shahin and Wright, 2004). Cross-cultural understanding is becoming crucial today because of the globalisation process and the fact that organisations are expanding their boundaries internationally. This globalisation process is making the cultural contextual argument a significant issue that needs to be addressed in the twenty-first century.

Building on the direction of the cross-cultural literature, the first doctoral research endeavoured to examine the two diverse cultures of Malaysia and Australia, and middle managers were targeted for the research. Organisations from four industries were selected in both countries, and the data collection employed a mixed methods technique. The middle managers were drawn from manufacturing; transport, postal and warehousing; information media and telecommunications; and financial and insurance services.

The leadership literature argues that female and male leadership styles may be similar or may vary depending on the needs of the tasks. For instance, some women exhibit a different
leadership style compared to their male colleagues (Eagly \textit{et al.}, 2003; Helgesen, 1990; Rosener, 1990, 1995) in certain circumstances. Women can be seen to be transformational leaders in their interactions with employees when compared to their male counterparts who demonstrate transactional leadership approaches (Bass \textit{et al.}, 1996; Eagly and Johannesen-Schmidt, 2001; Eagly \textit{et al.}, 2003). Findings based on evaluative studies carried out using meta-analysis by peers, superiors, and self, indicate that women's communal attributes manifest themselves in a transformational leadership style. However, once again, the vast majority of studies which have focused on leadership traits, behaviours, and styles were conducted in the West. There is little knowledge about the relevance of these studies in other cultural contexts. In particular, very little is known about how effective leadership is evaluated in other cultures. There is a need to go beyond Western paradigms and investigate these issues in different cultural settings (House \textit{et al.}, 2004) because it is possible that Western leadership theories do not have universal application.

Based on the literature review, Survey on Career Advancement was developed to examine the leadership styles and career aspirations of women and men in both countries. The questionnaire was divided into four parts: a demographic section, personal aspirations for future goals, workplace participation and questions related to national cultures. Two versions of questionnaires were designed and printed in English; one set directed to the Malaysian sample and the other to the Australian sample. The questions in both questionnaires were the same except for questions related to origin of birth, race, origin/descent, and educational attainment and terminologies. A multifactor leadership questionnaire (MLQ) leader form was attached with Survey on Career Advancement to measure the leadership styles of managers. MLQ is a measurement tool widely used in the literature and empirically validated in numerous research projects to assess leadership styles of managers in organisations. The MLQ form was developed as a tool to measure “full range” leadership dimensions, and includes elements which are highly positive (transformational) on one end of the spectrum, and leadership items that are negative on the other end of the spectrum (laissez-faire) (Avolio and Bass, 2004).

Upon completion of questionnaire administration, in-depth interviews were conducted with the respondents. The interview questions were designed to be short and specific. Every participant was asked the same questions. The interview questions were drawn from quantitatively described standardised questionnaires. A funnel technique was used to explore the subjective interpretation of the participants' workplace experiences, their lived experiences and underlying challenges with career aspirations and progression.

Qualitative data were used to explain and re-examine quantitative findings from the questionnaire stage. In this project data were collected sequentially. The reason for employing a sequential approach was to help strengthen the key findings in the quantitative stage because the interviews presented an opportunity to verify and explain the researcher's interpretation of the statistical analysis. Furthermore, the interviews gave an opportunity for the researcher to integrate statistics with thematic data to answer the research questions with credibility.

**Discussion – PhD project 2**

The second doctoral research project investigated the influence of company and executive characteristics on strategic alliance formation (decision to form alliances, alliance type selection and choice of alliance partners) and performance evaluation of alliances, in the
Australian tourism industry sector of travel. The research focused on three travel sub-sectors – travel agencies, tour operators and wholesalers – and how these sub-sectors relate with those of transport and accommodation. A behavioural framework for investigating strategic alliances was developed.

The significance and contribution of this study is twofold – first, to understand strategic alliance formation in the tourism industry in Australia with emphasis on the travel sector, and second, to understand these formations in terms of company and executive characteristics, which only a few studies of strategic alliances have done. This thesis borrows from Tyler and Steensma's (1998) study of technological alliances that uses cognitive orientations of executive officers in assessing technological alliances, to understand how top executives' behavioural orientations influence their attitudes toward strategic alliance formation in the tourism industry in Australia. The study investigates factors and/or elements which may be considered most relevant in the creation and maintenance of strategic alliances in the travel sector by taking into account the company's and the executive's characteristics.

The objectives of the study were to examine whether internal or external factors, as identified in the literature, influence the formation of strategic alliances in the tourism and travel sector in Australia; to explore the role of company and executive characteristics in selecting the type of strategic alliance, choice of alliance partners, and alliance performance outcomes in the travel sector, and to establish whether significant relationships exist between strategic alliance performance evaluation and choice of strategic alliance partners. The broad research question was: What are the effects of company and executive characteristics on strategic alliance formation, strategic alliance selection, choice of alliance partners, and alliance performance evaluation in the Australian travel sector?

This study developed a framework to study strategic alliances in the tourism industry from five broad perspectives – drivers (internal and external), alliance types, choice of alliance partners, alliance structure, and alliance performance outcomes. The intention behind the framework is to understand alliance types and choices of alliance partners. For example, there is a need to recognise the drivers influencing organisations to embark on such alliances. Furthermore, it assumes that the choices made (both of alliance types and partners) influence the type of alliance structures adopted, leading to certain levels of success (measured in terms of executives' assessments). Depending on analysis of alliance performance, organisations decide to continue or terminate the alliance, forge new alliances, embark on mergers and acquisitions or “go it alone”. It is the dynamic complexity of collaborative strategic management process, based on feedback analysis, which leads to development and growth of the tourism industry.

The variables that are considered in this framework are wide and varied. It is, therefore, beyond the scope of this work to study all the factors. Only 13 drivers are studied. In addition, eight strategic alliance types are considered. Factors that influence the choice of alliance partners are also evaluated, and strategic alliance evaluations were conducted in order to find out whether alliances that organisations are embedded in helped them to achieve the objectives they had set beforehand.

Further to the above, the theoretical relationships between strategic alliance theory and executive and company characteristics were developed in a framework where it is argued that alliance practices are highly influenced by executive and company characteristics. A review of the senior executive perspective is conducted linking it into strategic alliance formation.
Further, a review of the company characteristics perspective links certain strategic decisions to company profiles. Based on these outcomes, a theoretical understanding of how the differing factors influence strategic alliances is discussed with the identification of a number of company characteristics.

To investigate these relationships, a survey was developed from the literature review and was sent to Australian travel businesses. Subsequently, in-depth semi-structured interviews were undertaken to expand on the initial survey findings. The survey was distributed to a random sample of 600 top executives in the travel sectors, namely, travel agents, tour wholesalers, and tour operators in Australia. Out of the 600 surveys, 435 were distributed electronically while 165 hard copies were posted. Of the 165 hardcopies sent to potential respondents, seven hardcopies did not reach the desired respondents and were returned to the researcher, while of the 435 electronic copies sent by email, 145 were returned because either the recipient's email address had “permanent fatal errors”, the delivery to the recipient “failed”, or the business had ceased operations. It is assumed that 444 (290 electronic and 158 hard copies) reached the desired respondents. In total, 127 completed surveys were returned. Of these, 117 (92 per cent) were found to be usable for the study.

Survey data were analysed to identify major themes for interviews. Interviews were based on 20 questions, which were divided into four themes: alliance types and reasons for alliance formation, strategic alliance performance, choosing alliance partners, and whether alliances were perceived as a risky form of business. These questions were piloted with one tour operator to see whether they were clearly understood, and appropriate changes were made. All the interviews ranged from 30 to 45 minutes in length and were tape-recorded and transcribed for textual analysis. Data were then categorised according to the various questions which were asked in the interview. This allowed the researcher to understand and interpret executives' experiences with strategic alliances in the travel sector.

**Data analysis of both projects**

The two projects used sequential mixed methods as primary research designs to collect and analyse data (QUAN-qual). In both projects, quantitative data were collected and analysed, followed by qualitative data, which were collected and analysed to augment quantitative findings. In both cases, quantitative data were analysed using both descriptive and inferential statistics. Preliminary analysis in both projects used descriptive statistics (averages, means, percentages, standard deviations), and correlations to determine trends in responses. In addition, these studies used a variety of tests, including Pearson $\chi^2$, Cramer's V tests, $t$-tests, and one-way analysis of variance (ANOVA). $\chi^2$-test was chosen because the data were categorical and Cramer's V was used to measure the strength between these categorical variables (Field, 2005).

In the first PhD project, leadership measures were assessed using a MLQ and questions from the Survey on Career Advancement which was developed by the researcher. Participants in the Malaysian and Australian sample completed MLQ-Leaders form, which was based on a full range leadership model (Avolio and Bass, 2004). Descriptive statistics of the MLQ items were assessed to identify whether the data had a normal distribution; eight items out of 45 items on the MLQ survey were skewed. Since skewed distribution will violate the assumptions of common parametric tests (only performed on normally distributed data), measures were taken to transform the skewed data in order to reduce the impact of extreme scores. Data transformation allows corrections to be made on skewed items to normalise the
data distribution, and, statistically “transforming the data won't change the relationship between variables” (Field, 2005, p. 79). Positively skewed data were transformed by square root transformation, and negatively skewed data were transformed by using squared command. After transforming the skewed distribution, the whole data set was standardised (by setting the mean to equal zero and the standard deviation to equal one), thereby allowing for the aggregation of transformed and non-transformed MLQ items.

In the second research area, four measures of aspirations for career aspirations were examined. These four areas were personal variables influencing managerial aspirations, personal perception of aspiration for career advancement, personal perceptions of workplace participation, and personal perceptions of barriers to career advancement in general. Data analysis for these sections employed $\chi^2$ analysis, ANOVA, $t$-tests and Post Hoc Tukey HSD tests.

The second doctoral project used correlations, $\chi^2$, Cramer's V and simple regression to assess company and top executives characteristics' associations with alliance practices (decision on whether to form a strategic alliance or not, strategic alliance types, number of strategic alliances a company has, and location – whether the company has domestic or international alliances or both, choice of alliance partners, and alliance types) and alliance evaluations. Both PhD projects used ANOVA to assess relationships between independent and dependent variables. The first study assessed relationships between respondents' demographics and workplace participation (commitment and motivation), and cultural influences (whether culture is perceived as a factor that helps or hinders respondents' aspirations for career advancement). The second study used ANOVA to assess relationships between company and executive characteristics with choice of alliance and, for instance, joint ventures, marketing alliances, alliance variables, and alliance performance. Where violation of assumption for variance was found, the Welsh's $F$-ratio was reported, as suggested by Field (2005).

In the second study, factor analysis and regression were performed to establish the nature of relationships between variables. Factor analysis through principal component analysis, purified using varimax rotation, and validated for reliability through Cronbach's alpha coefficients was used to identify the major factors and to reduce the data to a manageable size. The results of factor analysis were used to assess the relationships between choice of alliance partners and strategic alliance performance, using simple multiple regression techniques.

The two projects adopted purposive selection to identify respondents who participated in in-depth interviews:

This is deemed an important qualitative sampling method because the researcher decides which members of the population are most likely to provide the answers to the research questions and then deliberately includes them in the sample (Pansiri, 2006, p. 230).

This involves selecting people from which the researcher can substantially learn about the experience (Polkinghorne, 2005). The first project had 23 respondents from Australia and 16 from Malaysia in the interview process. Interviews were conducted for approximately 30 minutes. In some cases, respondents spent up to 45 minutes. Prior to the interviews, quantitative data were analysed to determine themes which formed the basis of the interview questions. The interview schedule was structured based on quantitative themes to systematically explore and re-examine the data. Interviews were taped using digital voice
tracker and transcribed. Data from the interviews were analysed using content analysis. This is a research technique involving the identification of codes prior to searching for them in the data (Liamputtong and Ezzy, 2005) and systematically examining the content of communication (Wentling, 2003).

In the second doctoral project, 13 respondents who participated in the survey indicated their willingness to participate in face-to-face interviews. All of them were men. Seven of them later declined, citing work commitments as the main problem. Six interviewees finally participated in the interviews.

The interviews were based on 20 questions, which were divided into four themes: alliance types and reasons for alliance formation, strategic alliance performance, choosing alliance partners, and whether alliances were perceived as a risky form of business. The interview questions were piloted with one tour operator to see whether they were clearly understood, and appropriate changes were made. All the interviews were recorded, transcribed and typed out.

Qualitative data derived in interviews were analysed using narrative analysis, a method that has been identified to help researchers to retain the integrity of the data collected and begin analysis from the basis of the verbatim transcripts that are produced (Coffey and Atkinson, 1996; Liamputtong and Ezzy, 2005; Punch, 2005; Saunders et al., 2003). This method involves “the collection and analysis of qualitative data that preserves the integrity and narrative value of data collected, thereby avoiding their fragmentation” (Saunders et al., 2003, p. 482). The analysis relied more on quoting narratives by the interviewees with a view to telling the stories based on:

[…] executives' accounts of their experiences and the ways in which they explained these accounts through their subjective interpretations, and related them to constructions of the social world in which they live (Pansiri, 2006, p. 233).

Conclusion and future research

The primary aim of this paper is to provide empirical evidence to justify the advantages of using mixed methods in management research. By doing so, this paper particularly targets doctoral students who may consider employing mixed methods in their research designs. This paper highlights various advantages for adopting mixed methods, including the benefits gained from multiple data types and variation in data analysis techniques, suggesting an optimal research design for future studies. Both researchers adopted a sequential-type, mixed methods approach (Creswell, 2003; Tashakkori and Teddlie, 1998, 2003) based on their research questions. It is clear from our experience that adopting research designs that go beyond the conventional dominance of any one particular research technique, either quantitative or qualitative dichotomies, will produce research outcomes of high standing.

Furthermore, it is crucial, if not essential, that doctoral students experience both quantitative and qualitative approaches in order to develop their knowledge base in management research. After all, mixed methods will help doctoral students to learn and master the art of multiple ways of collecting, analysing and interpreting data that are more holistic in order to understand research problems. These are important skills for early career researchers.
Although these two doctoral studies appear to be similar because the researchers triangulated quantitative and qualitative data by employing a sequential mixed design, where qualitative data were used to explain quantitative data, the differences between the two projects are clear. The differences in terms of measurement instruments and choice of analysis formed a worthwhile contribution to management research, in general, and to doctoral education in particular. The areas studied by the researchers were remarkably different. The first project focused on gender, leadership and managerial career aspirations in two diverse cultures. Similarities and differences between and within female and male middle managers were compared and contrasted in order to examine the universality of Western-developed theories in diverse cultures. The second project looked at strategic alliances in the tourism industry's travel sector (travel agencies, tour operators, and wholesalers) in Australia. The results of the second project indicate high levels of interaction through alliances between the three sub-sectors and the two sectors of accommodation and transport in the Australian tourism industry. Company and executives' characteristics were found to be influential in taking strategic decisions on whether to form alliances or not, the choice of strategic alliance types, the choice of alliance partners and alliance evaluation.

In conclusion, it is obvious that research using mixed methods can be employed to study an array of topics in the management discipline, with diverse research instruments such as replicating existing measurement tools in the literature as well as developing one's own questionnaire. Mixed methods allow and foster creativity amongst researchers in their research design, data gathering and data analysis. Most importantly, these research skills are invaluable for providing doctoral students who wish to take up academic roles in universities with adequate knowledge for effective teaching and supervisory skills. As scholars we should, at least, aim to have a minimum degree of knowledge and experience of quantitative and qualitative research methods.
**Figure 1** Mixed methods design matrix

Notes: “Qual” stands for qualitative; “quan” stands for quantitative; “+” stands for concurrent; “→” stands for sequential; capital letters – “QUAL” and “QUAN” denote high priority or weight; lower case letters – “qual” and “quan” denote lower priority or weight.

Sources: Adapted from Creswell (2003); Johnson and Onwuegbuzie (2004); Tashakkori and Teddlie (1998); Pansiri (2005, p. 202)
**Figure 2** Doctoral project 1
Figure 3: Doctoral project 2

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