The Professor Francis Allotey Graduate School

Office of Graduate Studies (OGS)

WRITING YOUR PHD RESEARCH OUTLINE

As part of the application requirements to pursue a PhD degree program at AIT, all prospective candidates are required write a 5-page PhD Research Outline following the guidelines provided below.

The details of this Research Outline will be evaluated by the PhD Admissions Committee in addition to the details of the candidate's application form to determine his/her suitability to pursue a PhD program with us.

Please make sure you restrict yourself to the 5-pages concentrating on the sections identified in the *"Guidelines for Brief Research Proposal"* on the next page.

To assist you in drafting your Research Outline, we have provided below a toolkit: *'writing a PhD Research Proposal: Toolkit'*. Please refer to the details of this document.

We also provided a list of *Sample Research Proposals* which you may want consult. You can also visit the Internet to download additional sample PhD research proposals to guide you.

Please submit your PhD Research Outline with your completed PhD Application Form and other requested documents to: **open@ait.edu.gh.** You may instead decide to submit your details in-person at our Cantonments Campus, Accra. We are opposite the Morning Star School.

Please make sure you follow the instructions for paying for your application form (in case you download it from our website)

Just in case, we can be reached on: **028-8181817 or 028-9181817**

GUIDELINES FOR BRIEF RESEARCH PROPOSAL

TOPIC:

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What is a Research Proposal?

A *Research Proposal* is a document spelling out **what** you intend to do, **why** you want to do it, **how** you intend to do it, **what** you expect to get out of the research exercise, its significance and possible use.

A number of potential PhD students and beginning researchers do not fully understand what a research proposal means, nor do they understand its importance. To put it bluntly, one's research is only as a good as one's proposal. An ill-conceived proposal dooms the research project even if it somehow gets through the relevant PhD Research Committee (PRC). A high quality proposal, on the other hand, not only promises success of the research exercise, but also impresses the PRC about your potential as a researcher and a PhD candidate.

A research proposal is often developed by beginning with the following considerations:

- What is the central question I wish to address?
- What kinds of answers am I looking for?
- What methods will help me find the answers?
- What is the relationship between my central question and current work in the discipline/subject/area?
- Am I sufficiently interested in this research topic or question to sustain my engagement with it over a prolonged period of study?
- What kinds of benefits, personally, intellectually, or professionally, might derive from my research?
- What specific contributions will my research make to the body of knowledge in my field or domain of study

In the final analysis, you need to bear in mind that a research proposal is intended to convince others that you have a worthwhile research project and that you have the competence and the work-plan to complete it. Generally, a research proposal should contain all the key elements involved in the research process and include sufficient information for the readers to evaluate the proposed study.

Regardless of your research area and the methodology you choose, all research proposals must in the end address the following questions: ***What you plan to accomplish, why you want to do it and how you are going to do it.***

The Research Area Identification: Some Basic Questions

- Will the subject/area sustain your interest in the research?
- Is the research within your area of competence?
- Is the area researchable, i.e. Can the area be researched or investigated?
- The practicability and feasibility of the intended area of research
- Will the research lead to clearly identifiable deliverables?
- Questions relating to the significance of the research?
- Is the research manageable?
- Will the output of the research meet the requirements of the PhD degree in terms of relevancy and level?
- Uniqueness, Originality Requirement: Uniqueness in terms of the approach used, area explored, subject matter, solution, etc.

The PhD Research Focus

A PhD research/study may be designed to:

- EXPLORE: a concept, a theory, an idea, or an area
- EXPLAIN: a concept, a theory, the behaviour or operation of a system, a mechanism or a phenomenon
- DESCRIBE: a concept, system, process or phenomenon
- PROOF: a theory, a concept, or a hypothesis
- CONCEPTUALIZE: a system, a process, a model, procedure or a mechanism
- DESIGN: a process, a system, a procedure, or a model
- EXAMINE: a concept, a process, a system, procedure or a mechanism
- DEVELOP: a concept, a procedure, a model, an approach, an algorithm, a system, an architecture or a product
- BUILD: a system, a physical unit/model, a mathematical model or a working model of a system
- IMPLEMENT: a system, a process, a model, procedure, a concept, a theory, an idea or a mechanism
- DEMONSTRATE: a concept, a theory, an idea, a system, a process, a model, procedure or a mechanism

The PhD Research – Potential Outcomes

The outcome of a PhD research work may:

- Open up new a area
- Provide unifying framework
- Resolve long-standing question

- Thoroughly explore an area
- Contradict existing knowledge
- Experimentally validate a theory
- Produce an ambitious system
- Provide empirical data
- Derive superior algorithms or systems
- Develop a new methodology or mechanism
- Develop a new tool or system
- Produce a negative result

Developing a Good PhD Research Proposal/Outline: Some Pointers

"A good thesis proposal hinges on a good idea. "A clean, well thought-out, proposal forms the backbone for the thesis itself.

"A research proposal sets out the **broad topic you would like to research** (*substance*), **what the research would set out to achieve** (*aims and objectives*), **how you would go about researching it** (*methodology*), **how you would undertake it within the time available** (*outline plan*) and **what the results might be in relation to knowledge and understanding of the subject** (*potential outcomes*)

"Your research proposal frames your original idea, locates it, delimits it and specifies not just what you are studying but how you will actually carry it out and what you might find".

"A research proposal basically lays out your ideas and intentions in a clear, concise manner."

"A PhD is an original piece of research and so you should demonstrate that your proposed area has not been studied before."

"The process of developing the proposal can be a valuable exercise, one which can help you determine your focus, clarify what is involved in your research project and plan its development.

"A developed proposal is an important way in which you can demonstrate your understanding of research and communicate your 'research thinking' to others".

"It is the merit of the proposal which counts, not the weight. Shoot for up to five pages that indicate to a relatively well-informed audience that you know the topic and how its logic hangs together, rather than fifteen or twenty pages that indicate that you have read a lot of things but not yet boiled it down to a set of prioritized linked questions."

"The research proposal should situate the research work in the relevant body of knowledge of the subject matter, it should show why this is an (if not the most) important research problem to

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answer in the field, and convince the research committee (the skeptical readers that they are) that your approach will in fact result in an answer to the stated research problem".

Finally, in developing a research proposal it is useful to remind yourself of what the examiners will be looking for in the final thesis when you have completed it. In a good thesis the following elements can be traced back to the research proposal:

- A distinct contribution to knowledge
- Evidence of the discovery of new knowledge or the exercise of independent judgement
- Literary presentation
- Original work of merit worth of publication
- Evidence of competence in independent research
- Understanding of concepts, issues, techniques and methodology
- Critical use of published work and source materials.

The Research Proposal: An Outline

1. The Thesis Topic

A **title page** should include your proposed thesis **topic** (or title), your full **name** and **qualifications** (e.g. Akosua Mensah, BSc, MBA), your AIT **School** (e.g. AIT Business School [ABS]; Advanced School of Systems and Data Studies [ASSDAS]; School of Advanced Technologies, Engineering and Science (SATES)) and the **date** of submission. The research topic should be concise and descriptive. For example, phrases like:, *"An investigation of . . ."* ; *"Research on ….."; "Studies on ….." etc*. could be avoided.

If possible, think of an informative but catchy title. An effective title not only generates the reader's interest, but also predisposes him/her favourably towards the research proposal. In composing your topic be also mindful that a requirement of a PhD thesis is that it makes an original contribution to knowledge. Thus, you need to show how the proposed research topic is sufficiently important to justify your efforts (and the efforts of those you involve in your research).

2. A Brief Abstract

An **abstract** that, in one or two paragraphs, provides a concise summary of the research work you are proposing including *a brief statement of the problem that you are trying to solve and how you expect to solve it*. This is one of the most challenging parts of the proposal to write since you must provide some detail without the reader having yet been given the background knowledge. It is probably best to write the abstract last!

3. The Research Objectives (General and Specific Objectives)

A statement of the **field** and **subject area** of focus of the research followed by the **general/global objectives** and the **specific objectives** of the study.

For example, the field of study could be *Information Technology* and the subject area of focus could be: *Distributed Systems, E-government Systems, Database Systems, Artificial Intelligence/Knowledge-based Applications Systems*, *Information Security*, etc)

The ***General/Global Objective*** should state the expected contribution of the research to the general body of knowledge in the subject area. For example, you could have a statement like*: "The general objective of the proposed research is to contribute to the general body of knowledge and research work in the area of the application of artificial intelligence to support medical diagnosis*

The ***Specific Objectives*** should state how specifically the general objectives will be achieved. It could start with the statement…*To achieve the general objectives, the research will be aimed at addressing the following specific objectives:* .. [bulleted list/brief statement or description of the specific objectives..]

Key points to keep in mind when preparing a study objective(s) statement.

- The study objective(s) should provide a specific and accurate synopsis of the overall purpose of the study" If the purpose is not clear to the writer, it cannot be clear to the reader.
- Try to incorporate a sentence(s) that begins with "The general/specific objective(s) of the study is . . ." This will clarify your own mind as to the purpose and it will inform the reader directly and explicitly.
- Clearly identify and define the central concepts or ideas of the research. When using terms, make a judicious choice between using descriptive or operational definitions.

4. The Research Problem

A concise **research problem** statement that, in one to three sentences, describes specifically *what the problem is that you intend to solve*. It explains *what problems or issues you wish to explore and why you wish to explore them*. This problem statement can be technical in nature. For example, ***"Intend to explore the benefits and liabilities of fuzzy logic in the scheduling of work across heterogeneous distributed computing environments."*** Please note that the word 'problem' is intended to be interpreted broadly. It is entirely possible that your 'problem' might be less specific in nature. For example, ***"Intend to develop and empirically test a tool for integrating database schemas."***

Do note that if the research problem is framed in the context of a general, rambling literature review, then the research problem may appear trivial and uninteresting. However, if the same research problem/question is placed in the context of a very focused and current research area, its significance will become evident. Try to place your research problem within the context of either a current "hot" area, or an older area that remains viable. Secondly, you need to provide a brief but appropriate historical backdrop. Thirdly, provide the contemporary context in which your proposed research problem occupies the central stage. In short, try to paint your research question in broad brushes and at the same time bring out its significance.

You should also provide a brief description of the research problem. In other words, you will need to convince the PhD Research Committee that you have thought of all the details of the research problem (and the environment(s) in which it occurs) that might affect your proposed solution. The research problem description further convinces the committee that you know what you are talking about and will therefore be capable of undertaking your proposed research work.

Some Pointers on Composing the Statement of the Problem

"The research problem statement describes the context for the study and it also identifies the general analysis approach"

"A research problem might be defined as the issue that exists in the literature, theory, or practice that leads to a need for the study"

"It is important in a proposal that the research problem stand out—that the reader can easily recognize it. Sometimes, obscure and poorly formulated problems are masked in an extended discussion. In such cases, reviewers and/or committee members will have difficulty recognizing the problem"

"A research problem statement should be presented within a context, and that context should be provided and briefly explained, including a discussion of the conceptual or theoretical framework in which it is embedded. Clearly and succinctly identify and explain the problem within the framework of the theory or line of inquiry that undergirds the study. This is of major importance in nearly all research proposals - quantitative research and qualitative research"

"State the research problem in terms intelligible to someone who is generally sophisticated but who is relatively uninformed in the area of your investigation"

"Effective problem statements answer the question *"Why does this research need to be conducted."* If a researcher is unable to answer this question clearly and succinctly, and without resorting to hyper-speaking (i.e., focusing on problems of macro or global proportions that certainly will not be informed or alleviated by the study), then the statement of the problem will come off as ambiguous and diffuse"

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5. Background and the Justification of the Research

The research background statement among other things should: *describe the current state of art, why the research is needed (the justification) -- how would the results of the proposed research fill this need and be beneficial*; explain the background and issues of your proposed research – identify the discipline, describe why you are doing the proposed research work and what its significance is. (i.e. Does anyone else care about what you are doing? – The justification of the research work). On documenting the significance of the research you will need to indicate *how your research will refine, revise, or extend existing knowledge in the area under investigation. Note that such refinements, revisions, or extensions may have either substantive, theoretical, or methodological significance*. You also need to provide a quick sketch of your proposed solution and briefly explain how it differs from other works. Be sure to build from more general concepts to more specific ones so that the reader will understand everything.

The background to the research section should also provide a brief statement on related work - commenting on previous work related to what you are proposing. This section should be carefully written and organized to make the relationships between the earlier research efforts clear and to also explain how that research relates to your proposed work. The documentation of significant prior research should be comprehensive enough to demonstrate that you are aware of the major relevant sources of information. Most research projects arise out of considerable prior research, which should be summarized. *You need to show the relationship between your research problem and this prior research*. The work you reference should be relevant and recent. Insufficient references suggest that you may not be aware of all the related work and this means that it is possible that your work may already have been done by someone else.

The inclusion of irrelevant (or too many) references may lead the PhD Research Committee (PRC) members evaluating your proposal to question your understanding of the area. Finally, lack of recent references might suggest that your proposed work is no longer of interest or is, perhaps, too hard a problem that other researchers have chosen to overlook.

Finally, do base your related work on quality publications. Your referenced papers should be from well-respected, refereed sources (i.e. journals or top tier conferences in your selected area). Referring to dubious papers lessens the committee's confidence in your thesis proposal. Finally, your selected papers should reflect a reasonable amount of breadth in terms of authorship and source.

6. The Methodology

The Methodology section is very important because *it documents how you plan to tackle your research problem*. The guiding principle for writing the methodology section is that it should contain sufficient information for the reader to determine whether the methodology is sound. It may well be the longest section of your proposal and should be made up of the following sub-sections:

6.1 Solution Strategy/Approach: A description of your proposed ***solution strategy/approach or method*** and expected results. Although you may not know the precise details of how you will solve the research problem, you should be able to give the committee sufficient detail to convince them that what you are proposing is a good idea that can be done within the time constraints of a PhD degree and that you understand the issues associated with the techniques you intend to apply. In particular, you should be able to describe how your proposed solution strategy or approach/method will address the details of the problem and environment described in the previous section of your proposal. You should also realistically summarize what you see as the advantages and disadvantages of your proposed approach/method and, accordingly, what you expect the results of your work to be.

6.2 Evaluation of Research Work: A description of how you propose to undertake the ***evaluation*** of your work. You must ultimately be able to answer the question of whether or not the work you have proposed and (later) completed is important. This is often done by direct comparison with other, existing work in the field. Such comparisons may be done experimentally, analytically, through simulation or possibly a combination of these. For example, you might be proposing a thesis where, at the end, you will want to compare the performance of an algorithm you developed and implemented with the performance of a similar existing algorithm. When doing this, always try to make the comparison(s) as objective and meaningful as possible.

7. Summary

A brief (one to two paragraphs) summary of the research proposal (i.e. the previous sections) that highlights the key points in the proposal and provides a list of contributions to the field that you expect your work to provide. Be very specific when listing your contributions and explain why they are of interest to the research community in your specific field and subject area of research.

8. References

A section listing relevant references on which your research proposal is based should be included.

Concluding Remarks

Just keep these points in mind while writing your proposal:
- Include all the above sections.
- Stay focused on your research topic.
- Develop a coherent and persuasive argument for your proposed research.
- Cite major studies in the field and the subject area of research.
- Present theoretical and empirical contributions by other researchers.

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THE IMPACT OF THE ATTACHMENT OF A FINANCIAL PRODUCT ADVISER TO A RETIREMENT SAVINGS PLAN ON THE INVESTMENT DECISIONS OF THE MEMBERS

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Seventy seven percent of working Australians are effectively investors by government mandate: They are required to participate in retirement savings (RS) plans that incorporate investment choice. There is evidence that these working Australians, and their counterparts overseas, find these investment choice decisions difficult. Moreover, this difficulty may result in decisions that are not fully rational. For instance, some researchers have highlighted the significant numbers of members who remain in company-selected default investment options and don't seem interested in making active investment choice decisions. If decisions are "not fully rational" then the result can be a retirement savings shortfall. This is an outcome about which both researchers and policy makers have expressed concern. From a theoretical point of view, behavioral models have been developed in recent years to explain decision-making that is "not fully rational". In contrast, the longer-standing Life Cycle Permanent Income Hypothesis (LCPIH), depicts an economically rational individual, making decisions that optimally smooth consumption over a life cycle. Previous research has considered the role played by both financial education and RS plan design in moving individuals closer to the rational ideal modeled in the LCPIH. The aim of the proposed research is to investigate whether the attachment of a financial adviser to an RS plan will lead the members to make more rational investment choice decisions as per the LCPIH. A unique data set for this research will be provided by an industry partner that has a large number of client companies for its RS plan product. A pilot study has identified logistical issues associated with the extraction, management and analysis of this data. A sample of RS plans will be grouped according to whether or not a financial adviser is attached. Using panel data techniques, a range of hypotheses will be tested, two of which follow for illustrative purposes: RS plans which have a financial adviser attached will have (a) a relatively smaller percentage of members in the default investment option, and (b) members investing a relatively larger percentage in shares. If the attachment of a financial adviser is shown by this research to lead to investment choice decisions that are closer to the rational ideal modeled in the LCPIH, then this could have important public policy implications. These implications would arise from the large numbers of individuals making these decisions, both in Australia and overseas, and the concern expressed by some with their existing decisions.

3.   Introduction

3.1   The Background to the Study

The Australian population is ageing (Australian Bureau of Statistics, 2002). In 2001, 11% of the population was aged 65 and over, an age by which most working Australians have retired. The Australian Bureau of Statistics forecasts that by 2051 this figure will increase to 26%, due, in part, to declining fertility levels, increasing longevity and ageing of the large baby boomer[1] cohort.

The ratio of numbers of people aged 65 and older to those aged between 15 and 64, known as the aged dependency ratio, is an approximate index of the "proportionate burden that the aged will place on working members of the population" (Bateman, Kingston, & Piggott, 2001, p.6). In 2001, the aged dependency ratio was 18%. In 2051, it is forecast to increase to 43%. Changes in the aged dependency ratio of this magnitude would have placed a severe strain on the traditional government-funded pension system, had it been maintained, since the taxes of a reducing proportion of workers would have been required to fund the pensions of a growing proportion of retirees (Commonwealth of Australia, 2002). Faced with these projections, the Australian government began, during the 1980's, to develop policy to encourage retirement saving by individuals.

Current government policy makes retirement saving mandatory for most Australian workers[2]. Further, it sets the minimum level of contribution at 9 % of salary and offers tax incentives on those contributions. In addition, those tax incentives are also extended to any voluntary

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[1] A "baby boom" is widely recognized as any period over which the total fertility rate is greater than or equal to 3.00. Many countries experienced such a boom in the years following World War II. For Australia, this period extended from 1946 to 1965. Since 1965, the total fertility rate has been below 3.00 (Australian Bureau of Statistics, 2003).

[2] Not all employees are covered by the Australian Government's RS legislation (e.g., Superannuation Guarantee (Administration) Act 1992). Some of the main exceptions are employees who are " paid less than $450 per calendar month, 70 years of age or over, or under 18 years and working 30 hours a week or less" (Australian Taxation Office, 2003). Clare and Connor (2003, p.1) have noted that superannuation coverage was 87% in 2001, having more than doubled since 1984. Amongst casual part-time employees, superannuation coverage in 2001 was only 62% versus 91% for permanent full-time employees. Ninety-one percent of males had super versus 85% for females in 2001. In 1995, only 51% of employers were covered and for individuals who were self-employed and employed no one else (i.e., own account workers), the coverage was 36%.

retirement savings above the 9 % minimum. The impact of these arrangements has been widespread. Eighty seven percent of working Australians now have mandatory retirement savings. And retirement savings assets now form the second largest component of household wealth after dwellings (Connolly & Kohler, 2004)

The vehicle for retirement savings is known as a retirement savings (RS) plan (or scheme/fund). RS plans are typically structured either as defined contribution plans (also known as accumulation plans) or defined benefit plans[3]. Defined contribution plans (DCP's), of which 77 % of working Australians are members, typically have three main features.

1. The individual makes regular (or defined) contributions to the plan (usually out of each wage/salary payment).

2. The individual has a choice as to how these contributions are invested, with the investment choices typically ranging from low risk/return (i.e., mainly cash) through to high risk/return (i.e., mainly shares).

3. The sum of money accumulated at retirement will be determined by two main factors; the total contributions made by the individual, and the returns generated on those contributions by the investment choices selected.

This study will conduct research into the investment choice decisions made by the members of DCP's. While there is a body of finance research that has considered the behavior of different types of investors, these "mandated investors" may form a distinctive and interesting subset. Certainly, they are different from their counterparts in the US, who choose to participate in RS plans (e.g., Choi, Laibson, Madrian, & Metrick, 2001b). They are also likely to be different from those individuals who trade shares and other financial products by choice and who, for instance, have been characterized by Barber & Odean (2000) as displaying overconfidence.

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[3] A defined benefit plan is a retirement savings plan "where the formula for calculating the retirement benefit (and possibly other benefits also) is specified in terms of years of service with the employer (or years of membership of the fund) and average salary level over the last few years prior to retirement" (The Association of Superannuation Funds of Australia Ltd, 2003). In this type of plan, the investment risk is borne by the sponsor/employer.

3.2   The Significance of the Study

The importance of researching the investment choice decisions of members is that it could identify problems with existing decisions and, in turn, ways that those problems could be overcome.

But what grounds are there for having concerns with existing investment choice decisions? A starting point is that these decisions are widely recognized as being complex for the typical DCP member (Lusardi, 1999, p.81). In addition, research conducted in Australia (Roy Morgan Research, 2003) suggests that the typical DCP member does not have the skills to cope with this complexity. Finally, there is evidence suggesting that a proportion of members do not actually make deliberate investment choice decisions. This is a specific reference to the large proportion of members who commonly end up in a default investment option chosen by their company. For instance, US-based research by Choi, Laibson, Madrian & Metrick (2001b) found that 80% of members in the DCP's that they considered, were in the default investment option. While no similar figures have been published for Australia, the industry partner to this proposed research has confirmed that similar percentages occur in Australia.

While it could be argued that some members make a deliberate and independent choice to be in the default investment option, it seems unlikely that such a high percentage of members would be acting in this way. A more likely possibility is that there are other explanations for the prevalence of default behavior on such a wide scale. Some of these explanations follow.

1. The complexity and difficulty of investment choice decisions, which has been mentioned previously here, may cause some members to decide that they are unable to make a decision. As a result, they end up in the default investment option. As support for this explanation, the first Australia-wide survey of adult financial literacy, reported in Roy Morgan Research (2003), found a general lack of understanding of the fundamentals of investing - especially the risk-return relationship. It also found that there is a more specific lack of understanding

of the risk-return properties of shares and the role that they can play as a long-term investment.

2. Members who find these decisions difficult and time-consuming, but not impossible, to make, may procrastinate about making them (O'Donoghue & Rabin, 1999).

3. Members may believe that the default investment option of the DCP is actually implied advice by the company on the best investment option (Madrian & Shea, 2001).

4. Members may look "to do whatever requires the least current effort" (Choi et al., 2001b, p.4), which in this case means making a passive decision to be in the default investment option.

5. Members may feel that investment choice decisions are not that important "today" because their consequences will be felt so far into the future. (Munnell, Sunden, & Taylor, 2000).

6. Members may not make these decisions as a way of avoiding thinking about themselves ageing, retiring, and eventually dying (Lusardi, 2000, p.7).

Whatever the reasons for "default behavior", it can result in relatively low investment returns, since the default investment option may be a low or middle risk investment option. As a consequence, the quantum of savings at the point of retirement can end up being inadequate, an outcome about which both researchers and policy makers have expressed concern (e.g., Choi, Laibson, Madrian, & Metrick, 2001a).

This concern has led some researchers to consider ways of improving the quality of these investment choice decisions. To date, two main avenues of research have been explored. The first has been the obvious one of financial education. The second has centered on the design of DCP's, particularly which investment option to use as the default investment option.

The research proposed here will investigate a third avenue which does not appear to have been considered in the literature to date; the attachment of a financial adviser to a DCP. This is an

arrangement that occurs in some DCP's in Australia, but does not appear to be common in other countries.

3.3 The Purpose of the Study or a Statement of the Problem:

The purpose of this research is to establish whether the attachment of a financial adviser to a DCP has an impact on the investment choice decisions of the members. If this attachment can be shown as an effective way of improving the quality of member investment choice decisions, then this could be a significant research finding, given the large numbers of individuals in DCP's making these decisions and the concern expressed with the quality of these decisions.

3.4 Research Questions

In its broadest form, the proposed research aims to address the following research question: What impact does the attachment of a financial adviser to a DCP have on the investment choice decisions of the members? Does it lead the members to make investment choice decisions which, from the perspective of the LCPIH, are more rational?

This broad research question is set against a background, courtesy of the "first national survey of financial literacy levels of adult Australians" (Roy Morgan Research, 2003, p.1), which characterizes members of Australian DCP's as follows. They have a low level of interest in and understanding of retirement savings decisions generally and investment choice decisions in particular. They are conservative when it comes to long term investing in growth assets generally. In more specific terms, they are reluctant to invest long term in shares due to a lack of understanding of shares as well as a general anxiety about the possibility of negative returns,

Given this background, it is possible to frame the following more specific research questions. Does the attachment of a financial adviser to a DCP lead to a reduced percentage of members in the default investment option; members taking relatively higher levels of investment risk; and/or

members investing a larger percentage in shares?

In addition, there are another set of research questions that involve identifying whether the impact of a financial adviser is constant for the same financial adviser who is attached to different DCP's; for different financial advisers who are attached to different DCP's; and through time for a financial adviser who is attached to a DCP.

4.   Review of the literature

Section 3 of this document has already reviewed some relevant literature in the process of outlining the background, significance, importance, and research questions of this proposed research. To recap, the literature quoted supports the case that many DCP members find investment choice decisions complex and difficult to make. In part, this is because they lack the skills necessary to make these decisions. As a consequence, there are concerns with the overall quality of the decisions being made.

The review of the literature that follows considers the following questions. What theoretical models exist to explain investment choice decision-making by DCP members? Do the predictions from these theoretical models fit with the decision-making problems previously identified?

4.1   An Overview Of The Two Main Models

There are two main alternative models of investment choice decision-making: the life cycle permanent income hypothesis (LCPIH) and the behavioral models. The behavioral models highlight the "not fully rational" side of investment choice decision-making. In contrast, the LCPIH is based on the perspective of an economically rational individual. Strictly speaking, the LCPIH does not address the question of investment choice, but is rather a more general model

PhD Research Proposal - Visualising Software Corpus Analysis

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1 Summary

Despite the spread of software development and software usage, we have almost no dependable data on how software is actually written in practice. Understanding the shape of existing software is an important step to understanding what good software looks like.

Our proposal is to undertake quantitative studies of the way software is actually written in practice and evolved over time by collecting large corpora of software in object-oriented and aspect-oriented programming languages. We will then create tools to produce visualisations of the structure and behaviour of the software using visualisation techniques to characterize each language's characteristic patterns of usage and frequency. In other disciplines, e.g. applied linguistics [12], this kind of approach is well established.

Our proposed kind of corpus analysis will expose how programmers actually use languages, what features of languages are used, and better inform programming pedagogy, software language design, and software understanding. A key observation leading to this proposal is that software that could comprise such corpora have become available for study only in the last decade. One source of corpora will be free and open-source software (FOSS) that is freely accessible over the Internet.

2 Specific Objectives of Research

Our objectives are as follows:

- We want to expose how programmers actually write object-oriented software, use object-oriented languages, what features of languages are used, and how software evolves over time. The software corpus analysis will help to better inform programming pedagogy, software language design, and understand software.

- We aim to produce tools that can create effective visualisations of software to help determine the quality of software for maintenance purposes. Software maintenance is reported to be about 70% of the total cost of a software product [3, 24]. Understanding what causes these costs is an ongoing research problem in software engineering. Examining existing software to determine where the costs are is a good idea.

- We aim to analyse object-oriented programs, design patterns, and aspects from the software corpus using software visualisation techniques [20, 19]. Software visualisation [10, 25, 29, 7] is the use of the crafts of typography, graphic design, animation, and cinematography with modern human-computer interaction and computer graphics technology to facilitate both the human understanding and effective use of computer software.

- We want to see what effect design patterns [11, 27] have in object-oriented software development. Using design patterns can help speed up the software development process by providing tested, proven development paradigms. However if patterns are used inaccurately this can lead to inefficient solutions and incorrect implementations, hence requiring majoring refactoring.

- We want to see how applicable Aspect Oriented Programming (AOP) [17, 18, 13, 6] is used for the development of object-oriented software. AOP attempts to aid programmers in the separation of concerns, specifically crosscutting concerns, as an advance in modularisation and to reduce costs in the software development process. AOP does so using a combination of language changes, environment, and

methodology. However if there are few opportunities where AOP is applicable then the possible benefits of AOP are likely to be limited.

3 Related Work

Some work related to understanding software, and visualising software corpora, design patterns, and aspects include:

- The Lego Hypothesis [23, 26] says that software can be put together like Lego out of small interchangeable components. Software constructed according to this theory should show certain kinds of structure: components should be small and should only refer to a small number of closely related components. An in-depth study of the structure of Java programs collected 56 applications of varying sizes and measured their key structural attributes [1]. They found evidence that some relationships follow power-laws, while others do not.

- Noble and Biddle [21, 22] have used information visualisation techniques [5, 2, 28] to investigate the layouts and programming style of over 1,000 Nord Modular programs. They found that although modules could be positioned freely within a program, particular types of modules were generally found in stereotypical locations.

- Jerding [14] has looked at visualising design patterns in the execution of object oriented programs, while others have looked at visualising design patterns using UML [8], 3D [4] and web services [9].

- Khaled et al. [16] have used AspectJ to collect program monitoring information for visualising UML sequence diagrams of running programs and algorithm animations of sorting algorithms. They also created domain specific visualisations for a library system. Other work has looked at using AOP and Eclipse to help people learn object-oriented programming [15].

4 Research Methodology

1. Literature review on how other disciplines do corpus analysis, existing software corpus analysis, techniques for visualising software, open source software, and studies on how software is written.

2. Collect appropriate data from open source software repositories such as SourceForge.net, Free Software Foundation, and the Apache Open Source Foundation.

3. Compare the literature on how to write software versus how software is actually written. Identify the common features and differences between the theoretical and practitioner approaches.

4. Identify the problems and opportunities that exist with the way software is actually written and evolved versus the many methodologies, patterns and standards for designing and programming software.

5. Develop prototype tools to create visualisations of the structure and behaviour of the software in the corpus.

6. Evaluate the tools for creating software visualisations and the visualisations produced from the tools.

7. Analysis of the software corpus and visualisations. Characterize each language's characteristic patterns of usage. Identify the common features and differences between the languages. Identify and document how design patterns and aspects have been used.

8. Discussion of the results.

9. Report on the results by writing a thesis.

Image-Based Modelling Using Nonlinear Function Fitting on a Stream Architecture

Karl E. Hillesland

January 26, 2004

1 Introduction

An important goal in computer graphics is to be able to synthesize photo-realistic images of objects and environments. The realism of the images depend on the adequacy of the model used for synthesis. *Image-based modelling* is an automated modelling technique aimed at achieving this realism by construction of models from photographs of real-world objects or environments.

A wide number of image-based modelling techniques have been proposed, each with its own technique for model generation. This is due to the fact that there is variation in the goals of the model and input data availability. However, we can treat all image-based modelling as a form of function fitting, where the function is our representation for appearance, and the data we want to fit are the photographs. This dissertation will address the use of nonlinear optimization to construct image-based models in general, including a new algorithm for efficient computation. This algorithm is designed to take advantage of programmable hardware.

The next section gives background on image-based modelling, and the approach that will be documented in the proposed dissertation. Following is a summary of previous work upon which the proposed dissertation is built. A brief summary of work completed to date is given, along with a schedule for remaining tasks. Most of the work has already been completed, and is documented in a siggraph paper [7], attached as appendix A.

2 Background

I will concentrate on image-based models that are spatially-varying and surface-based. *Surface-based* refers to a model that includes some geometric description of the object or environment, typically as a collection of triangles. *Spatially-varying* refers to models that take into account how appearance changes as we move from one point on the surface to another. I will refer to this class of models as SSIMs, for Surface-based, Spatially-varying, Image-based Models. Although SSIMs can be used for both objects and environments, the term"object" will be used to describe both.

A SSIM has an associated geometric description of the object to be modelled and a surface parametrization for one or more textures. The textures contain parameters for the appearance model. The appearance model is a function of the position on the surface of the object (surface parametrization), as well as other quantities such as viewing conditions and lighting conditions. These other quantities may also be stored in texture maps organized either by surface parametrization or some other parametrization, such as view direction.

1

PhD Research Project Proposal
By
Manoranjan Paul

1.   Title

A New Approach to Very Low Bit-Rate Video Coding Systems

2.   Objective

To develop a very low bit-rate video coding system (MPEG4/H.26X based architectures, algorithms, and applications) with scalable bit-rate vs. video picture quality facilities for video-telephony, videoconferencing, and video streaming to mobile phones and handheld personal digital assistants (PDA), which have limited processing and bandwidth capacity.

3.   Statement of the Research Problem

Introduction

Video is incredibly stimulating in electronic commu-nications and multimedia applications. Video can do a great deal to enhance a presentation, illustrate a proper technique, or advertise a new product. Video files **are photographic images played at speeds that make it appear to the human eye as if the images or frames are in full motion. Such files can be extremely large because of the number of images required to give the appearance of motion. Depending on the screen size of the video file, a single second of uncompressed video running at 30 frames per second may require more than 30 MB of storage space. In addition to storage,** Bandwidth, **the amount of data a communication channel can carry, is also an obstacle to the delivery of video.**

Delivering video over the Internet is challenging because it needs huge amount of storage capacity and a wide bandwidth.

Despite these challenges, more and more multimedia applications, including digital videos, are disseminated everyday via the Internet and mobile telephone networks. In order to be used effectively however, video is often compressed for storage and transfer, and then decompressed for use. Research into very low bit-rate digital video coding face additional daunting challenges of meeting two inherently conflicting requirements—reducing the transmission bit-rate as well as increasing the image quality—that are sometimes inversely proportional due to bandwidth of communication medium and compu-tational complexity. So video compression with reasonable image quality is a very active research topic currently. Compression depends on two factors, (1) motion estimation— a process of estimating the pixels of the current frame from the reference frame and (2) motion compensation— a process of compensation for the residual error after motion estimation. The following are three widely used motion estimation processes:

1. Optical flow equation based methods,
2. Pel-recursive methods, and
3. Block matching methods.

The first two methods are computationally expensive. So block-matching methods have been widely adopted by the international digital video coding standards such as H.261/263/263+/263++ [6][7][8] and MPEG-1/2/4 [3][4][5]. H.26X series are widely used for video-phoney and video-conferencing applications that require very low bit-rate to acco-mmodate public switched telephone network (PSTN).

An image is partitioned into a set of non-overlapped, equally spaced, fixed size, small rectangular blocks (known as macroblocks); and the translation motion within each block is assumed to be uniform. Although this simple model considers translation motion only, other types of motions, such as rotation and zooming of large objects, may be closely approximated by the piecewise translation of these small blocks provided these blocks are small enough. This observation originally made by Jain and Jain, has been confirmed persistently since then.

Displacement vectors for these blocks are estimated by finding their best-matched same positioned block in the previous frame. The same positioned block in the previous frame is not always the exact

representation of current block so pixels-by-pixels difference should be calculated for error compensation to reconstruct the current block at the decoder. In this manner, motion estimation and compensation are significantly easier than that for arbitrarily shaped blocks. Since the motion of each block is described by only one displacement vector, the side information on motion vectors decreases. Furthermore, the rectangular shape information is known to both the encoder and the decoder, and hence does not need to be encoded, which saves both computational load and side information. Most international video coding standards use a block size of area 16×16 or 8×8.

Although very simple, straightforward and efficient, the block matching motion compensation technique has its drawbacks. Firstly, it has an unreliable motion vector field with respect to the true motion in 3-D world space. In particular, it has unsatisfactory motion estimation and compensation along moving boundaries. Secondly, it causes block artifacts. Thirdly, it needs to handle side information, that is, it needs to encode and transmit motion vectors as an overhead to the receiving end, thus making it difficult to use smaller block sizes to achieve higher accuracy in motion estimation.

All these drawbacks are primarily due to its simple model: each block is assumed to experience a uniform translation and the motion vectors of partitioned blocks are estimated independently of each other. Unreliable motion estimation, particularly along moving boundaries, causes more prediction error, hence reducing coding efficiency.

The block artifacts do not cause severe perceptual degradation to the human visual system (HVS) when the available coding bit rate is high. This is because, with a high bit rate, a sufficient amount of the motion-compensated prediction error can be transmitted to the receiving end, hence improving the subjective visual effect to such an extent that the block artifacts are not perceptually annoying. However, when the available bit rate is low, particularly and below 64 kbps, the artifacts become visually unpleasant.

The assumption is that the motion within each block is uniform, requires a small block size such as 16×16 and 8×8. A small size leads to a large number of motion vectors, however, resulting in a large overhead of side information. A study by [30] indicated that 8×8 block matching performs much better than 16×16 in terms of decoded quality due to better motion estimation and compensation. The bit rate required for encoding motion vectors, however, increase significantly (about four times), which may be prohibitive for very low bit rate

coding since the total bit rate needed for both prediction error and motion vectors may exceed the available bit rate. It is noted the when the coding bit rate is quite low, say, for example of the order of 20 kbps, the *side* information becomes compatible with the *main* information (prediction error) (see [31]).

In spite of its drawbacks, block matching is still by far the most popular and efficient motion estimation and compensation technique utilized for video coding, and it has been adopted for use by various international coding standards. Some of the recent advancements in block matching techniques are summarised below:

Hierarchical Block Matching—A set of different sizes for both the original block and correlation window are used. The successive levels with smaller window sizes and smaller displacement ranges are capable of adaptively estimating motion vectors more locally.

Multigrid Block Matching—Uses a multigrid structure, another computational powerful structure in image processing, to provide a variable size block matching. With a split-and-merge strategy, the thresholding multigrid block matching technique segments an image into a set of variable size blocks, each of which experiences an approximately uniform motion. It makes uniform motion within each block more accurate than fixed-size block matching can do.

Predictive Motion Field Segmentation—To solve moving boundary problems, predictive motion field segmentation technique make the blocks involving moving boundaries have the moving field measured with pixel resolution instead of block resolution. This method saves shape overhead, and avoids side information with various techniques.

Overlapped Block Matching—It enlarges blocks so as to make them overlap. A window function makes motion estimation and compensation so it achieves better performance than the conventional block matching.

Motivation

After analysing the error surface between two successive frames in video sequences, it has been observed that there are many macroblocks, which have little or no motion. For this kind of macroblocks, there is no need to consider all of the pixels in those blocks. Considering only those intensity-changing pixels, further compression may be possible with less computational time. It has also

been observed that motion vectors of a macroblock are sometimes related to its adjacent macroblock because these macroblocks may be the part of the same object. So motion vectors may be predicted from the adjacent macroblocks. Furthermore it may be also concluded from our error surface analysis, completed so far, that there exist relationships between velocity of the objects in a video sequence and motion vectors of the macroblock. Understanding such relationships may help research into estimating the motion vectors and compensation error more accurately than existing methods. During the last decade, a number of signal processing applications have emerged using wavelet theory. Among those applications, the most widespread developments have occurred in the area of data compression. Wavelet techniques have demonstrated the ability to provide not only high coding efficiency, but also spatial and quality scalability features. Some algorithms are developed by exploiting the features of the wavelet transformation such as the Embedded Zero-tree Wavelet method (EZW) (see [32]) and the Set Partitioning In Hierarchical Trees (SPIHT) (see [33]) technique.

Review of Relevant Research and Theory

Some recent research partly addressed some of the issues stated in the above motivation. [1] proposed four 128-pixel patterns to represent the less moving macroblocks. For the very low motion video, the number of intensity changing pixels is not as high as 128 pixels. Otherwise for the very high motion video, pattern represent is not fruitful to represent the macroblocks. [11] proposed eight 64-pixel patterns for the same purpose. To do this, proposed method divides the macroblocks into three categories according to their moving region. The proposed patterns successfully represent the macroblock with low motion. Using a fixed number of patterns does not fit well for all kinds of video sequences because objects have different texture and movements. [12] proposed a strategy for the prediction of the motion vector from the adjacent macroblocks. Considering a moving region of the macroblocks may lead the motion vector prediction a new dimension. We know motion vectors of the macroblocks located on the boundaries of the objects are not accurately estimated. [13] successfully proposed a method for edge oriented block motion estimation. [14] proposed a method, which overcome the local minima problem of the error surface in tradition fast searching algorithm. [15] - [19] and [21] proposed various kinds of fast search strategies. Fast search strategy reduces the computational time for searching and also

may reduce image quality. [23][24] proposed feature based search strategy. A new error criterion is proposed in [20]. An efficient encoding method is described in [22]. Morphological operations contribute a significant improvement in motion estimation. These kinds of operations reduce the noise in frames of video sequence. See [9]. Wavelet transformation contributes a significant improvement in low bit rate video coding and video image quality. [25] and [29] described the processes how the video image quality can be improved using wavelet transformation. [26]-[28] successfully applied the Embedded Zero-tree Wavelet algorithm to improve the coding efficiency.

Research Hypothesis

Many of the existing video-coding standards, e.g., MPEG-1/2, tend to employ block-based techniques because of their implementation simplicity and also because they generally provide good results when the bandwidth requirement is relaxed. This is, however, not the case with low bit-rate block-based video coding such as in H.26X. The shape of a moving object is generally arbitrary and may not necessarily be aligned with the hypothetical grid structure created by the fixed-sized, non-overlapping rectangular blocks, termed *MacroBlock* (MB) in the coding standards. The typical size of a MB, being 16×16 pixels, leads to a large number of blocks, some of which will contain only static background, some will have moving objects and some a combination of the two. [1] and [11] successfully introduced four 128-pixel and eight 64-pixels patterns respectively to represent the small moving region macroblocks. In [11], MBs were classified according to the following three mutually exclusive classes:

I) *Static MacroBlock* (SMB)—**Blocks that contain little or no motion;**

II) *Active MacroBlock* (AMB)—**Blocks that contain moving object(s) with little static background;**

III) *Active-Region MacroBlock* (RMB)—**Blocks that contain both static background and some part(s) of moving object(s).**

By treating AMB and RMB alike, as is done in H.263/H.263+, leads to coding inefficiencies [1]. In order to improve this efficiency, block size may be reduced only to add additional information to be transmitted due to the increase in the number of blocks [10].
Both [1] and [11] successfully addressed the above issue by

1. Introduction

1.1 Problem Statement

As the popularity of software grows so does the need for quality. This situation has driven software engineering researchers to investigate technologies that can aid in improving quality. In many contexts software inspections have become or are becoming an important part of the quality assurance effort for software products [Glass99], [Johnson94], [Laitenberger99]. Inspections are a process whereby software artifacts are examined by a group of inspectors to ensure that they meet some set of quality constraints. Another common goal for inspections is to uncover defects in the artifact. The increasing popularity and perceived usefulness of this technology can be seen by its spread into various industrial settings [Bush90], [Doolan92], [Fowler86], [Grady94], [Russell91], [Votta93], [Weller93]. While early inspection work focused on how inspections could be used to improve the quality of code, since then researchers have expanded inspections to cover not only code but also requirements [Basili96], [Kelly92], [Schneider92], design [Parnas85], [Laitenberger00], [Kelly92], [Travassos99], test plans [Kelly92], and even user interfaces [Zhang99].

Prior to inspections was the idea of a *walkthrough*. The walkthrough could range anywhere from a simple peer review all the way up to a formal inspection of the type we are discussing here. One of the problems with using walkthroughs in a process that is going to be improved is that normally very little data is collected because walkthroughs are less formal and applied differently in each setting. Because of this the efficiency of defect detection is quite variable [Fagan86]. Because we wish to study a more controlled process, we have chosen to investigate inspections instead of walkthroughs.

It has been pointed out that all project environments and products are different in some way [Basili88], even described by one author as "its own unique world" [Ackerman89]. Because of these differences the application of techniques and methods on different project should expect to vary. There are many dimensions upon which software development organizations can differ. For example, the application domain can vary from business software to satellite support software. Another dimension of potential variation can be the level of risk inherent in the project. For some applications, failure may mean only mild inconveniences, while with other applications, it could mean loss of life. While there are some standard methods and practices for performing inspections, in many cases the application of those methods may need to be tailored in some way because of this variation.

A brief description of inspections will be given here with a more complete discussion presented in Section 1.2.1. The basic idea behind an inspection is that members of a software development organization review a software artifact to ensure that it possesses some level or characteristics of quality. An inspection consists of a series of steps. First, the author of the artifact gives the inspectors an introduction and overview of the artifact. Next, the individual inspectors review the software artifact to prepare for the team meeting. After the individuals have inspected the document, they meet together as a team to record the defects that are found. Finally, the document author is given this list of defect so that he or she may repair them in the software artifact [Fagan76].

In most cases, the research surrounding inspections has dealt with improving the inspection meeting. This line of research makes the assumption that individual inspectors already know how to inspect software artifacts on their own. As most software developers are taught only how to write documents but not how to read them, we question this assumption. Research has shown that providing inspectors with detailed techniques can improve their performance over simple ad hoc reading [Shull98]. Other researchers have even questioned the need for an inspection meeting at all [Porter97, Votta93]. In either case, work on the individual inspection either prior to the meeting, or in place of the meeting, has not been studied as much as the inspection meeting has. Because the research has questioned the necessity of the meeting, and because research has shown improvement for individuals when given a specified technique to use, there is a need for aiding the inspector, either before the inspection meeting or in the absence of the inspection meeting, to become better and more efficient at the job of detecting defects in the software artifacts.

In addition to variability of the techniques and methods used within a software development process, the inspectors also come with different backgrounds and experiences. An inspector who is very experienced in a highly technical domain such as mission planning for a spacecraft should be expected to perform differently in a software inspection for that domain than someone who is not familiar with that domain.

Studies of inspections that have been performed confirm the fact that variations among inspectors can have an impact on the outcome of the inspection. Some argue that lack of product knowledge can be beneficial by allowing for a different perspective on the artifact [Dow94]. On the other hand, other organizations employ experts in various aspects of the product to perform the inspection [Doolan92]. Other researchers have found that certain individual inspectors have a effect on the outcome of the inspection [Porter98], [Siy96].

So, not only does the development organization have to worry about how the specific techniques and methods will positively or negatively affect their software development process, they also must have a way to evaluate the background and experience of each of their team members. The way in which these evaluations are done and the results reported by them must give the process manager some guidance on how to staff an inspection.

In order to do this, the relationship between different background characteristics and the performance during an inspection needs to be studied. If a causal effect can be located, then the process manager can be given some guidance for planning their inspections. For example, if we can determine that having high domain experience improves performance during a requirements inspection, then when building the attitude control system of a new satellite, the process manager will want to choose inspectors who are very familiar with the domain to be members of his or her Software Requirements inspection team.

Because a structured review technique is not always used in performing an inspection, we want to investigate not only those inspections that were performed using a technique but also inspections that were done in an ad hoc way, meaning inspectors are allowed to review the document in the way that they think is most effective. Investigating both types of inspections will allow us to say something about inspections in general instead of being limited to only those in which a structured review technique is used.

Thesis Topic: Management practices of American International Assurance Company (AIA)

<u>Research Methodology</u>

This study was conducted in order to assess the business practice or strategy of AIA in Hong Kong. The focus of the assessment was on the firm's management strategies. In order to gather the necessary data, the researcher utilized the descriptive method, using both qualitative and quantitative approaches. A total of 50 respondents were randomly selected as participants. The survey-questionnaire method was the research instruments used for data-gathering.

The senior managers who have been chosen in this study accomplished a survey questionnaire to evaluate the strategy used by AIA. The results of the survey were then processed by computing the weighted mean of each survey item. The computed values were compared to the Likert scale for data interpretation. Relevant literatures were also used to support the gathered findings.

The credibility of findings and conclusions extensively depend on the quality of the research design, data collection, data management, and data analysis. This chapter will be dedicated to the description of the methods and procedures done in order to obtain the data, how they will be analysed, interpreted, and how the conclusion will be met. This section is to justify the means in which the study was obtained and will help in giving it purpose and strength as it will then be truthful and analytical. All these will help in the processing of the data and the formulation of conclusions.

Specifically, this research will cover the following: the research design and method, the respondents or subjects to be studied (which will include the sampling method), the data collection instrument, and the data analysis. These will be presented below.

In this research, I will use descriptive method of research is to gather information about the present existing condition. The purpose of employing this method is to describe the nature of a situation, as it exists at the time of the study and to explore the cause/s of particular phenomena. The researcher opted to use this kind of research considering the desire of the researcher to obtain first hand data from the respondents so as to formulate rational and sound conclusions and recommendations for the study.

I.   Research Method

For this study, the research used qualitative and quantitative approach. The qualitative method permits a flexible and iterative approach, while the quantitative research method permits

specification of dependent and independent variables and allows for longitudinal measures of subsequent performance of the research subject.

The value of qualitative research can best be understood by examining its characteristics. One of the primary advantages of qualitative research is that it is more open to the adjusting and refining of research ideas as an inquiry proceeds.

Also, the researcher does not attempt to manipulate the research setting, as in an experimental study, but rather seeks to understand naturally occurring phenomena in their naturally occurring states. Inductive reasoning, as opposed to deductive reasoning, is common in qualitative research, along with content or holistic analysis in place of statistical analysis (Meyer et al, 1995).

On the other hand, quantitative method is compatible with the study because it allows the research problem to be conducted in a very specific and set terms (Cooper & Schindler, 1998). Besides, quantitative research plainly and distinctively specifies both the independent and the dependent variables under investigation.

It also follows resolutely the original set of research goals, arriving at more objective conclusions, testing hypothesis, determining the issues of causality and eliminates or minimises subjectivity of judgment (Kealey & Protheroe, 1996). Furthermore, this method allows for longitudinal measures of subsequent performance of research subjects (Matveev, 2002).

<u>Research Methodology</u>

This study was conducted in order to assess the challenges post by the new accounting rules and practices in HK with regards to real estate industry. To be able to gather the necessary data, the researcher utilized the descriptive method, using both qualitative and quantitative approaches. Herein, the chosen responded were randomly selected from various real estate industry in HK. The survey methods were the research instruments used for the data-gathering.

The employees of real estate who have been chosen in this study accomplished a survey questionnaire to evaluate the challenges facing the real estate industry in Hong Kong. The results of the survey were then processed by computing the weighted mean of each survey item. The computed values were compared to the Likert scale for data interpretation. Relevant literatures were also used to support the gathered findings.

The credibility of findings and conclusions extensively depend on the quality of the research design, data collection, data management, and data analysis. This chapter will be dedicated to the description of the methods and procedures done in order to obtain the data, how they will be analysed, interpreted, and how the conclusion will be met. This section is to justify the means in which the study was obtained and will help in giving it purpose and strength as it will then be truthful and analytical. All these will help in the processing of the data and the formulation of conclusions.

Specifically, this research will cover the following: the research design and method, the respondents or subjects to be studied (which will include the sampling method), the data collection instrument, and the data analysis. These will be presented below.

3.2 Research Methods

This study utilized the descriptive method of research. As widely accepted, the descriptive method of research is a fact-finding study that involves adequate and accurate interpretation of findings. Descriptive research describes a certain present condition. Relatively, the method is appropriate to this study since it aims to describe the present condition of technical analysis as it is used in the stock market. The technique that was used under descriptive method is the normative survey approach and evaluation, which is commonly used to explore opinions according to respondents that can represent a whole population. The survey is appropriate in this study because it enables the researcher in formulation of generalizations. Specifically, two types of direct-data survey are included in this study. These are questionnaire survey and interviews. Interviews with researchers, venture capital practitioners, and other colleagues in the academy were conducted to provide further insight about the results of the survey. The direct-data type of survey is a reliable source of first-hand information because the researcher directly interacts with the participants. The questionnaire survey respondents were given ample time to assess the

challenges facing the real estate in HK. Their own experiences with real estate in practice are necessary in identifying its strengths and limitations.

The purpose of employing the descriptive method is to describe the nature of a condition, as it takes place during the time of the study and to explore the cause or causes of a particular condition. The researcher opted to use this kind of research considering the desire to acquire first hand data from the respondents so as to formulate rational and sound conclusions and recommendations for the study. According to Creswell (1994), the descriptive method of research is to gather information about the present existing condition. Since this study is focused on the perception or evaluation of the consultancy firm's effective human resource management, the descriptive method is the most appropriate method to use.

Two types of data were used: the primary and the secondary data. The primary data were derived from the answers respondents gave in the self-administered questionnaire prepared by the researcher. In addition, the information obtained from the interview also provided primary research data that supported the study. The secondary data on the other hand, were derived from the findings stated in published documents and literatures related to the research problem. These were based from the recent literatures related to real estate in HK and the factors that challenge it and the accounting rules and practices in HK and the concepts cited by the respondents.

In terms of approach, the study employed both qualitative and quantitative approaches. The quantitative approach focused on obtaining numerical findings was used with the survey method. The interview on the other hand, made up the qualitative approach of the study as this focused on personal accounts, observations, description and individual insights of the respondents. This study employed the combined approach so as to overcome the limitations of both approaches.

Thesis Topic: ASPERGER'S SYNDROME

INTRODUCTION TO THE PROBLEM

Why are services failing to meet the needs of people with Asperger's Syndrome and Highfunctioning Autistic spectrum disorder? Well, it is paramount that people continue to validate existing services by conducting sound research and demonstrating techniques and strategies that are effective. It is important to promote continued trials of new and innovative approaches and to share information with others who work with people who are suffering from Asperger's syndrome and autism disorders.

BACKGROUND OF THE PROBLEM

This research makes a welcome and much needed contribution to people's knowledge and understanding of services provision and value of the services for children and teenagers with high functioning autism and Asperger's syndrome. Whilst there have been many studies exploring services for children with a range of disabilities, there have been very few specifically focusing upon ASD, especially those with high functioning autism and Aspergers. Indeed, the research is aptly timed, drawing upon the recognition of the valuing people of the need for and value of services for children and young adults affected by the disorders including those without a recognized learning disability. Assessing current levels of provision and service gaps, the report thus provides an important information resource for policy makers and practitioners. The research accessible format, in terms of both the language and clear layout, ensures that the study will also be of interest and value to a wide audience, including the families of children and teenagers with ASD.

STATEMENT OF THE PROBLEM

The research proposal implies the use of service provision in meeting the needs of those people with Asperger's syndrome and ASD. Parents frequently emphasized the importance of having a range of flexible services in order to meet the needs of individual children and their families. Within this, priorities for services included routines and consistency, the importance of planning placements and ongoing communication with families, high staffing levels and appropriate environments as this was very much the ideal; in reality the majority of families using services had little choice. Indeed, service providers were very aware that they are currently providing only what they can afford rather than what is actually needed. The most frequently requested types of services were sitting services, play schemes, family based short breaks and befriending schemes. The study clearly demonstrates not only a general need for more services but that provision is inequitable and largely focused upon those with the most obvious, practical needs.

The proposal should recommend not only more and better-funded services but also a greater understanding of ASD, with knowledgeable and well-trained staff to meet the whole spectrum of needs.

PURPOSE OF THE STUDY

The purpose of the study is to basically determine, enhance and strengthen certain support services like special education services designed for people with Asperger's syndrome and high functioning autism that would provide success to service provisions that relates to the focus situation and imply better assumptions for possible collaboration and partnerships among parents, teachers, school administrators, care providers and the society in general to always update and provide plans of action for a better service that is a true success in helping out those children and young adults who are suffering from the high functioning autism and Asperger's syndrome.

RESEARCH QUESTIONS

The research proposal centers upon some crucial research questions as each of which is comprehensively discussed in the process and includes:

- Are the services provision experienced as beneficial? Are there certain policies for provision for children with AS and ASD? What are the key principles?
- What are those services used and required by children and young people with ASD?
- What are the factors inhibiting the provision of the services and its possible recommendations?
- Does the LEA/TEACCH give guidance to schools and other professionals on enabling pupil participation, including pupils with an ASD?
- Are families given support during and immediately following identification of an ASD?
- Is information given to families about where to go for further sources of information about education for children with ASDs, covering the range of educational provision that is available locally and nationally, including early intervention and educational approaches and the differences between them?
- Is practical advice and training available to parents in ways of working and interacting with their children?
- What elements of provision are considered important for children with the different kinds of incidence needs?
- What are the major gaps in services, support and provision at every level? What are the key areas for development that will help address these gaps?

DEVELOPING COUNSELING MODEL FOR PSYCHOSOCIAL IMPLICATIONS OF INFERTILITY IN SUDAN

A PHD RESEARCH PROPOSAL

INTRODUCTION

BACKGROUND:

Infertility is a problem that affects individuals and groups in different cultures. Sudan is known to be one of the low fertility belt countries in Africa and thus suffer from infertility problem as well. Infertility primarily refers to the biological inability of a man or a woman to contribute to conception. Infertility may also refer to the state of a woman who is unable to carry a pregnancy to full term (Planned Parenthood, 2007) Infertility is a world wide problem as well, and a complex issue, as infertility affects between 80 million and 168 million people in the world today. Approximately one in ten couples experience primary and/or secondary infertility (Cambridge website, 2007). 'Global rates of infertility vary dramatically – from prevalence rates of about 5% in some developed countries to as high as more than 30% in sub-Saharan Africa. Rates of primary infertility worldwide are generally 1 to 8% with rates of secondary infertility reaching as high as 35%. The rates of infertility are the highest in the world in what has been termed the 'infertility belt,' stretching across central and southern Africa (Ibid.). where in Sudan Primary infertility is estimated to be 3 – 5 %, and secondary infertility around 9 – 16 % (Almroth, 2005).

The complexity of infertility issue comes from different arenas. One thing the couples own demand or the couples's biological demand to bear children is representing one aspect. Another dimension is the societal demands placed by the society on their expected roles to have children. Couples often suffer from 'a sense of personal failure as well as social stigma' (WHO report, 1975) as a result to being infertile.

Despite the fact, psychosocial implications of infertility are documented in many studies in different countries. Nonetheless, in Sudan even general researches on infertility, as explained by Akol Akol are lacking (2007).

According to this few is documented on the experiences of Sudanese infertile couples as well as the psychosocial counselling services available provided to this category. Thus, this research is aiming at exploring the experiences of Sudanese infertile couples by looking at the psychosocial implications of being infertile couples and also to develop a model and/ or guidelines for counselling and support that suits their own needs in the Sudanese context.

STATEMENT OF THE PROBLEM

Infertility is a problem with very definite psychological and social implications. The social pressures, namely the stigma of infertility often leads to mental disharmony, divorce and ostracism. The suffering experienced by the infertile couple is very real (Larsen, 2004). Women in particular also commonly, in addition to stigmatization, suffer from severe negative social consequences such as ostracism, abuse and economic deprivation (Leke et al., 1999 in Dyer et al., 2002). In fact, Infertility signifies the most severe emotional crisis (BKiD, 2007). Research has indicated that counselling has a positive effect, if only few sessions have been taken advantage of (Ibid.). 'The main purpose of counselling is to provide patients with emotional support in times of crisis and to help them come to terms with their treatment choice and its effect on their lives' (HFEA, 1995 in Boivin, J., Scanlan, L. C., Walker, S. W., 1999.)

Literature of earlier studies suggested that more research work is needed in regard to the role of health care provider, and this need is greater in developing countries rather than in developed countries and this mainly due to that 'woman's status is often determined by her reproductive successes (Dyer, 2002).

Nonetheless, in addition to the fact that, there is no special places to provide infertility counselling; the counselling provided in professional settings depends mainly on modern and mainly western approaches to counselling; these approaches are mainly imported and used in the Sudanese context. This leads to a major question, weather these approaches are effective to help Sudanese women or not. 'Western cultural domination of counselling has been the hindrance of its effective application in a culturally diverse world and the impeding and exclusion of other perspectives from attention, thought, research, and emulation. To be truly effective, theories, approaches, and practices should be culturally harmonious' (Saleh, 1989). So this research attempts to design a counselling model for infertility that is congruent with the needs and cultural background of the Sudanese clients.

PURPOSE OF THE STUDY

In scientific research the purpose statement indicates 'why you want to do the study and what you intend to accomplish' (Locke, Spirduso, and Silverman, 2000). According to this;

The purpose of this sequential, mixed methods study is to first explore the psychosocial impact of infertility on the Sudanese couples as well as determining the client's needs for psychosocial support, in three available infertility centres in Khartoum state as well as the traditional religious and non- religious services available for infertility clients in Sudan. Then based on the experiences and needs defined, the second phase will be to develop a counselling model that suits and match the Sudanese clients' needs based on the previous information as well as information collected in this phase; namely observation of both modern and professional ways of helping available to infertility clients and in - depth interviews.

STATEMENTS AND RATIONALE FOR MIXING METHODS

This research is intended to follow a mixed methods research design. According to this, the aim of this section is to define and give a rationale for using this specific research design for this specific study.

Mixed methods research design is defined as 'the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve integration of the data at one or more stages in the process of the

research' (Creswell, Plano Clark, Gutmann, & Hanson 2003 in Hanson, Creswell, Creswell, Plano Clark, & Petska 2005).

Historically mixed research method is relatively not a new idea. It probably originated in 1959, when Campbell and Fiske used multiple methods to study validity of psychological traits. Their encouragement to others to use their 'multimethod matrix' prompted others to examine using mixed methods in their enquiry (Creswell, 2003). Recognizing that all research methods have limitations, researchers felt that biases inherent in any single method could neutralizes or cancel the biases of other methods (Ibid.) another advantage of using mixed research methods design is that it allows researchers to simultaneously generalize results from a sample to a population and to gain deeper understanding of the phenomenon of interest (Hanson, Creswell, Creswell, Plano Clark, & Petska 2005).

In this respect, this study will mix different research methods, for the purpose of being able to generalize research results that will be obtained, from a representative sample, but at the same time give insights and understanding of issues tackled through quantitative techniques. This will ultimately be achieved through the use and integration of data in the various research stages namely; data collection, data analysis and discussion and reporting of findings.

One rationale is that, in order to generalize weather Sudanese infertile couples suffer from psychosocial implications in their own communities, a quantitative tool need to be used and applied. At the same time, the in depth of such suffering needs to be qualitatively addressed. As well as describing the processes that shall take place in counselling infertile couples. Another rationale for using mixed methods research is to 'convey the needs of individuals or groups of individuals who are marginalized or underrepresented' (Hanson, Petska, Creswell; Creswell, Creswell, Plano Clark, & Petska 2005). Infertility clients in Sudan lack supportive services and thus this research is intending to explore their psychosocial issues, which are related to infertility.

Although there are many challenges in using mixed methods research design, such as; the researcher should be familiar with both quantitative and qualitative research methods, also the need for extensive data collection (Creswell, 2003). But the growth and the developments of using this method proved the successful and the advantages of using this specific design, as stated earlier. In conclusion, for the purpose of this study a mixed methods research design will be used in order to achieve its stated purpose.

RESEARCH QUESTIONS

This research will attempt to answer the following questions:
- ✓ What is the psychosocial meaning of being infertile in the Sudan?
- ✓ What coping strategies do infertile couples use?
- ✓ Are there any variations between male and female partner in regard to coping?
- ✓ What type of helping is available for infertility couples and who provides psychosocial support for infertility couples in Sudan?
- ✓ What similarities and differences between the available traditional and modern ways for helping infertility clients in Sudan?
- ✓ What counselling model/guidelines that can best suit the couples suffering from infertility in Sudan?