International Journal of Economics, Business and Management Research

Vol. 2, No. 05; 2018

ISSN: 2456-7760

THE APPLICATION AND INAPPROPRIATE USE OF INFORMATION SYSTEMS RESEARCH METHODOLOGIES IN A POSTGRADUATE THESIS, IMPACTS POSITIVELY ON COMPLETION RATE IN HES.

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Abstract
The paper presents on and motivates the significance of choosing an appropriate postgraduate Applied Information Systems (AIS) research methodology and application in higher education institutions. Research education has become a matter of concern as there are low completion rates of masters' student dissertations. This study addresses the issue of inappropriate and misalignment of IS research methodologies of AIS masters' and MBA dissertations at the North-West University (NWU) to determine whether the research approach used by both disciplines was relevant to their studies. The choice of selecting an appropriate research methodology is a tedious task with which many researchers are confronted during the research process. The principal research objective was to explore AIS and MBA students' ideological ways of comprehending information and dissertation requirements, by preparing them to undertake sound research projects that culminate in a masters' dissertation and improve research completion rates. The alleged problem is that AIS masters' and MBA students use a particular research methodology for rather negative reasons and consider it to be the most appropriate for IS research. A quantitative research approach was adopted and a structured framework was used as an instrument for data gathering which targeted 103 from AIS masters and MBA 97, all together to taled 200 dissertations. The findings based on the data indicate that there is a lack of a conceptual matrix, supervision guidance, furthermore, it evidenced that there is badly-structured research dissertations of MBA. There is a need for graduate school to be introduced to the use of an appropriate conceptual matrix into MBA research approaches.

Keywords: Postgraduate, dissertation, research exposure, research methodology, stress, supervision guidance and time management.

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INTRODUCTION

This paper aimed at probing the application of appropriate AIS masters' and MBA research methodologies and comparing their mini-dissertations with each other to emphasis the differences in approaches taken. The paper also addresses the use of a problem-solution and research question alignment matrix to ensure that sub-problems under investigation are properly aligned and articulated with the research questions that a researcher poses to ensure viable empirical results (Klopper & Lubbe 2011).

The nature and quality of postgraduate research studies in higher institutions have been acknowledged as crucial to improvement and national economic growth (Lee & Green 1995; Pearson & Brew 2002). Research education has therefore become a matter of concern for both government and public. There is therefore an augmented emphasis on low completion rates of masters' student dissertations (Pearson & Brew 2002). Remenyi et al. (2011) revealed how research principles and methods plays indispensable role and impact during research inquiry. This paper, on the other hand, looks at the suggested approaches of conducting research activities, as well as the role of supervisions and contribution towards AIS and MBAs' research completion.

LITERATURE REVIEW

South Africa emerged from the pre-1994 political dispensation with two separate types of tertiary educational institutions: Technikons and Universities (Mondiale, 2008). Technikons were created as career-orientated, practical content institutions with an emphasis on producing skilled graduates to meet specific needs of the country (Pather et al. 2005). Given the imperative for academics to "Publish or Perish". Many South African universities have developed their own strategies to help improve their students' research approaches and staff publication rates. Unfortunately, not many of AIS ad MBA students would adhere to this strategy (North et al., 2011; 2012; Pather et al. 2005).

AIS masters and MBA dissertation is usually a report that is required in the final stages for a masters' degree to be conferred to the student. This dissertation/theses is an indication which suggests that the researcher have acquired the indispensable abilities and comprehension in order to manage and carry out a research project (Bhattacherjee 2012). It thus, demonstration that the researcher is experienced in identifying areas that are researchable, such as setting research objectives; establishing, managing and, importantly, analyzing the relevant primary and secondary data (Creswell, 2009).

Postgraduate dissertation study is a part of higher learning purported to identify significant problems and challenges and to investigate them in an appropriate manner, then to analyse the findings, and to relate them to concepts or concerns, finally producing conclusions and implications to others in clear, objective prose. As a result of poorly documented research, supervisors often encounter difficult problems when they check through a postgraduate research design only to realise inappropriateness of research questions or misaligned (Klopper & Lubbe 2011).

Thus, Klopper and Lubbe (2011) suggest that the appropriate way of conducting research is with a conceptual matrix. Supplementary recommended that postgraduate researchers should use a

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conceptual matrix for aligning research problems, aims and research questions. This ensures that sub-problems under investigation are properly aligned with themes and the research questions that researcher poses to ensure viable empirical results (Klopper & Lubbe 2011; Boote & Beile 2005).

Klopper and Lubbe (2011) sustained that in a well-designed research project the researcher will extract a specific number of sub-problems from the general problem, as well as the same number of sub-questions from the general research question in such a way that sub-questions and sub-problems are properly aligned. If this is done systematically, the answer to a specific research sub-question will provide the solution to its associated sub-problem.

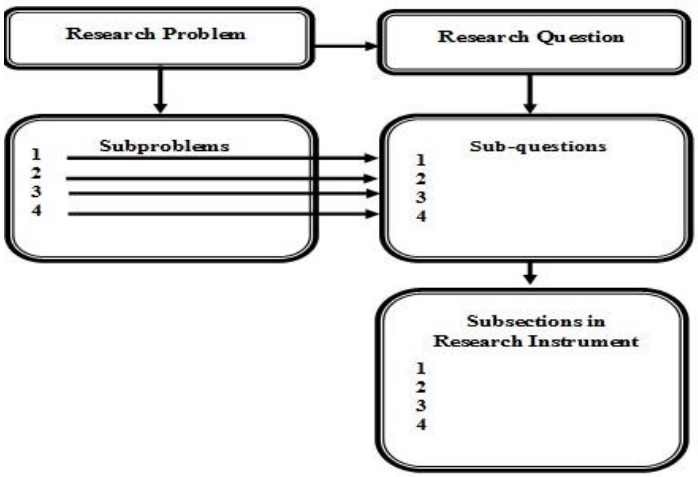

Figure 1 Alignment matrix: The alignment of a research problem.

Through this demonstration, a researcher should be able address the underlying why and ways in which to provide answers, clarifications and justifications, formulate comparisons and furthermore, arriving at neither details nor conclusions which can be used to extend theories on what should be done (Bhattacherjee 2012).

How to conduct IS research applying appropriate methodologies

Some postgraduate students think that research is largely about data-collection or doing case studies while others think it is about discovering something entirely new (Klopper & Lubbe 2011). This section of the paper highlights probable approach to help identify related issues to research problems, strengths and weakness handled by other researchers' studies and existing gaps in the literature. The application of an intensive use of literature sharpens the researcher's theoretical understanding of the research and acquaints the researcher with the modern theoretical development and debates conducted by previous researchers (Du Plooy 1995). It ensures that researchers do not duplicate or copy the efforts of others, but rather, they should reproduce something original and productive to the body of knowledge by discovering a new theory (Du Plooy 1995).

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Descriptive literature review process

According to Levy and Ellis (2006), it is imperative that the literature review process is descriptive; this will assist in defining the use of philosophies in the literature to justify the specific approach to the theme, the selection of methods. Not only does it support selection of appropriate methods, it enables the development of knowledge; simplify concept expansion; and to make meaningful contribution to the body knowledge (Webster & Watson, 2002; Levy & Ellis, 2006). A descriptive literature review processes unveils the key principles, variables, associations that narrate to the research problem (Randolph, 2009). Therefore, descriptive literature review establishes to what degree previous academic scholars have engaged in tackling similar research problem.

Judging from the description mentioned above, it is clear that an effective descriptive literature review process is fundamental during research activities in the sense that it;

- Prevents replication of preceding research
- Prevents the mistakes/obstacles made of preceding research.
- Allows innovative and unique research
- Advocate that the research contributes to the body of knowledge (Kitchen ham & Charters, 2007; Levy & Ellis, 2006).

This paper introduces a descriptive literature review which is grounded by three processing stages (Levy & Ellis, 2006). Stage one is referred to as the inputs stage, which deals with the descriptive literature review search mechanism. While stage two is known as the processing stage, which is established in the literature matrix themes. Finally, stage three signifies the outputs stage that deals with the actual written literature review. Nevertheless, all these stages mentioned above, are of importance, most specifically, the stage 2 which appears to deal with the evaluation activities of knowledge creation, understanding, presentation and scrutiny (Levy & Ellis, 2006). The descriptive literature review is sustained throughout the duration of the paper.

Inputs stage: descriptive literature search mechanism

Descriptive literature search mechanism is an essential requirement for a descriptive and advance literature review processes (Dutta et al., 2008). However, the purpose of a descriptive literature search mechanism is to unveil the key philosophies, variables, concepts associated with relevance to the literature (Webster & Watson, 2002; Kitchen ham& Charters, 2007). A descriptive literature search mechanism proposes openness for inspection, rigorous, and unprejudiced (Staples & Niazi, 2007; Brocke et al., 2009).

Descriptive literature review search mechanism begins with the keywords development. Keywords are the words or terminologies that form the foundation for subsequent electronic literature searches. Most authors are of the opinion that keywords permits readers the platform to choose whether or not a research study covers material applicable to their interest. That being said, it enables readers with appropriate words or terminologies to use in web database searches to discover other resources on similar topics. Nevertheless, these keywords concepts are derived from the research problem statement form the initial set of keywords. Therefore, research problem statement acts as a filter for concept that is applicable to the problem being investigated (Klopper & Lubbe, 2011; Brocke et al., 2009; Dutta et al., 2008; Small bone & Quinton, 2011;

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Saunders et al., 2007).

The original set of keywords derived from the problem statement tends to contain synonyms, acronyms, alternative spellings, singular/plural, related terms, and related parts of terms (Brocke et al., 2009 & Dutta et al., 2008). Above all, keywords are realised from discovered appropriate literature, especially from the keywords, abstract, introduction, and conclusion sections (Petersen et al., 2008).

In the web-based search mechanisms, the discovered keywords are deployed to gather electronic literature from the web based databases. Most scholars would deploy the option of multiple search mechanisms, while others may use specific web-based search methods respectively. In any research activity, the choice of search mechanisms is vital, simply because it signifies what kind of literature that are obtainable, accessible for the subsequent stages of the descriptive literature review. The optimum search mechanisms uses, Google scholar, association for Information System electronic Library (AISeL) and the Duck Go search engines.

Literature evaluation

It is central for academic writers to bear in mind that all published resource materials differs in quality. Each search made can possibly yield several literature articles. This means that in attempt to retain only literature that is appropriate to the research study (Kitchen ham& Charters, 2007) and quality (Levy & Ellis, 2006), the researcher need to evaluate each obtained literature material. These processes of literature evaluation encompasses glancing through each literature item's title, keywords, abstract or summary, introduction, and conclusion sections for significance to the problem statement (Klopper & Lubbe, 2011; Brocke et al., 2009 & Brereton et al., 2007), and where suitable, scrutinising an entire literature item. The significance of literature evaluation is based on an individual decision by the researcher (Floridi, 2008). A literature material is said to be appropriate when it is addressing the research problem (Brocke et al., 2009; Levy & Ellis, 2006).

Another central aspect of evaluating the quality of each literature material is that it involves inspecting of the publisher to confirm that each literature material has go through a rigorous peer-review process. The literature materials that are not peer-reviewed or are practitioner oriented have restricted use in the following stages of the descriptive literature review processes (Levy & Ellis, 2006). Nevertheless, most journals papers that are extremely ranked by the professional bodies undergo a rigorous peer-review process and have the required quality for inclusion in the subsequent stages of the descriptive literature review (Levy & Ellis, 2006). However, if a literature material is evaluated to be appropriate and of quality, it is therefore retained for the following stages of the descriptive literature review, and stored with the title or a shorter equivalent as the file name (Levy & Ellis, 2006).

Search mechanism

The section introduces the search mechanism in three sequential stages. After the first iteration is done, any of the stages can be administered or re-executed in any form. This stages of the descriptive literature review process is completed once a theoretical conceptualization is grasped, in order word no new ideas are being disclosed in the discovered literature (Webster & Watson,

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2002).The first stage is referred to as the iterative in nature as it involves using the established keywords and chosen search parameters in the selected search mechanism and web-based databases, and then evaluating any discovered literature. Each sequential search is trigged by the preceding filtering and is developed accordingly. Search alteration is a fundamental part of the search process. The alteration involves using keywords and parameters to reduce or advance the search scope and it entails keyword combination choices.

Next, is the second stage, this stage deploys backward and forward search mechanisms on literature gathered from the first stage (Webster & Watson, 2002; Levy & Ellis, 2006). A backward search entails discovering appropriate and quality literature from the references cited, title, writers, and keywords in obtained literature. This stage is efficient during the process of unveiling other relevant and quality literature. Finally the third stage is carried out to handle or tackle publication unfairness and to search for appropriate and quality literature that is not obtainable in the selected search mechanism and web-based databases. This stage embraces hand searches where applicable, electronic searches of ancient literature, automatic searches of conference proceedings, and it will include contacting professionals, librarians, and academic scholars who's research field is within that domain (Kitchen ham& Charters, 2007; Egger et al., 2003; Dyba et al., 2007; Webster & Watson, 2002). In this regard, it is advisable for researcher to involve a unique interest group, called the Association for Information Systems (AIS) were knowledge and material is being provided and access to professionals who specialise in that field. All literature that is discovered during this search mechanisms undergoes the processes mentioned above regarding literature evaluation before it can be obtained for the subsequent stages of the descriptive literature review.

Processing stage: literature matrix themes/concepts

In this case, the processing stage necessitates that assessment be realistic to the ideas, concepts, and recognises facts within the obtained literature. In so doing, the cognitive activity of assessment is reinforced by the cognitive activities of information, understanding, presentation, scrutiny, and synthesis (Levy & Ellis, 2006). Nevertheless, all these cognitive activities are active throughout the three stages of the descriptive literature review. However, in stage two, these cognitive activities result in a literature matrix themes/concepts. The literature matrix themes/concepts is established in form of table, the main themes/concepts associated to the study's problem statement alongside with each obtained literature material (Klopper & Lubbe, 2011; Levy & Ellis, 2006). Importantly, the literature matrix themes/concepts support the literature to be structured around the study's significant ideas (Rowley & Slack, 2004 & Holbrook, 2007). Also, literature matrix themes/concepts ensure quality literature review (Webster & Watson, 2002).

Outputs phase: literature review

The output stage is the actual documentation of the literature review, presenting the themes/concepts and literature from stage two (Klopper & Lubbe, 2011). Stage three is vital as it includes critical comparative scrutinises of all the literature under each themes/concepts, revealing unveiling and discovering expert's opinion (Holbrook, 2007). In this stage, critical

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comparative scrutinises, argumentative scrutiny, and assessment to support the accomplishment of the descriptive literature review objectives (Levy & Ellis, 2006; Lubbe et al., 2005 & Pather et al., 2005) argue that often postgraduate students pick a topic that could take a research team of twelve or more people within six years to complete. Even, at times, they pick an interesting topic for which it would be impossible to collect appropriate data due to problems of access or confidentiality or they pick a topic that looks far more like a work-based project than an area for masters' work.

Application of techniques, research management skills and priority

Generally, students do not have a clear understanding of research methodology or theoretical grounding/assumption in terms ontological or epistemological choices that they need to make in order to frame their research (Lubbe et al. 2005; Remenyi et al. 2011). Only a few of them have a profound understanding of how to select the most appropriate methodological framework to allow them to research their own topic (Lubbe et al. 2005; Ellis & Levy 2009). AIS masters' MBA and other MBA streams students wrongly choose inappropriate research methodological approaches and techniques which are not relevant to the study in question. Many students are afraid to think that they will choose a research method that does not address the study, and there are often fears of having to reproduce originality of the research work (Lubbe et al. 2005).

Many postgraduate students might underestimate the complexity of the research and pick a topic that is not properly focused. Such topics cannot be researched in the appropriate time frame allocated, and as a result, may not meet the compliance or become exclusive to research (Lubbe et al. 2005; Remenyi et al. 2011). Research studies suggests that poor managerial guidelines in terms of research documentation and structural issues can seriously delay students' research completion; this happens when postgraduate students do not structure their studies properly (Davis 2001; Lubbe et al. 2005). An unstructured dissertation and non-supporting documents will affect the final research product. Supervisor often have difficulties to manage the content of their students' research activities, while it is envisaged that masters' students should have a proper documentation system that will help them manage their research work (Seminar 2007; Mavetera 2011).

Mauch and Park (2003) deduced that priority and research management skills can either determine the success or failure of postgraduates' research completion. Nevertheless, it is advisable that AIS masters' and MBA research students to firstly outline the current state of their research activity, by identifying those tasks that are completed and furthermore circling the ones that are yet to be attended to. As this will give the student an idea of what is expected and serve as a track to monitor their progress (Mauch & Park 2003).Many postgraduate are quilt of reference and index. It is amazing how many students do not index references properly and then spend valuable weeks at the end of their studies trying to rediscover lost references (Seminar 2007; Davis, 2001; Lubbe et al. 2005). Lubbe et al. (2005) emphasise some of the challenges that masters' students came across when documenting dissertation/thesis. These issues are linked with lack of inadequate administration and quality control over dissertation/thesis documentation and in most often cases supervisors' role played.

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Supervisors' role in a postgraduates' research activity.

The quality of a postgraduate research dissertation activity is exclusively dependent on the supervisor's ability to meet the needs and expectations of a student (De Lange et al., 2011; Backhouse 2011; ASSAf 2010; Rugg and Petre 2010). There must be a mutual understanding and relationship between both parties to effectively embark on a research project. This mutual understanding of role expectation is vital to the success of the supervisory process. The supervisor has a major role to play in the coaching, guiding and mentoring of the postgraduate students. The illustration below is a reflection of a supervisor and students traits.

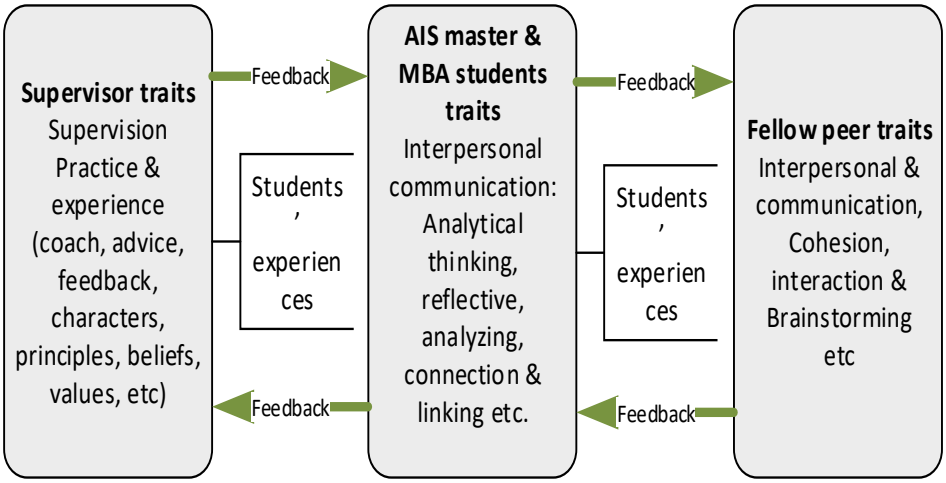

Fig 2: Master student matrix of communication with peers and supervisors.

Notwithstanding the role a supervisor have to play, a masters' students must take personal responsibility to ensure that they meet deadlines. Postgraduate students should maintain a jointly agreed record of personal progress. More also the students should discuss with the supervisors the type of guidance required, agree a schedule of meetings and take the initiative in arranging further meetings if necessary, and maintain progress as required and agreed, including, in particular, the presentation of written material in sufficient time to allow for comments and discussion. Equally, supervisors should read and provide probable feedback as well as comment where possible on a reasonable time (De Lange et al., 2011 & Backhouse 2011).

Research Questions

These questions have emerged and are presented as follows:

- Do AIS Masters and MBA students use a conceptual matrix in their dissertations to demonstrate themes used in the literature review and aligning the themes to the research topic?
- How is AIS masters and MBA's research dissertations documented, was it properly structured?
- What particular research method do AIS Masters and MBA students use and what are the perceived barriers that they encounter in their research?

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- What apparent reason was visible for not completing or documenting a good research project?

RESEARCH METHODOLOGY

Depending on the type of research study that is undertaken and, a research type will have to be chosen (Leedy & Ormrod, 2010). This paper adopted a quantitative research method and a structured framework was used in order to facilitate an in-depth analysis of the problem under investigation. The framework was used randomly on all AIS and MBA dissertations to systematically ascertain the choices made and to ensure a better return rate.

This framework represents the researcher's knowledge, theoretical foundations and guidelines to research processes, analysis and interpretation of data collected (Carroll & Swatman 2000). This framework was in form of a table and presented as hard copy, where the researcher uses it randomly to select the AIS Masters and MBA mini-dissertations as submitted to the NWU library and Nexus Database.

RESULT, DISCUSSION AND FINDINGS

This section offered the presentation and discussion of the findings based on the initially stated research questions of the paper. A first step is to establish whether AIS Masters and MBA students understand the usefulness of applying a conceptual metric and the alignment of themes to their research topics.

Do AIS Masters and MBA students use a conceptual matrix in their dissertations to demonstrate themes used in the literature review and aligning the themes to the research topic?

This question explored the usefulness of conceptual matrix and alignment comparing the responses from both AIS and MBA. Figure below illustrates the differences between students from both degrees. Out of 200 students, results revealed that more of AIS students used a conceptual matrix as compared to MBA students. A representation of 77 (74.8%) is associated with AIS postgraduates who used a conceptual matrix to align their research problem and subsequent themes and 36 (25.2%) did not apply this approach.

When compared with MBA students, 36 (37.1%) respondents made use of a conceptual matrix in their dissertations while majority 61 (62.9%) did not make use of the conceptual matrix. The findings indicated that not many students are familiar with conceptual matrix, it is discovered in appropriately use referencing technique, however, what was evidenced is that there were reference list present that contains the information about the article's publication date, authors, sources consulted and references listed in the dissertations from both disciplines AIS and MBA students.

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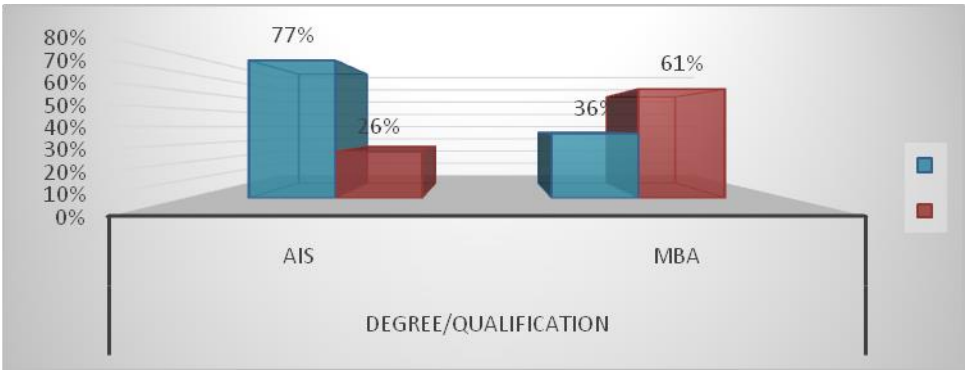

Fig 3.Use of conceptual matrix

How is AIS masters and MBA's research dissertations documented, was it properly structured?

The findings suggests that not many students were able to submit in the minimum required time, this evidenced emerged from their academic year of study. Consequently, students' procrastination, delays and not being able to meet the deadlines by the institution resulted in low completion. Other attributing factors are linked with poorly structured documentations, inappropriately use and application of methodologies. It is unavoidable that all AIS masters' and MBA dissertations must be submitted for language editing to ensure that the requirements for presenting a properly written and argued document are satisfied. The majority, indicated that their research had gone through language editing with proof attached in their dissertations appendix.

What particular research method do AIS Masters and MBA students use and what are the perceived barriers that they encounter in their research?

May authors (Creswell, 2009; Orlikowski & Baroudi 1991; Lubbe et al. 2005 & Remenyi et al. 2011) avers that the choice of selecting research methodology is problematic and a challenging stage in the research activities. Many research students battled with a frustrating question of how to choose a suitable methodological approach for the research problem and questions to be probed. The finding discloses that majority of AIS and MBA students are more comfortable using quantitative research approach, as opposed to applying any other approaches. This may be perceived as insufficiently guided/ trained or equipped to use other methods, perhaps may serve as a weakness in the type of methodological approaches that students have been exposed to by their supervisors. In affirmation to justifying the type of approach used, the paper skimmed AIS masters and MBA dissertations through the framework, to determine whether a research question or hypothesis were used", it revealed that 125 respondents (62.5%) used research questions in their dissertations. It is apparent for a researcher to be able to defend his/her research before a panel of experts. Which is why it is crucial for a researcher to be able exhibit satisfactory understanding of research techniques, rather than applying a particular research approach for convenience? Findings depicts that 63% had proof of instruments used in measuring, analyzing

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and interpreting the result, proof ethical clearance certificate.

What apparent reason was visible for not completing or documenting a good research project?

Postgraduate students encounter stress problems as most students could not cope with research stress (Lubbe et al., 2005). When stress is observed negatively or becomes unbearable, students are likely to encounter physical and psychological impairment (Murphy & Archer 1996). Aronson (2001) argues that the stress problem is common to every postgraduate student. One way of coping with stress is to associate with other postgraduates who are successfully coping with similar pressures (Lubbe et al. 2005).

The results show that challenges that students encounter were as a result of badly-structured dissertations, bad referencing or citations, choice of choosing research methodology, and many more. This likes of (De Lange et al., 2011 & Backhouse 2011 &Shannon, 1995) add, in conjunction with the challenges that AIS masters and MBA students are facing, that the prevalent problem in research activity is inadequate supervision; in other words, lack of communication between the supervisors and students; the student's misunderstanding of standards, requirements, and of the supervisor's role and functions. The figure 4 below provided the justifications concerning the reasons behind poorly structured dissertations which leads to low completion.

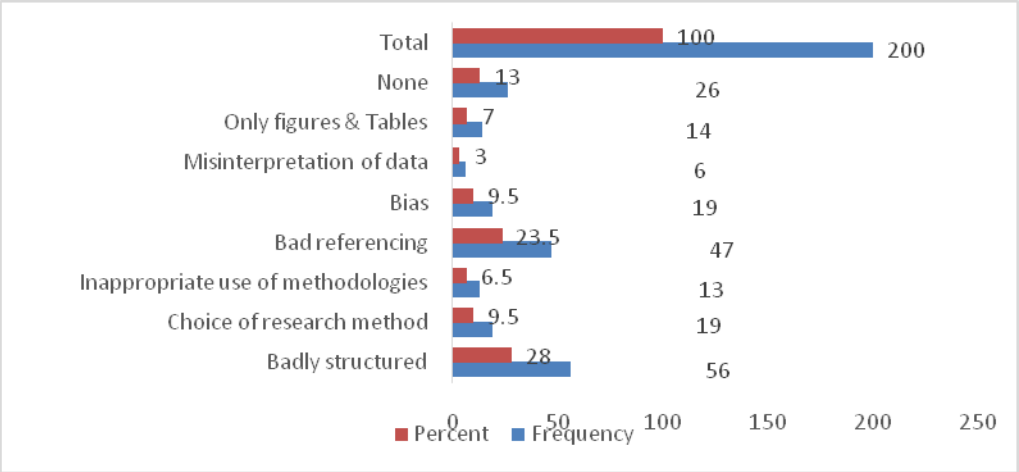

Fig 4. Reasons behind unstructured research activities

The findings shows that only a few of postgraduates dissertations have demonstrated that their research documentations, techniques and approaches were appropriately used and were in alignment with 26 (13%) amongst other variables. While the remaining experienced badly structured dissertations which seemed higher with 56 (28%); followed with bad referencing 47 (23.5%) choice of research method and bias with 19 (9.5%), while the rest are low represented.

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RECOMMENDATION AND CONCLUSION

Findings mentioned above in Figure 3, show that despite the autonomous responses, when comparing the students from both disciplines, one can easily identify which of these students use a conceptual matrix or not. Of 200 respondents, 74.8% of AIS masters used a conceptual matrix, aligning these concepts with the themes embedded in the conceptual matrix during their research activities as opposed to the MBA students with 37.1%. This implies that most students are facing challenges when it comes to research documentations. It also evidenced as seen in Figure 4, that there are elements of badly-structured dissertations, bad referencing or citations, choice of research methodologies and many others. The use of a conceptual matrix is also a challenge to the MBA students as they are not properly inclined about the use of a matrix.

This findings affirmed Klopper and Lubbe (2011) report where they stated that not many postgraduate students uses the problem-solution and research question alignment matrix to ensure that sub-problems under investigation are properly aligned with the research questions that researcher poses to ensure viable empirical results. For this reason, a strategy should be put in place for improved postgraduate research documentation amongst AIS students, but most importantly with MBA researchers. It is further recommended that problem solution and research question alignment matrix as shown in Figure 1 and 2 should be adopted in line with the relevant approaches discussed in the literature.

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