AN EMPIRICAL INVESTIGATION OF RIGOUR VERSUS RELEVANCE IN INFORMATION SYSTEMS (IS) RESEARCH

By

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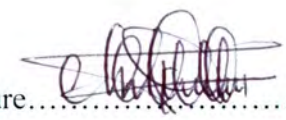
DECLARATION

I, Joshua Chukwuere, hereby declare that this research dissertation hereby submitted for a Master's degree programme in Information Systems (IS) Department at the North-West University, has not been submitted by me at this or any other university. I also declare that it is my own work. All material consulted has been duly acknowledged.

Signature  .....

Joshua Chukwuere

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ABSTRACT

The purpose of the study was to investigate the rigour and relevance of IS research; as researchers and practitioners are divided and living in a different world of aspiration in conducting research. This division is as a result of many reasons. The gap between researchers and practitioners has promulgated debate and argument among the two that has lasted for years. Many believed that IS research is effective and others opposed it. Others within or outside the discipline consider whether IS research output affects and impacts decision making in the industry. Meanwhile, the debate on rigour and relevance has lasted for decades but, in reality, the differences gap still persists, in spite of efforts by researchers. Their efforts and hard-work seem not to be very effective. This study seeks to determine whether practitioners meet their needs and expectations and whether they address them through the rigour and relevance of IS/academic research. It is also to determine whether this debate which has lingered over the years is worth it. The growing problems and needs in the practitioners' world call for an investigation into this rigour and relevance. There is an on-going criticism that IS research lacks rigour, relevance, effective communication and acceptance in the field as noted in the literature. The identified problem under investigation now is lack of rigour, relevance and other issues such as consistency, transparency, communication and inaccessibility in IS research. The population for the study comprised academic lecturers attending the South African Institute for Computer Scientists and Information Technologists (SAICSIT 2012) conference and North-West University IS and Computer Science (Mafikeng Campus) academics. The population was 90 lecturers/academics and the sample size of 73 answered the questionnaires.

Keyword: Rigour, Relevance, Debate, Information Systems (IS), Academia, Collaboration, Research, Academic, Researchers, Practitioners, Applied discipline, Research method and Academic researchers.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The quality of a research project is dependent on its rigour and relevance. Rigour and relevance in Information Systems (IS) research are a means for a quality research rather than an end in itself (Martensson & Martensson 2007). Rigorous research is research that aims to be credible by being consistent and transparent. Relevant research is presenting meaningful findings to practitioners (Martensson & Martensson 2007). The rigour-relevance and contributory aspects are working together to achieve research quality.

The rigour versus relevance debate on IS has been on-going over decades but it has not yet been solved (Glass 2009; Martensson & Martensson 2007; Gulati 2007; Worrall, Lubbe & Klopper 2007). The debate is about IS researchers and practitioners asking themselves whether IS research has moved from rigour-relevance to reverberating and responsible research that impacts on practitioners' activities and on general society (Desouza, Sawy, Galliers, Loebbecke & Watson 2006.).

IS research can be used to harness and structure managerial practice in an organisation through the relevance of its research findings (Palmer, Dick & Freiburger 2009). Meanwhile, academic IS researchers (Desouza et al. 2006; Serenko & Turel 2010; Kuechler & Vaishnavi 2011; Srivastava & Teo 2005) have questioned prior contributions of the rigour and relevance of IS research and the inability to address the street-level problems experienced by practitioners. The changing society, business, climate and organisational world have positioned IS research as an integral part of society. This has therefore triggered the rigour and relevance debate over the decades (Rosemann & Vessey 2008). The significance of IS research in human society continually grows (Desouza et al. 2006). All researchers are also concerned with the level of rigour and relevance of IS research. One of the reasons for this debate is the result of the focused area of IS researchers that has been limited to reporting rather than to innovation-driven research (Desouza et al. 2006).

In searching for relevant literature, the following keywords were used: Rigour, relevance, research, information systems, practitioners, applied discipline, method and academic

researchers. These keywords were entered onto search engines, such as Google scholar, yahoo.com and ask.com.

The chapter provides a Background to the problem statement; Problem statement; Objectives of the study; Research design; Layout of the study and Conclusion.

1.2 BACKGROUND TO THE PROBLEM STATEMENT

The academic and practitioner communities are in a crisis regarding who an expert is in IS research (McNatt, Glassman & Glassman 2010). This crisis of who is an expert has placed a gap between both parties and this is a serious problem (McNatt et al. 2010). Other academic disciplines are criticising the IS discipline (McNatt et al. 2010; Serenko & Turel 2010; Recker, Young, Darroch, Marshall & McKay 2009) and now the IS discipline is fighting a battle for legitimacy and identity as a discipline (Cranefield & Young 2007; Tushman & O'Reilly 2007; Kieser & Leiner 2009; Kieser & Leiner 2011; Bakshi & Krishna 2007; Raghupathi & Friedman 2009; Young, Darroch & Toleman 2006; McNatt et al. 2010). Shapiro, Kirkman & Courtney (2007) have agreed that anything lost in before any IS research transaction causes a gap of ineffective communication in IS research and this together with many other issues have placed IS research findings in doubt.

IS as a young discipline is confronted with changes or challenges, development and innovations, where knowledge and ideas often emerge (Steinbach & Knight 2006). The IS discipline is an applied discipline (Straub & Ang 2011; Lanamäki, Stendal & Devinder 2011). It aims at producing and conducting research that could be applied by practitioners in confronting changes in any organisation as well as in society. The two dimensions of rigour and relevance in IS research therefore have to be evaluated for IS to survive in the industry (Whitworth 2007).

A debate was organised on how to move IS research forward by tackling important societal issues (Desouza et al. 2006). Based on this, Straub and Ang (2011) returned to the debate on whether IS academic research is addressing practitioners' needs. The discussion was in two versions, firstly, in looking at the choice of topic selected by IS researchers and secondly, considering whether IS research is accessible and used by practitioners. Whitworth (2007) states that practitioners argue that IS journals are delayed and out-of-date, over-rigorous and increasingly irrelevant. In reality, the central objective and aim of a researcher is to conduct research that is rigorous as well as relevant and applicable by practitioners (Mentzer 2008).

1.3 PROBLEM STATEMENT

In today's changing information environment, IS researchers are faced with the challenges of finding solutions to IS practitioners' expectations and needs. The lack of relevance, consistency, transparency, inaccessibility and practitioners' low interest in IS research, have given rise to the debate and argument on rigour versus relevance (Straub & Aug 2008; Max-Erik & David 2011; Lanamäki et al. 2011; Tushman, O'Reilly, Fenollosa, Kleinbaum & McGrath, 2007; Kieser & Leiner 2007; Mohrman & Lawler III 2010; Serenko & Turel 2010). It is important to look at whether knowledge produced by IS researchers is applied by IS practitioners on a daily basis in order to understand whether the problems and challenges faced by practitioners are addressed by IS research and whether the reports are available to IS practitioners (Recker et al. 2009; Kraaijenbrink 2010).

As stated earlier, the rigour and relevance debate on IS research has been on-going for many years (Desouza et al. 2006; Straub & Ang 2011; Whitworth 2007; Steinbach & Knight 2006; Loebbecke, Berthod & Huyskens, 2007; Glass 2009; Rosemann & Vessey 2008; Gulati 2007; Mentzer 2008). The central objective and aim of IS researchers is to conduct research that is rigorous and relevant and applicable by practitioners (Mentzer 2008). For a research study to be relevant researchers and practitioners have to collaborate, the findings must be cited by others, it must solve real-world problems and create and add knowledge to both the academic and practitioner body (Kieser & Leiner 2007).

The identified problem being investigated here is lack of rigour, relevance as well as consistency, transparency, communication and inaccessibility in IS research, that mount the argument on rigour and relevance as a standing problem (Loebbecke et al. 2007). Whitworth (2007) stated that practitioners argued that IS journals have been delayed and out-of-date, over-rigorous and increasingly irrelevant.

1.4 OBJECTIVES OF THE STUDY

The significant position of IS in society is not only based on the rigour and relevance of it but on addressing pressing needs of our society (Desouza et al. 2006). The expectation of practitioners on IS research has not been fully realised (Serenko & Turel 2010) and, thus, the debate still continues. To join this debate in finding solutions, the following objectives were generated, based on the problem statement:

1. to establish the extent to which rigorous and relevant research in academia meets practitioners' expectations;

2. to determine whether IS research output addresses issues of concern for IS practitioners; and
3. to determine whether rigour and relevance are necessary in IS research.

1.5 RESEARCH DESIGN

The research method used in this study is the quantitative data analysis. It aims at obtaining a sample from a population of Computer Science, Information Technology (IT) and Information Systems (IS) academia at South African universities. The sample has been determined using an email approach. The approach has been used to establish the actual academics published in journals and conference proceedings.

At present, the estimated sample of individual lecturers across the universities is unknown. To reach the sampled lecturers, a questionnaire is used. The research questionnaire is sent to the respondents who said yes to the question posed in the paragraph.

1.6 LAYOUT OF THE STUDY

The study comprises five (5) chapters as follows:

- **Chapter 1:** Introduction to the study - An introduction to the study topic and other necessary influences.
- **Chapter 2:** Overview of the literature - The literature review is concerned with information on what has been done on the topic as well as other new information available.
- **Chapter 3**: Research methodology - It lays down what methodology design was used to gather information for this study.
- **Chapter 4:** Data analysis – This covers the extracting information or converting collected data into valuable information.
- **Chapter 5**: Conclusion - It deals with the overall summary of the study and revisits the questions to determine if they have been answered, followed by managerial suggestions and the conclusion.

1.7 CONCLUSION

In summation, the possibility that lies within the IS discipline, can be strengthened through rigorous and relevant research. This chapter has pointed out that IS is a young applied discipline with the mandate to accomplish success. The rigour and relevance debate still continues. Many suggestions have been presented on how to move IS research forward by notable researchers and the discussion still persists.

Lack of rigour and relevance as well as consistency, transparency, communication and inaccessibility have placed IS research in doubt and this chapter has shown that all these problems are preventing the discipline from achieving its mandate to the full.

The chapter has added value in clear understanding of the present stand point of IS discipline and its research in applied discipline and framing the road map of where the entire study has to go in an in-depth investigation of the study. In the second chapter, the literature review (overview of the literature), other authors' articles in regard to the research topic are discussed.

CHAPTER TWO

OVERVIEW OF THE LITERATURE

2.1 INTRODUCTION

The IS field is challenged (Mathiassen & Nielsen 2008). The gap between IS academics and practitioners is in a worrying state to many (Fitzgerald 2003). Lately, there has been a debate on how to increase and improve research relevance (Nicolai & Seidl 2010). In this, rigour has a role to play (Vermeulen 2007) and it is important for relevance to be initiated in a research (Huisman & Conradie 2010). Academic editors have also debated among themselves the amount of rigour needed in a research for it to contribute to the field of academia (Pasmore, Stymne, Mohrman & Adler 2007). Researchers and practitioners have been criticised for conducting research on limited and unproved evidence (Pfeffer & Sutton 2006; Pasmore et al. 2007). All these debates have led to a funding problem. Basically, natural science has the same problem in attracting funds (Pasmore et al. 2007).

The range of innovation today has placed researchers and practitioners in a position where they are seeking help from academic research to cope with ever-increasing changes. At this point, solutions provided by both are in doubt regarding whether the challenges faced by them are really addressed through solutions provided and the research findings accessible by all (Recker et al. 2009; Kraaijenbrink 2010). The rigour and relevance debate has been of concern in the academic field for decades now, with little or no solution to resolve the issue (Desouza et al. 2006; Straub & Ang 2011; Loebbecke et al. 2007; Glass 2009; Rosemann & Vessey 2008; Gulati 2007; Mentzer 2008).

In searching for relevant material on this chapter, the following keywords were used: collaborative and engagement research, rigour, relevance, research, practitioners, researchers, and academic researchers. This chapter provides the following layout from the matrix: The academic (IS) decline over the years; The absence of theory; Academic research's lack of discipline; Rigour and relevance; Major challenges facing academic research; Problem of informing systems; Established disciplined level of an engaging practice; Contribution to the body of knowledge and Conclusion.

2.2 THE ACADEMIC (IS) RESEARCH DECLINE OVER THE YEARS

For decades now rigour and relevance have become an issue of debate in academic disciplines (Kieser & Leiner 2007). According to Cummings (2007), researchers hardly believe that

practitioners pay attention to academic research and if they do, they do not use it in practice. Gill and Bhattacherjee (2009) argued that researchers and the way they inform stakeholders, have decreased in the past and this contributes to the decrease in practitioners as well. They advised that researchers should be committed to publish in practitioners' outlets. In the 1950's and 60s, the argument that academic management research was becoming relevant was raised for the first time (Gulati 2007).

The continued gap between research and practice is still a mystery. Many believe that the gap is still growing (Markides 2011). Over the decades, interest has been shown in this gap (McNatt et al. 2010). Much has been suggested regarding the cause and the solutions but little has been achieved and it keeps increasing (Aguinis & Cascio 2008). Over the same period, the IS discipline has fought to establish good relationships and collaborations between researchers and practitioners. Academics have debated without much success (Darroch 2010). The slogan of publish or perish indicates that researchers are promoted or rewarded based on the number of publications and journal articles published. This has led to an increased number of conferences, journals and publications in the discipline with little impact in practice (Moody 2000).

Over these years, IS research has been in crisis from criticisms (Mathiassen & Nielsen 2008). Many articles have suggested how to link and collaborate with non-academic audiences to address this crisis and the perception was that the present rooted gap needed a radical approach to erase the divided world (Hartmann & Dewulf 2011). All disciplines have annual debates and discussions on the relevance of the gap between research and practice. The debated issue is that academics' research topics are not addressing street-level challenges facing practitioners (Kuechler & Vaishnavi 2011).

Academic research on cross-boundary topics has continued over the decades and its relevancy remains under scrutiny. Having debated over the decades on rigour and relevance in academic research, the debate states in particular that practitioners are not using academic research findings in practice (Worrall et al. 2007). In spite of this, donors for funding directed at universities for academic research through private and government institutions have decreased since the 1990s and continue to decrease not taking into account the number of publications published to close the relevance gap. This has put pressure on universities to increase the opportunities for funding (Worrall et al. 2007).

Presently, practitioners have little interest in academically published research and see no reason to use this research (Mckelvey 2006). Practitioners in the industry are worried because IS researchers are allowed to research in any kind of institution, be it in government organisations,

informal groups, online groups and many more (Lanamäki et al. 2011). In the past 50 years, academies have been seriously asking questions on how to impact management practice more positively through research (Bartunek 2007). The debate has been tested that the theory layout of the IS field has been interrogated and found to be soft (Bakshi & Krishna 2007). The changes and quick innovation in technology have forced new knowledge emerging over the years from data processing research to Information Systems (IS) and also to information and communication technology (ICT) (Bakshi & Krishna 2007).

The IS discipline is relatively young compared to other applied disciplines. Over the years, the discipline has changed its direction many a time; this occurs as high innovation in technology (Loebbecke et al. 2007). Solutions have been suggested but the fact remains that the issues remain unsolved (Glass 2009; Recker et al. 2009). As Constantinides and Chiasson (2010) put it, the relevancy of IS research has been under doubt. The debate has been on bridging the theory gap (Constantinides & Chiasson 2010). Researchers have been disordered in reviewing relevant information and research that are informative (Desouza et al. 2006). The reviewing process is not adequately formulated and IS research can be rigorous but not relevant (Straub & Ang 2011).

The crisis has escalated to such an extent that many wonder whether IS research tackles the needs of practitioners. This can be traced back to the early days of business schools (Straub & Ang 2011). The debate relating to the gap can be grouped into two kinds, according to Straub & Ang (2011). The first kind is a gap that emanated from the choice or type of topic researched and issues tackled by researchers and the second is the kind of topic delivered, obtained and applied by practitioners in operation. In 2008, Straub and Ang tagged the two kinds of gap as topic usefulness and knowledge transference (Straub & Ang 2011).

To be useful in practice, IS practitioners began the discourse on the relevance of the IS research topic in their world since early 1990s and it has been treated by top researchers in top publications but the discourse continues (Steinbach & Knight 2006). According to Loebbecke et al (2007), IS research was criticised by researchers and practitioners in those days for its lack of relevance. The criteria for tenure promotion in the IS discipline plays down on rigour because researchers are now more focused on promotion than on the rigour research requirement and its impact in practice (Loebbecke et al. 2007).

IS (academic) research is irrelevant, uninteresting and unusable to practitioners (Max-Erik & David 2011). Researchers still believe that they are not motivated to research for top IS journals as a result of lack of incentives to conduct relevant research (Rosemann & Vessey 2008). This debate led to the suggestion over the past decades for a way to make academic research more

relevant. Some have advised restructuring of institutional and publication processes (Kraaijenbrink 2010). However, presently, the issues are still unsolved; previously, the discipline had been more concerned with relevance and less with rigour (Kraaijenbrink 2010).

2.3 THE ABSENCE OF THEORY IN IS (ACADEMIC) RESEARCH

From inception, the link between IS researchers and practitioners has been under heavy scrutiny. Until today the relevance of academic research to practice is still debatable (Lanamäki et al. 2011; Rosemann & Vessey 2008). Many consider conducting research that is both rigorous and relevant as a conflict of interest (Rosemann & Vessey 2008). There is a high level of conflict and distress regarding the irrelevance of academic or organisational studies and many publications have been published to end the debate (Palmer et al. 2009).

Academic researchers are growing irrelevant, which affects the identity of the discipline (Tushman et al. 2007). Some have argued that academic research is having basic problems (McKelvey 2006). This interdisciplinary debate on the IS field states that the IS discipline lacks self-dependency, which is seen as an identity crisis and that it keeps borrowing theories and principles from other fields (Contantinides & Chiasson 2010).

Academic researchers believed that there is little demand on IS practitioners to read and support IS journal publications. According to Rosemann and Vessey (2008) only a small amount of IS research is transferred and translated into meaningful and relevant material. Academic research is finding it very difficult to find a way into the two-tier publication journals and this produces a high level gap between rigour and relevance (Kieser & Leiner 2007). From the beginning, academic research has been fighting a legitimacy battle because of rigour and relevance (Kieser & Leiner 2007). The separation between rigour and relevance is the main debate of academic research (Gulati 2007). In addition, this gap has been noted in the research methodology used in research topics (Found & Fei 2009).

Moreover, the level of relevancy of IS research is still a big concern to the discipline (Rosemann & Vessey 2008). For this reason, Rosemann and Vessey (2008) have proposed an applicability check as an alternative way to measure and draw feedback from practitioners and at the same time improve rigour and relevance. An applicability check is used in IS research as a framework for theory, models, processes and evaluation purposes (Rosemann & Vessey 2008). According to Lee and Hubona (2009) IS is not really basic or pure science but it is a discipline that is based on government, business and other institutions and mandated to render relevant research. In reality, the link between IS research and practice are disconnected, both are independent and there is

little knowledge transfer between them, therefore rigour and practical relevance are difficult to achieve (Moody 2000).

For this reason, they debated that journals and publications published under the IS discipline can be published under other disciplines, such as computer science, economics, psychology, applied mathematics and organisational studies (Bakshi & Krishna 2007). IS researchers acknowledge the fact that the discipline lacks acceptance settings and theories by other disciplines. Many researchers, such as Benbasat and Zmud (2003), try to define impacting IS research with the aim of creating and strengthening its identity in applied disciplines and acceptance by others (Bakshi & Krishna 2007).

However, without structured or strong theory in the IS discipline, all the effort in the discipline is lost. Other researchers in the discipline also believe that the IS discipline lacks academic legitimacy and identity (Bakshi & Krishna 2007). Then, the multifariousness in the IS discipline can assist to improve rigour and relevance but is a threat at the same time. Researchers keep borrowing theories and principles from other disciplines. This has led to rigour (academic) and relevance (practice) being under heavy scrutiny and questioning (Bakshi & Krishna 2007).

Bringing in structured knowledge, structured literature reviews, referencing styles and other statistical instruments used in IS research have made little impact on informing practitioners (Steinbach & Knight 2006). This expression and belief is regarded as "tribal warfare" (Gulati 2007). To move forward, we need radical change in academic journals, academic approaches, internal and external research perceptions, otherwise we should not bother trying to make a difference in all things (Vermeulen 2007).

Furthermore, the interchange of ideas and knowledge is limited among researchers and practitioners compared with other academic bodies, such as engineering, law and medicine, where the engagement among them is well structured to benefit all parties (Huisman & Conradie 2010). There is little research that promises good structures and it is doubtful whether it is impacting the practitioners' world. The absence of a structural communication approach in IS, according to Lang (2003), is grouped into three kinds; (1) inadequate communication pattern (2) language barrier both in style and informing writing pattern and (3) practitioners depend on IS research findings to make decisions, but only a small amount of research is useful in the real world to solve practical problems (Steinbach & Knight 2006). Lang states that the remedy to this problem is for researchers to see and consider practitioners as customers that consume their research and this should be practical theory, experience and technical skills that should be used to measure this process (Steinbach & Knight 2006).

To revive IS theory and the advancement of relevance, the proposal to change in business school, in leadership settings and in other areas in an option (Kraaijenbrink 2010). Encouraging editorial board members to be more practical and relevant minded, will be an effort in the right direction (Bartunek 2007; Rynes 2007; Tushman et al. 2007). All these different suggestions and arguments show a lack of discipline and theory in the discipline (Kraaijenbrink 2010). IS discipline is at the risk of rigour preference over relevance (Recker et al. 2009). As Markides (2011) puts it, the link between research and practice is really separated. To date IS research literature has appeared irrelevant (Cranefield & Young 2007). The reason for the cause of irrelevance is still being questioned (Cranefield & Young 2007).

2.4 THE LACK OF DISCIPLINE IN IS ACADEMIC RESEARCH

The rigour and relevance debate was as a result of a lower level interest in discipline (Glass 2009). In spite of a number of articles and papers being published to address the issue, it still continues (Rosemann & Vessey 2008). The present debate is attributed to weak discipline. Research quality is based on the dimension of rigour and relevance. This helps to strengthen the IS-debated identity (Bakshi & Krishna 2007). Furthermore, the breakdown between IS researchers and practitioners can be termed as 'premature' (Desouza et al. 2006).

Recker et al. (2009) believe that IS discipline will lose it legitimacy if it fails to conduct relevant research that informs practitioners. The debate also relates to the IS status as an academic discipline, its operation and its future. Some concern has been expressed on the methodology used in IS research, and a comparison between positive and interpretive approaches, quantitative against qualitative methods and many more has led to a hot debate in the discipline. The fact remains that all the research methods can be suitable in any situation depending on the prospective research question at hand and whether the questions asked will be addressed by the method (Moody 2000).

Bakshi and Krishna (2007) believe that unclear structure in IS identity is causing a legitimacy problem in the field and it contributes to the doubt the discipline is currently facing, which is being described as a crisis. The identity problem in the IS discipline threatens the occupational advancement of junior researchers in the field and hinders young, potential and promising researchers from joining the field (Bakshi & Krishna 2007). In the past three decades, the IS discipline has been fighting its discipline identity war in order to prove its relevancy as a discipline to others (Kuechler & Vaishnavi 2011). This has shown that practitioners and academics are divided in terms of concern and interest (McNatt et al. 2010).

According to Markides (2007), the problem affecting the discipline can be characterised as remarkable or mysterious. Non-academics think academic research is not informative in a real-world setting and for their needs, but researchers are mandated to research on informative knowledge that has practical relevance (Recker et al. 2009).

Academics may not have been bothered to conduct research that matters to practitioners. They have a different language, framework, methodology, models, rigour and relevance standard and fail to solve problems through a rigorous standard. All these divisions are as a result of a lack of discipline (Mohrman & Lawler III 2010). Lack of discipline could be traced to choice of topic and failure to be readily available to the right audience (Mohrman & Lawler III 2010).

The IS discipline has been described as an applied discipline. Any applied discipline has two elementary objectives; theoretical and practical objectives. Theoretical objectives are aimed at increasing ideas and knowledge, in understanding why things happen in a particular way, for example why IS projects succeed or fail and practical objectives are aimed at increasing practical relevance and a better way to increase usefulness of IS research output with effective use of methods (Moody 2000). The possibility is that many IS researchers do not believe in discipline constituents. Over these decades of IS existence, it has created a strong foundation (Bakshi & Krishna 2007).

This means that the discipline should focus on reference to its own research, not only borrowing from other disciplines (Bakshi & Krishna 2007). Numerous research methodologies used in the IS discipline have proved that its research findings lack rigour and relevance. Lack of proper constituents caused persistent debating, continuous borrowing from others and a decline in identity, lack of discipline and multiple options have left out important and relevant issues (Bakshi & Krishna 2007). The level of doubt in the on-going debate and argument on IS research may force it to lose organisational understanding and usability in future and being unable to generate problem statements and answer questions from academic practitioners (Vermeulen 2007).

According to Bakshi and Krishna (2007), the IS discipline does not have a framework of its own and is always borrowing but if the IS discipline continues borrowing theoretical framework and depending on others, then why should it be called a discipline of its own? Presently, there is a debate in the camp of researchers and practitioners on whether borrowing is good or not or to stop (Raghupathi & Friedman 2009). In summary, one can say that the IS discipline lacks personal identity and this has hindered career growth and succeeding production (Bakshi & Krishna 2007). The knowledge transfer has been criticised for not integrating properly with

practitioners (Straub & Ang 2011). In all these critiques, no grounded proofs have been presented to support the argument (Bakshi & Krishna 2007).

The academics and practitioner relevance gap is known in academic disciplines and lack of relevance is a major challenge confronting the discipline as a whole (Lee & Mohajeri 2012). In the descriptive statistics and an exploratory factor analysis (EFA) survey, it was revealed that respondents (practitioners) were worried about the lost in and before translation problem, believing this has caused tremendous division and separation in the discipline (Shapiro et al. 2007).

All applied disciplines also lack a theoretical base; to be theoretically balanced, they borrow from others to resolve problems, for example, medicine borrows theory from chemistry and biology to cure and diagnose disease and the engineering discipline borrows theories from mathematics and physics to build and repair buildings, roads and bridges (Moody 2000). Ideally, debates have also been on whether published papers have a positive impact on practitioners (Moody 2000).

2.5 RIGOUR AND RELEVANCE

For decades now business schools have been urged to increase the relevance of their research on practice (Booker, Bontis, & Serenko 2008). A common belief by many is that rigour and relevance work against each other and that closing the gap is practically impossible. Benbasat and Zmud (1999) strongly advised research journal editors and reviewers to create a balance between rigour and relevance in a journal. However, the main mission of academic researchers in any professional or business school is to be active in conducting informative and impacting research that benefits different stakeholders (Mathiassen & Nielsen 2008; Worrall et al. 2006).

IS research is mandated to achieve this mission through its rigorous and relevant research and thereby sustaining its legitimacy and identity as a discipline (Raghupathi & Friedman 2009). A paradigm shift has been realised from the mandated mission, then, a call was made for refocus from just the rigour and relevance debate (concept) to what Desouza et al (2006) called responsibility and reverberation research. This indicates more focus on societal pressing needs and challenges (Raghupathi & Friedman 2009).

To understand this section, rigour and relevance have to be defined. Relevance is defined as issues or matters at hand. In academic discipline, it means the level at which external stakeholders regard and use knowledge generated by researchers in solving real-world problems and challenges (Raghupathi & Friedman 2009). Recker et al. (2009) define relevant research as a

research that educates and assists practitioners to solve their problems and challenges. The better way to evaluate IS research can be through relevance in practice because, by definition, a relevant research informs and helps practitioners in tackling real-world problems and good planning and delivering also improves relevance (Recker et al. 2009).

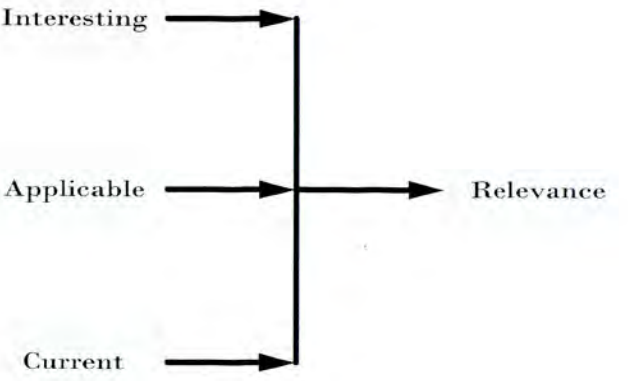
Research relevance can be seen in two two-way information flow; from academic to practice (audience) and from practitioners to academics (Raghupathi & Friedman 2009). However, IS research has a disconnection problem with regard to the flow of information and knowledge (Moody 2000). To be practically relevant, the thorny road of the journey and strenuous converting of academic findings to practitioners' understanding has to be followed (Vermeulen 2007). Relevance is seen in academic research and useful when practitioners gain more control and understanding about their space than before in making better informative decisions (Vermeulen 2007; Huisman & Conradie 2010). This shows the vitality of IS practical relevance; without it, IS research is meaningless, the output has only served academic interest, without significance to the audience.

IS research should be more on practical challenges confronting practitioners, as this will help to promote IS identity (Huisman & Conradie 2010). IS research relevance has three dimensions; importance, accessibility and suitability (applicability) (Rosemann & Vessey 2008; and Klein, Jiang & Saunders 2006). By definition, importance research is research that is manageable and able to solve or address real-world problem, according to Rosemann and Vessey (2008).

Secondly, the accessibility of a research is based on whether the research can be readable, understandable and usable by the targeted audience. Lastly, applicability of research to practitioners is a question of whether a research is directive and providing informative recommendations as needed (Rosemann & Vessey 2008). Relevant research is not published in academic journals but in practitioners' journals (Lanamäki et al. 2011).

Research relevance is not just the end, below are the components of relevance research: interesting, applicable and current (Mårtensson & Mårtensson 2007).

Figure 2.1: Components of relevant research



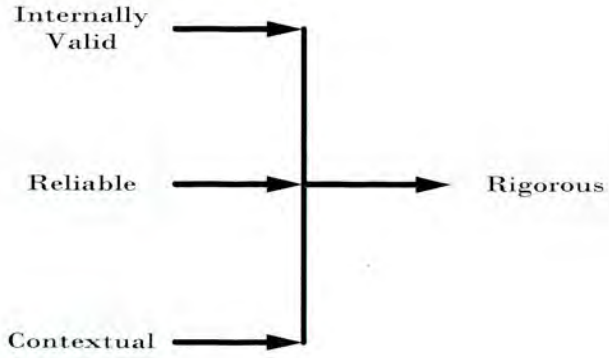
Sources: Mårtensson & Mårtensson (2007).

Rigour means the use of accurate tools to determine if research is reliable and valid and checking whether scientific methods are followed to a conclusion (Dipboye 2007). According to Vermeulen (2007) rigour is an avenue whereby a theory can be consistent and reliable. Rigorous research can be described as a scientific research study that passes through the reviewer process and makes a contribution to practitioners. To facilitate rigour, applicability checks ensure that academia and practitioners collaborate well on acceptable research (Huisman & Conradie 2010).

The rejection and acceptance of a paper is through readability, because if not readable, it makes no sense in practice (Straub & Ang 2008). The lack of readability in a research renders it valueless; some believe that acceptance and rejection of any research should be based on rigour and relevance and others argue that rejection of a research paper based on rigour will be killing and hindering the discipline from new innovations and ideas but both should also be regarded in a research. Rigorous research without relevance is unimportant. Whitworth (2007) advised that IS researchers should not kill the discipline in the name of rigour. The advancement of IS research in the future depends on the compounding of rigour and relevance. Rigour may be important to show practical reality and researchers and practitioners should try to agree on a rigorous standard and working towards relevance (Vermeulen 2007).

Mårtensson and Mårtensson (2007) maintain that usable pieces of research can be characterised by rigour, consumable, relevance. However, quality research is also characterised by validity and reliability. According to Mårtensson and Mårtensson (2007), validity shows research topic relevance in the discipline. Reliability shows that a research conducted by different people has to be simpatico in nature. According to Mårtensson and Mårtensson (2007), the three components below make up rigorous research: internally valid, reliable and contextual.

Figure 2.2: Components of rigorous research



Sources: Mårtensson & Mårtensson (2007).

Rigorous research is vital for a research to be credible and trusted and it is a way to achieve credibility (Mårtensson & Mårtensson 2007). The combination of rigour and relevance is what is important in a discipline and in research (Mårtensson & Mårtensson 2007). Conducting practical relevance research requires sacrifices, commitment and engagements (Vermeulen 2007). To achieve this, researchers should enquire from practitioners regarding the kind of research topic they would want academics to research (Vermeulen 2007) and also about the kinds of categories of journal types that catch their attention. To offer practitioners the applicable papers, three categories of journals exist; (1) Academic journals. (2) Practitioner or professional journals and (3) Academic-practitioner journals. The first category of academic journal targets the academic audience (body). Secondly, practitioner or professional journals are aimed at the practitioner audience and usually written by journalists, consultants and management or professional writers. Finally, academic-practitioner journals focus on academics or on practitioners but mainly on a professional audience (Straub & Aug 2008; Lanamäki et al. 2011). Rigour is needed in IS research and by researchers and relevance can be achieved when IS researchers choose correct methods that produce important ideas that can inform practitioners (Steinbach & Knight 2006). The relevance of IS research serves two basic purposes, namely to advance knowledge and make a positive contribution. Its significance can be realised when it is used in practice (Loebbecke et al. 2007).

Relevance in research ensures that research is reliable, actionable and applicable in solving real-world challenges but irrelevant studies cause a research finding to lose its identity (Raghupathi & Friedman 2009). So far, practitioners regard academic research to be out-of-date, over-rigour and increasingly immaterial (Whitworth 2007). Researching rigorous and practical relevance remains difficult and challenging and many studies support the argument that academic research is not

based on practitioners' expectations (Gulati 2007; Markides 2007; Tushman & O'Reilly 2007; Vermeulen 2007; McGahan 2007).

According to Moody (2000), the IS discipline cannot establish legitimacy through rigorous or theoretical methods but through practical relevance and usefulness. According to Lang, IS research findings have failed to add relevance to its audiences immediately (Lang 2003). In reality, relevance is vital in the IS discipline and for other academic disciplines (Fitzgerald 2003). Another area of concern is that academic research is divided into applied and basic research.

Applied research needs an immediate application in practice and basic research is aimed at a long-term application (Fitzgerald 2003). Benbasat and Zmud (2003) state that IS research has tried to copy the research rigour of other disciplines. For this reason, in trying to be rigorous, this may have forced the discipline to forfeit relevance (Mood 2000). This leads to researchers and practitioners in the discipline debating whether academic research is becoming rigorous or not at the expense of relevance (Recker et al. 2009).

Noticeably, high rigour and low relevance have also often been criticised in IS research and many have continued to express that research findings are not resolving the expectations of practitioners (Serenko & Turel 2010). Researchers have shown little concern regarding conducting relevant research to practitioners, therefore it is not surprising that they are criticised in this regard (McNatt et al. 2010). The vast majority of people believe on the gap's existence because both parties have different interests, aspirations, resources, capabilities, incentives and time, thus closing this gap is impossible if academics' and practitioners' interests are not united (Shapiro et al. 2007).

An attempt at bridging the gap is for the IS discipline to learn from other applied disciplines regarding how they have managed to address their own gap, for example, how medicine as applied discipline, has managed to be academically rigorous and practically relevant (Moody 2000). The medical discipline has managed to close the gap between research and practice because researchers and practitioners are engaging in one community of interest and expectation, and not living in separate communities. Some of the academics in the medical discipline spend half of their time in teaching and the rest in clinical practices, but in IS this kind of idea is discouraged or prevented (Moody 2000).

2.6 MAJOR CHALLENGES FACING IS (ACADEMIC) RESEARCH

The IS field is faced with challenges (Mathiassen & Nielsen, 2008). The contract between academics and practitioners is not properly formed to produce important or relevant research. Only limited academic research presents practitioners' concerns and only a few practitioners read academic articles, therefore this is a major challenge (Desouza et al. 2006). The rigour and relevance debate is intrinsically and extrinsically focused (Gulati 2007). Shapiro et al (2007) attribute the growing gap between academics and practitioners to the lost in or before translation problem. Markides (2007) defines the existing gap problem as a result of academics having concluded that the gap exists, without defining what practitioners expect.

Some of the bridging methods proposed are worse than the actual problem; the gap problem is getting worse as time progresses. Markides (2007) argued that the IS discipline has to move into a cross-border discipline. This is to avoid instability as seen in medicine, engineering and architecture. However, in conclusion, IS should remain as an applied discipline (Moody 2000). From all the possible reasons for the lack of relevance in IS research, it can be seen that IS researchers have inadequate exposure to the practical environment (Huisman & Conradie 2010). This has led to rigorous research but which is practically irrelevant and this shows that IS research is undertaken by academics for non-IS academics (Moody 2000).

However, attaining the twofold mandate of IS research and making contributions is challenging. The main argument is that a strong relationship between research and practice is not well established (Hartmann & Dewulf 2011). Academics and practitioners have different areas of interest, aspirations, missions and objectives and balancing all these can be challenging and problematic (Dooley & Kirk 2007). This could lead to a conflict of interest among the parties. From editorial comments it was realised that collaborative research also yields different aims among the parties (Pasmore et al. 2007).

The connection between researchers and practitioners is becoming challenging, the two parties speak a different language, have different style principles and different paths of communication (Kieser & Leiner 2011). However, as Shapiro et al (2007) put it, the difference between them is as a result of lost in or before translation, they cannot understand each other because they speak a different language, collaboration cannot benefit both because they have different needs and logic (Kieser & Leiner 2011). The difference between the parties makes it impossible to generate relevant (practice) and rigorous research (Kieser & Leiner 2009).

For the past two decades, different literature has been written to close the gap but many still believe that nothing has worked. Rather, the gap continues to widen; in fact, academics have

continued to pour out solutions on how to close the existing gap (Markides 2011). Ironically, nothing much has been achieved in closing the gap. The lasting gap between the parties is tagged as mystery by Markides (2011). The difference between academics and practice is quite amazing (Pasmore et al. 2008).

However, the decision on whether to read an article or not begins with the practitioner going through its content (Straub & Ang 2011). The relevance problem cannot be resolved by individual researchers or by university institutions alone (Steinbach & Knight 2006). Academics are judged on promotion and practitioners are judged on impact (Steinbach & Knight 2006). A professional survey conducted in IS shows that the gap between both is rooted, so much so that practitioners often have no idea of IS research findings, maintaining that IS research is out-of-date, difficult to read and insignificant (Serenko & Turel 2010).

Some continue to debate on whether rigour and relevance should be combined in one research (Tushman et al. 2007). Disciplines, such as engineering and medicine, place less importance on the rigour and relevance gap (Kieser & Leiner 2007). Furthermore, the challenge is that practitioners take time to understand academic research and researchers take time to interpret its findings in a meaningful way to the audience (Kieser & Leiner 2007). Because of the language barrier, academic educators find it challenging to transfer knowledge and difficult to analyse practitioners' problems and concerns.

So far, the main issue here is that mainstream journals are not supported by external audiences and it does not support business flexibility (Straub & Ang 2011). Presently, IS research decisions have been based on researchers' interest, instead of on practitioners' interests (Moody 2000). However, it looks challenging for academic researchers to deliver ideas that practitioners can regard as relevant and impacting (Hartmann & Dewulf 2011). Additionally, the root cause of the problem is based on the boundary-cross of individual and interest differences (Bartunek 2007). According to Sandmann and Thornton (2008), the gap is grouped into three; knowledge distribution problem, research and practice have different sets of knowledge and idea (knowledge) creation problems.

Researchers in academic disciplines, including IS, have two basic problems, namely a lack of practical relevance and the gap between academics and practitioners (Lee & Mohajeri 2012). Most rigorous research in IS lies on theoretical relevance and methodologies but this is different from practical relevance (Lee & Mohajeri 2012). Mainly, most IS research topics selected are based on academics' ideas and not on practitioners' ideas. In addition, the time that academics take to publish this knowledge is worrying (Klein et al. 2006).

Furthermore, the changing technological world poses a great challenge to IS research relevance, meaning, the pace at which technologies are changing is far faster than the speed at which academic research is being delivered. Before research problems and questions are formulated and research conducted the business environment has changed and this disables relevant research being delivered (Raghupathi & Friedman 2009). The biggest challenge why the gap persists is that researchers keep talking about it but not much has been done to close it because it is working in their favour (Markides 2011).

Based on the argument of Kieser and Leiner (2009), one can be forced to believe that closing the gap is impossible. Narrowing the gap is huge to many, because the way rigour and relevance are measured is actually bad (Markides 2011). The fundamental reason for the relevance debate once again, may-be because IS researchers have failed to ask relevant questions (Cranefield & Young 2007).

So far, the debate can be due to a lack of effective knowledge transfer or a fundamental disconnection between researchers and practitioners (Cranefield & Young 2007). The basic reason for the disconnection between research and practice is lack of effective knowledge transfer between both and cross-membership (Moody 2000). Both are living in a divided community (world) with little knowledge transfer between them; ironically, the IS discipline discourages academics from becoming practitioners.

The task of being an academic and practitioner can be laborious, because of the idea that academics must publish (Moody 2000). There is little engagement between the two because each has his/her own conferences and journals and practitioners cannot publish in academic journals because of the high rigour requirement and procedures to attend conferences together and vice versa. The way forward is for academics to publish academic and non-academic papers (Moody 2000).

IS research has failed to be more relevant because of the fight for legitimacy (Benbasat & Zmud 1999; Klein & Rowe 2008). Communication barriers are a relevancy problem in the IS field (Van de Ven & Johnson 2009; Klein & Rowe 2008). The majority of gaps are caused by researchers and practitioners living in a divided world of communities of practice (CoP), distinct communication channels, having different ideas, values, interests, priorities, concerns, objectives, purposes, ways of making decision and division on what constitutes relevant research (Klein & Rowe 2008; Mohrman & Lawler III 2010).

According to Markides (2007), researchers and practitioners are divided in terms of values, mind-sets, skills and the attributes of rigorous research. Academic researchers argue that both are self-referential, meaning there is no link between the two parties (Kieser & Leiner 2009). This makes it unimaginable for academic researchers to produce relevant knowledge even if they collaborate with practitioners (Mohrman & Lawler III 2010).

From the look of things, the transfer of academic researchers' knowledge is not happening (Worrall et al. 2007) as practitioners have little faith in academic research that solves real-world problems (Worrall et al. 2007). If practitioners and researchers ever meet to formulate research questions, it leads to lack of relevance. It appears that practitioners hardly read or engage with researchers and this shows the gap could be bigger than estimated (Markides 2011).

A realistic example of the gap in academic research is like a car with different parts; the parts alone cannot work except if they are coupled together; practitioners do not want to read individual IS research individually but a coupled (whole) research paper (Markides 2011). Academic research is not incorporated into a full practice package, even if it is coupled together, thus practitioners find it irrelevant because it does not ponder or address the challenges (McNatt et al. 2010). McNatt et al. (2010) believe that this gap is a challenge and it needs to be closed immediately. Researchers and practitioners are operating on a different paradigm, making little effort to close the gap. Academic researchers understand the difference between practice and research but they continue to publish insignificant research (Lee & Mohajeri 2012). Because of this, bridging the gap is difficult and impossible, no matter the length of talk (Moody 2000).

2.7 PROBLEMS OF INFORMING SYSTEMS

The present reflection in the IS discipline shows it is facing the challenges of identity establishment. The IS research rigour standard is in doubt, IS researchers are busy doing rigorous against relevance research (Bakshi & Krishna 2007). However, the social system is characterised as self-referential, so that researchers cannot communicate their findings to practitioners (Kieser & Leiner 2007). They can only irritate each other when interacting (Kieser & Leiner 2007). They are autonomous with a limited communication link, distribution of knowledge and problems and academic make decisions excluding practitioners (Cranefield & Young 2007).

Notably, the debate has been going on for decades (Gulati 2007). The rigour and relevance research is all working with little contact with each other, which is tagged as knowledge failure problem (McKelvey 2006). In most cases, academic researchers define rigour as strict research using theories, methodologies and data collection analysis (Gulati 2007). Institutions, both private and public, are all debating on the level of impact of academic research in their operation

(Shapiro et al. 2007). IS research is of less relevance to practice and management research as a whole (Benbasat & Zmud 1999).

According to Benbasat and Zmud, approximately 80% of management research is irrelevant according to opinions from business school deans. This report is alarming. Although, the perception is just from schools' deans, practitioners hold the same view and this perception is so common in IS published papers (Fitzgerald 2003).

Recently, ideas and knowledge created in management science have been criticised and used with difficultly or barely used in the management industry. Researchers mention relevance in their research but hardly give it meaning (Nicolai & Seidl 2010). Because of this, practitioners are confused on what researchers commonly mean by relevance. According to Hinkin, Holtom and Klag (2007) the relationship between academia and practice is disconnected and the problem relates to questioning and the field identity (Darroch 2010; Naudé, Nowak, Thomas & Rowe 2009).

Most times relevant research is not published in management publications. This shows practitioners cannot influence researchers' intentions in doing research and published papers are less important to them (McGahan 2007). But many articles published have shown that relevant research has emerged from the IS discipline (Lee & Mohajeri 2012). There are two points outlined by Kieser and Leiner; the research and practice gap are more in respect of language and style differences between science and practice (Bakshi & Krishna 2007).

On the basis of lack of discipline, Rosemann and Vessey (2008) state that researchers and practitioners believed that the problem was caused by lack of a proper incentive to academic research and practitioners have lost confidence in academic research (Glass 2009). To measure academic relevance is still problematic and Recker et al. (2009) believe that the relevance problem is the result of researchers not being rewarded accordingly and that achieving rigour and relevance at the same time is impossible. This has resulted in why many academic papers are irrelevant. Research used does not mean it is simple (Tushman et al. 2007). Academics do not aim to resolve short-term problems but to impact on critical thoughts and ideas.

IS researchers are not really working hard to make their research findings relevant to students or practitioners and to other audiences (Fitzgerald 2003). Academics and practitioners are all worried about practitioners' challenges but their research suggests the opposite and operating in a parallel-line. There is no proper engagement between academia and practitioners to close the

gap (McNatt et al. 2010). Each party has its own knowledge, questions, different approaches in answering questions and producing answers with different expectations (McNatt et al. 2010).

Bartunek and Rynes (2010) discovered that 42% of research papers from academics do not talk about significance and implication. Practitioners may understand current challenges in the industry and researchers know theories that can be applied. But the gap foundation cause has not been fully discovered (McNatt et al. 2010).

Practitioners hardly read academic publications; only limited academic knowledge or ideas are used in practice. In making informative decisions, practitioners depend on their own personal knowledge and experience or inquire from their fellow peer, consultant and others to seek for advice (Moody 2000). Many practitioners regard reading IS journals as information overload even if they want to read them. IS journal publications are often seen as an end result (Moody 2000; Bartunek & Rynes 2010).

Fundamentally, the on-going questions in the academic discipline are: how do researchers inform and learn about practitioners' problems? (McKelvey 2006). Another problem is that practitioners and researchers are in a battle for their own personal interest (McKelvey 2006). Research findings are considered irrelevant and less used in practice and the publication-time-cycle is problematic, because practitioners need immediate solutions to solve immediate problems (McKelvey 2006).

Another root cause of this persistent state of research (rigour) and practice (relevance) gap is that researchers are researching to serve themselves and their faculties (Markides 2011). According to Markides (2011) we know how to do it is a problem that has rendered all suggested solutions fruitless, little academic research is demand-driven research, which can help to solve present concerns; most is supply-push (research that goes through transformation before publication).

Palmer et al. (2006) state the disjunction between academics and practitioners has caused the rigour and relevance gap. For Moody and Buist (1999) most of the issues that lead to the relevance problem are caused by the lack of an effective communication path (Cranefield & Young 2007). Vermeulen (2007) states that research conducted with reality at heart makes an impact. In spite of innovations and the sophistication of IT artefacts, practical research relevance is still low. This was the reason for the question and doubt on IS research output by both researchers and practitioners (Huisman & Conradie 2010).

Worrall et al. (2007) debated the kind of research aimed at management and that aimed at researchers, which has conflicting roles in the discipline. Researchers, who believe that

academics are losing relevance, still believe that the loss is rooted in an inability to render impacting research, an inability to transfer its findings to practitioners and a loss in constituency (Palmer et al. 2009). According to Shapiro et al. (2007) this research is due to the lost before or in translation problem. Many are focusing more on the latter but the lost before translation problem is still recognised by many.

The academic body and practitioners are operating on different logic, science and understanding and tackling problems differently from one another (Fincham & Clark 2009). Many have played down the possibility of producing rigorous and relevant research at the same time; they continue to discard relevant research without rigour (Gulati 2007). According to Tushman et al. (2007), many have argued that the approach used by business schools to lecture students is incorrect and to the wrong students and the research can be rigorous but less relevant. Students expressed the view that academic research lacked proper links to ideas and expectations (Mohrman & Lawler III 2010).

The relevant research is still possible, yet the reality remains that researchers have not tackled lack of relevance and non-relevance issues confronting the discipline (Found & Fei 2009). Action research, mode 2 or any other, will not assist to generate coexisting rigorous and relevant research; to be meaningful, researchers should focus on a single research method (such as quantitative, qualitative, experimental or field study research) (Hodgkinson & Rousseau 2009). IS researchers can be regarded as followers and not as leaders. Academic research can be relevant but not communicated to the right audience (Markides 2007). Both have their own values and legitimacy (Markides 2007).

2.8 THE ENGAGING PRACTICE BETWEEN RESEARCHERS AND PRACTITIONERS

Government and other organisational institutions have increased dependency on knowledge produced by academic researchers for them to make policies and to advance productivity (Worrall et al. 2007). The term partnership is being used in the study for it encourages balanced commitment in research projects among practitioners and researchers (Naudé et al. 2009). In the camp of researchers and practitioners they use different terminology to explain the association between them (Naudé et al. 2009).

The level of collaboration and engagement among researchers and practitioners is what brings about the rigour and relevance debate (Kraaijenbrink 2010). Currently, many debate on the rigorous standard and others on relevance in solving confronting challenges facing practitioners

(Kraaijenbrink 2010). Moreover, practitioners lack the expertise of engaging research; this limits the collaborative research effort (Bartunek 2007). Basically, mutual research promotes partnership between academics and practitioners, but it is not the only way both can learn from each other, it is also important to strengthen this relationship and any form of challenge will help to smooth the path (Bartunek 2007).

The best way to establish mutual understanding between academics and practitioners is through engaged scholarship (Van de Ven 2007; Van de Ven & Johnson 2006). The relevance and success is a shared interest between academics and practitioners (Bartunek 2007). Academic approaches to understanding the practical world of practitioners and its knowledge and operations promote engaging relationships (Bartunek 2007).

Engaged scholarship research has its own challenges. Van de Ven (2007) defines engaged scholarship as research where researchers act collaboratively with an audience to solve a particular problem (Van de Ven 2007). Through this definition, four different engaged scholarship types of research were coined: the research has to be basic to inform, explain or anticipate any phenomenon; it involves sharing of power and involvement among the parties; the design and policy formulation and model frame solve real-world issues; and contributing of knowledge through action research application (Mathiassen & Nielsen 2008).

Collaborative research can also be seen as research that impacts on practice, engaging with each other and consulting each other to produce vital knowledge that can add value to practice (Mohrman & Lawler III 2010). Collaborative research is a process between two parties, one from the organisation and the other from the research community and working together to study the practitioner operational world, both should work to add and improve ideas and knowledge in the practitioner's real world of practice (Pasmore et al. 2007).

According to Krishnan, Martin and Noorderhaven (2006) and Bartunek (2007), this scholarship progressively engages academics and practitioners to formulate research problems and questions that reduced the gap (Sandmann & Thornton 2008). Researchers and practitioners have proposed bridging the disjoint on research and practice (Hartmann & Dewulf 2011).

The coming together of all stakeholders, both internal and external, will assist the discipline to establish and structure its identity (Bakshi & Krishna 2007). According to Vermeulen (2007), the debate on the rigour and relevance gap between practitioners and researchers is of a great concern. There is a call for engaged scholarship among both parties (Van de Ven & Johnson

2007). Bartunek (2007) states close engagement is needed, more platform is also needed for researchers and practitioners coming together to discuss their problems and solutions.

In reality, collaborative research always faces connection difficulties (problem); practitioners do not see themselves as co-researchers (Kieser & Leiner 2011). Collaborative research projects have not really generated results that are simultaneously rigorous and relevant and their output reflects the trade-off between rigour and relevance (Kieser & Leiner 2011). McKelvey (2006) proposed engaged scholarship within the academic body of fields and departments. Academic research should be presented in understandable language (Lanamäki et al. 2011).

Researchers and practitioners should consider collaborative research. Different research papers have shown that collaboration will generate relevant and actionable research that will solve problems (Kuechler & Vaishnavi 2011). Engaging and collaborative research are seen as an approach that is fit in closing the existing rigour and relevance gap. Evidence exists that collaboration is the way forward, therefore researchers and practitioners now have to discourse suitable collaborative methods in a given research topic (Kieser & Leiner 2011). In making the bridging process possible, researchers have to inform and involve practitioners on deciding on research problems and also try to let practitioners understand the importance of the prospective research topic (Kieser & Leiner 2011).

The operational processes of practitioners have to be understood by the researcher(s), as this will assist researchers to ask real world questions that can address practitioners' concerns (Kieser & Leiner 2011). But no matter the lost in and before translation problem, collaborative and engaging research can help to bring both parties under one umbrella of knowledge (Kieser & Leiner 2011). Collaboration cannot be fully believed without deep knowledge of what many have said on proposed solutions to conduct research that interests practitioners (Fincham & Clark 2009).

Hodgkinson and Rousseau (2009) indicate that deep collaboration between researchers and practitioners promotes learning on both theory and research methods that will assist producing high rigorous and relevant research. They state that collaboration will not compromise rigour and relevance but difference may exist to a certain level (Fincham & Clark 2009). The parties' interest and understanding improve through collaboration and engagement and will advance practitioners' confident in academic findings (Fincham & Clark 2009).

Below are some other ways in which academics have argued that collaboration could be benefiting and the challenges attached to it. An effort to close the practice gap is for practitioners

to actively participate and deliver in academic conferences (Fitzgerald 2003). The amount of benefits attached to collaboration also attracts challenges (Pasmore et al. 2007). Bringing researchers and practitioners into collaboration requires a research-driven mind-set and win-win conditions for the two parties and society in general (Pasmore et al. 2007).

Tushman and O'Reilly (2007) suggest that on-campus engagement is made to resolve the short-term problem but to present long lasting solutions. The engagement between researchers and practitioners will also assist business schools to discover and estimate the amount of gap that exists among them.

Meanwhile, bridging the gap between research and practice is as vital as co-operation between the two as it will help them to actualise their goals and also in bridging the rigour and relevance gap (Lanamäki et al. 2011). Some researchers argued for a need for engagement and effective trans-discipline interaction with other disciplines and others argued for more internal focus (Mathiassen & Nielsen 2008). This will help to advance knowledge for theory and practice through engagement and co-operation with practitioners (Kieser & Leiner 2011).

In forging ahead, researchers needed to formulate the theories on already existing theory, not just to please other academic body, but to contribute to IS body of knowledge (Gulati 2007; Found & Fei 2009; Colquitt & Zapata-Phelan 2007). Collaborative and engaging research is a way to close relevance and rigour gap (Kieser & Leiner 2007). By definition, collaborative research partners with researchers and practitioners to formulate research goals, questions and objectives.

Many have viewed information flow from academics to practitioners to be in linear format but researchers should acquire knowledge from practitioners as to contribute to the world of practice (Mohrman & Lawler III 2010). Importantly, knowledge is driven through interaction among parties, many advised for an improvement of relevance, they state that for a continuous close collaboration between the parties. Delivering relevant research, researchers have to see themselves as belonging in the camp of practitioners (Mohrman & Lawler III 2010).

Van de Ven and Johnson (2006) advised for engaging scholarship, which is a collaboration that occurs between researchers and practitioners to conduct a research. Scholarship research produces ideas that restructures and modifies a discipline with impacting knowledge (Tushman et al. 2007; Tushman & O'Reilly 2007). The benefit of collaborative research is still numerous in providing informing knowledge to both researchers and practitioners, more benefits of collaborative research is that practitioners will know research better vice versa and researchers will understand opportunities that lie in the discipline (Hodgkinson & Rousseau 2009).

The collaboration with researchers and practitioners should be to produce relevant impacting research without jeopardizing rigour (Found & Fei 2009). The collaboration and connection between practitioners and researchers will be beneficial if the parties establish a common ground, both should consider involving research that is supported by collaborative research (Kieser & Leiner 2011).

Academic research can be contributory if its findings are directed to the right audience in understandable manner and tutored on researchers' theories and concept used by practitioners (Kieser & Leiner 2011). According to Mohrman and Lawler III (2010) important knowledge and ideas can simply be developed through collaboration between researchers and practitioners. Kieser and Leiner (2009) maintained that collaborative research will generate findings that are rigorous and relevant in practice.

The way forward, the restructuring, enhancement, formulation of new kind of journal publication and distribution, conferences, network of interaction and new incentive will empower relevance (Rynes 2007; Kraaijenbrink 2010). Researchers should seek an avenue to bridge rigour and relevant gap through collaboration as to increase real world impacting research in the field (Gulati 2007). Many argued that collaborating research should be based on pressing needs (Found & Fei 2009). Generated knowledge from collaborative research should be actionable and implementable in action and influence operation and claim relevance in practice (Pasmore et al. 2007).

According to Kraaijenbrink (2010), there should be more engagement on research outcome distributions. The relevance and benefits attached to a research should be taken seriously (Bartunek 2007) and a better way to translate academic is needed to be discovered. Improving engagement and collaboration in conducting and distribution of our research could assist in closing the rigour and relevance gap (Kraaijenbrink 2010). Reverberation should be encouraged in publication and on paper submission (Desouza et al. 2006). This relevant research can only be meaningful to practitioners when it is distributed through reachable channel (Rosemann & Vessey 2008).

Doubters strongly believe that collaborative research approach has nothing much to offer in today's changing world. Contrarily to that, Pasmore et al. (2007) argued that present situations in practitioners can be resolved using collaborative approach because collaboration gives more understanding of any difficult industry. To better use collaborative research will be through continued submission (Pasmore et al. 2007). Collaborative and engaging researches have received a number of criticisms. According to Straub and Ang (2011), the existence of

collaboration between researchers and practitioners has produced academic rigour and practical relevance. This involves compound studying and acquiring of knowledge progressively (Pasmore et al. 2007).

Aguinis and Cascio (2008) argued that researchers should approach practitioners when formulating questions and explaining the consequences. The following are suggestions on how to advance communication between researchers and practitioners. (1) Researchers should mutually corporate with practitioners (Deadrick & Gibson 2007). (2) Researchers and practitioners should engage in a conference to discuss the gap (Aguinis & Cascio 2008). (3) Having common website where academic and practitioners can have access to, through this website, academics can understand challenges in the practitioner's world (Aguinis & Cascio 2008). (4) Developing common accord that will encourage common knowledge that both can control and lecturing practitioners based on research findings (Deadrick & Gibson 2007; Dipboye 2007).

The smooth information flow and engagement in the field of medicine should be used as a benchmark to improve disconnected knowledge transfer between academic and practitioners (Moody 2000). So, IS research should follow the same step to improve its research relevance and bridge the disconnection between researches and practice (Raghupathi & Friedman 2009). Having a good information flow should be considered.

2.9 CONTRIBUTION TO THE BODY OF KNOWLEDGE

An information system (IS) is a discipline that focuses on development, increasing, executing, sustaining, applying and handling all IS resources. Nevertheless, it is an applied and not pure discipline and is more concerned with the execution of information technology (IT) in use, than technology as itself (Moody 2000). IS can achieve its mandate as an applied discipline through theoretical and methodological rigour, usefulness in practice and be evaluated in societal contribution. IS research aims to address practitioner's challenges and issues, as researchers and practitioners are encouraged to work closely with each other in practice and in knowledge distribution (Moody 2000).

The non-academic think that academic research is not informative in a real-world setting and to their needs, but researchers are mandated to research on informative knowledge that has practical relevance (Recker et al. 2009). Academic research establishes its identity through contributions to the field, adding an advancement of knowledge and ideas and solving practitioner's problems (Bakshi & Krishna 2007). The contribution of IS research findings has continued and will continue to showcase in all endeavour, importantly, during recovering of tsunami victims (Desouza et al. 2006). IS research impact is not only seen in a number of article citations but

addressing the needs of its audiences. For academic research findings to be legitimate, it must be relevant, interesting and used by practitioners (Fincham & Clark 2009).

Numerous contributions have been made through academic research in the practical world; this is seen in the development of the accounting practice from nothing that economic operations are carried out (Pasmore et al. 2007). Academic research has the mandate to contribute to improve and add knowledge on pressing issues around practitioners (Pasmore et al. 2007). Decades now, the aim of conducting research has been to develop better knowledge about our world and the universe at large (Pasmore et al. 2007).

To define contributing, significant or relevant IS research, is a research that goes beyond the boundary of academics and being important to practitioners and on the entire society (Desouza et al. 2006). The contribution shown in computer science, engineering and in many other applied disciplines are more than it is in IS discipline, IS researchers should learn more from this discipline. IS research should focus more on idea production than accounting on wealth (Desouza et al. 2006).

Importantly, the more impacting knowledge produced by IS researchers, the greater the funding available for them. This process involves collaborative research which contributes toward advanced application of new ideas in solving difficult problems and enlightening collective knowledge and ideas (Pasmore et al. 2007). The contribution to IS practitioners and effect on society at large can be possible when researchers conduct relevant research to the needs of practice and distributed in a format prospective audiences can use (Moody 2000). Contributing research can only be real, produce and report in a way that practitioners can understand (Recker et al. 2009).

The best way to provide support and contribution is through relevance. Relevant research should press on needs of practitioners. For this to be possible, researchers should select a right method that impact positively (Recker et al. 2009). Relevant research makes contribution, it's vital for research to be contributory to the practitioner's world (Mårtensson & Mårtensson, 2007). Contributory research is a mandate, so relevant, original and generalisable is what makes a research important (Mårtensson & Mårtensson 2007).

Practitioners are expecting and eager to read and access structured research knowledge that can help them solve real world problems and challenges, concerns and understand more on issues around them (Straub & Ang 2008; Kieser & Leiner 2007; Worrall et al. 2007). The contribution from academic research can be directly or indirectly focused on audience through this means;

academic-practitioners publications, textbook, degree course and programme, conferences, seminar and short courses, continuing course, participated research and newspaper publication and many more (Straub & Ang 2008).

Business and professional schools are all expected to output research that can be practical; research that adds value to audience and conducted collaboratively, this is a kind of research that receives good funding (Mohrman & Lawler III 2010). An example of contributing research in practice is rigorous finance research that has direct application in practice and a representative portion of it is applied by the staff of financial institutions and brokerage houses. The present debate can aid researchers and practitioners to close rigour and relevance separation. The objective of research will be to produce knowledge in a collaborative way for a practical solution, if not a research has lost its mandate (Hodgkinson & Rousseau 2009).

It's impossible to believe that academic research has little effect on practitioners (Worrall et al. 2007). Academics are more concerned to produce ideas that practitioners will effectively use to serve their interest (Mohrman & Lawler III 2010). According to Van de Ven and Johnson (2006), different suggestions have been presented on how to make academic research impacting and contributing. For a research to be important and interesting to practitioners, it must be imparting, helping to solve and resolve pressing challenging issues facing practitioners (Mohrman & Lawler III 2010).

Suggestion emerges that each party needed to spend more time together as to select and draft research questions. This can be the only way academic research will be relevant and compelling (Mohrman & Lawler III 2010). The relevance of research findings and interesting topic propelled practitioners to be activated and the benefit can be seen (Hinkin et al. 2007).

The body of academics may balance collaboration by understanding the challenges and problems facing practitioners (Bartunek 2007). Relevant research can be achieved through realising of our constituency by researchers (Palmer et al. 2009). The constituency can be advanced when theory-evident researches are conducted. Research knowledge is produced by academia and lectured to students (McKelvey 2006). Research knowledge is formulated to be used by practitioners, contribute for future use and applied in a practical operation (Lanamäki et al. 2011)

In 2010 a biennial event on Kristiansand International Workshop on Information Systems Research (KIWISR) was hosted in the University of Agder (UiA) Kristiansand, Norway. The aim was on bridging the cognition gap between research and practice through a mutual informing system. The mutual informing system can be seen as a bridging gap mechanism that

practitioners and researchers engage in sharing ideas and exchange of resources and collaborated with each other to create and formulate knowledge or cognition to solve a problem and add knowledge to the existing one (Lanamäki et al. 2011). Researcher's produces knowledge that practitioners use and practitioners provide data that academic researchers refine into knowledge (Lanamäki et al. 2011) this is a knowledge recycled in a research.

Practitioners want and depend on evident research to resolve a given situation and academic researchers work hard to discover new solution that can be applied by them. Practically, medical discipline has managed to conduct research knowledge that impacts and is implemented by practitioners (Worrall et al. 2007). For the benefit and contribution from academic research to be seen and used by practitioners, a quick restructuring of academic schools, learning and knowledge of transfer and collaborative research have to be encouraged between research researchers and practitioners. The academic research will be more endangered if it fails to engage with practitioners (Worrall et al. 2007).

In reality, researchers needed to focus more on societal needs (Desouza et al. 2006). The universal remedy of lack of rigour and relevance is through increment of ideas and generation of new knowledge and meeting both rigour and relevance standard (Whitworth 2007). Sambamurthy (2010) proposed for the restructuring and shaping of IS discipline, IT and their management operations as the only way to make IS research contributing. According to Straub and Ang (2008), researchers should restructure their research to create knowledge, this can boost the relevance of IS research.

According to Kieser and Leiner (2007), academic journals should relate their finding to real world issues. To foster contribution of academic research, Found and Fei suggested the following steps that need to be regarded; (1) allowing their research emphasis begin through their collaboration; (2) focusing research problem on the difficult facing practitioners and (3) seeing academic research as icon across different audience, people and place (Found & Fei 2009). Practitioners are eager to see and read contributing research that can be applied in their immediate problem (Lanamäki et al. 2011).

Academic research that satisfies the level of practical relevance will certainly make a difference in practice, showing that collaborative research will benefit all audience (Pasmore et al. 2007). Publishing in a top journal does not make research contributing but circulating to audience through a proper channel can increase research relevance as well (Markides 2011). Analysing from different research publications, Markides (2011) still argued that we deliver less than what practitioners expected from us.

Based on his argument, for academic research to be meaningful to practitioners, they have to assemble their research car. Contributing research is more than just collection of different articles (Markides 2011). But, the present technological and societal situations should be a proof of IS research relevance (Max-Erik & David 2011). Contributions can be seen when practitioners learn from academic research findings leading to improving organisational routine (Pasmore et al. 2007).

Better collaboration improved link between academic and practice and helped in advancing relevance (Pasmore et al. 2007). Only important research can bridge the existing gap, this can be achieved by recognising that the gap exists, engaging with each other will contribute and at the same time help to bridge the gap (McNatt et al. 2010).

2.10 RESEARCH QUESTION

The primary research question is,

1. What is a rigorous and relevant research that meets practitioners' expectations?

The secondary research questions are:

2. Does IS research output address the concern of IS practitioners?
3. Is rigour versus relevance debate necessary in IS research?
4. What can be done to improve upon the understanding of rigour-relevance in IS research?

2.11 CONCLUSION

In conclusion, the rigour and relevance debate on academic or IS research, has attracted a lot of attention from wider academic disciplines. Numerous articles have been written in trying to close the existing gap in the discipline but all these efforts have been less fruitful in practice. This chapter has proved that the debate is still on-going and the gap has been labelled as mystery by many academic researchers to no avail.

This debate needs pragmatic action for it to be resolved completely, if not, all the proposed suggestions and prospective efforts will continue to be a waste in future and the discipline will continue to be in doubt by others. This chapter has added value to the extent that the debate has gone so far and different efforts put together by different researchers. The next chapter covers research methodology; the chapter discusses the method that used was for this research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter dealt with the literature reviewed on this study. This chapter has defined the research methodology used on this study and the procedures or steps taken to conduct this study connecting the research question to the objectives, data collection, analysis, interpretation and recommendations.

The research questions are: 1) What is a rigorous and relevant research that meets practitioners' expectations? 2) Does IS research output address the concerns of IS practitioners? 3) Is rigour versus relevance debate necessary in IS research? 4) What can be done to improve the understanding of rigour-relevance in IS research?

This chapter presents the two main types of research but with more emphasis on quantitative research type and methodology used in the study. This section presents the actual research type used on this study and data collection method. The section also deals with the nature of data collected to answer the research questions and the questionnaires as well. The ethical consideration shows the importance of ethical issues in conducting this study and conclusion.

3.2 RESEARCH TYPES

3.2.1 Qualitative and Quantitative Research

The two main types of research are quantitative and qualitative research. Quantitative research is an evidence or data based research which is numerical in nature to generate data (Oates 2008). Quantitative research is mainly used in a positivist research environment. Data collected through quantitative research is summarised into conclusion. There are different ways or techniques used in analysing quantitative data, shown in tables or graphs (Oates 2008).

Numerically, data collection is always discarded from many researchers because it involves mathematics (Oates 2008). Presently, software's packages like Minitab, Statistical Package for the Social Sciences (SPSS) and many more are available that can help to calculate the mathematical aspect of quantitative data, finally SPSS was used.

According to Denscombe (2003), the usage of quantitative data has gained ground in academic research because it uses numbers to represent the outcome in the form of tables and graphs which in turn are objective in nature. According to Henning, Rensburg and Smit (2004), the quantitative paradigm works with pre-prepared administered questionnaires that guide and control respondents with a list of questionnaires. Participants are controlled by the researcher with instruction on the questionnaire. Respondents are not free to direct their own will but are guided by the predetermined instructions as designed (Henning et al. 2004). Quantitative technique is suitable in a small study. Quantitative research is used in this study because it is rich in characteristics that help to achieve the study objectives. In summation, quantitative research has the ability to demonstrate or contradict a theory and is focused to deliver answer to a given question (Greener 2011).

Table 3.1: Difference between quantitative and qualitative research. Adapted from Oates (2008); Bryman and Bell (2011).

Quantitative research	**Qualitative research**
Deduction: theory testing and comparing theory against research.	Inductive: theory testing in total
Based on objectivism	Constructionism
Positivism	Interpretivism
Based on counting	To be done if the need be.
Numeric	Non-numeric

3.2.2 Research Method (s) used in this Dissertation

Quantitative research is a predetermined or predefined scenario which is standardised (Durrheim & Blanche 1999). Quantitative data are numeric in nature based on numbers and evidence. It is suitable in experiments, surveys and in questionnaires, which are used in positivist research and can also be used in interpretive and critical research (Oates 2008). Quantitative research works in descriptive studies. This study deployed quantitative research methodology because the study was focused to understanding whether the expectations and needs of practitioners are met through rigorous and relevant research and also to understand whether academic research output addresses practitioner's issues and concerns.

3.2.3 Data is required: Primary and Secondary data

Primary data represent information gathered from participants through questionnaires and in this study, the researcher is mandated to collect primary data (Bhattacherjee 2012). Secondary data represent information gathered from others in the form of literature study, for example, statistical report from government departments and others alike (Bhattacherjee 2012). The source of secondary data can be from articles, journals, books and many more. This study derives information both from primary and secondary data. Questionnaires constitute the source of primary data and secondary data emerged from literature studies and from other relevant materials available.

3.3 DATA COLLECTION METHOD

3.3.1 Methods for collecting primary data

Several methods can be used to collect primary data. The questionnaire is commonly used as a quantitative method to collect quantifiable data (Oates 2008). Questionnaires are a set of pre-arranged order of questions to address phenomenon and can be answered (self-administered) without the presence of an/a interviewer/researcher (Oates 2008; Bless, Higson-Smith & Kagee 2006). It can be distributed and gathered when participants have filled it in. It can also be distributed by emailing copies to participants with participants sending them back after completion. This is known as mail questionnaire (Bless et al. 2006). Basically, questionnaires can have two types of questions. Open and closed questions; in open questions participants are required to give (write) their own inputs/answers and closed questions are pre-designed standardised questions where participants are required to choose the possible answers from a given list of answers by the interviewer (Greener 2011; Oates 2008). The latter was chosen for this study and distributed to participants who were selected to complete the questions.

Table 3.2: Questionnaire Layout.

Part 1	Ask demographic questions of the participants; age, gender to academic historical questions.
Part 2	Ask questions on practitioner knowledge on rigorous and relevance research that meets the practitioner's needs.
Part 3	Ask questions on the kind of IS research that participants regard as impacting in the industry.
Part 4	Ask questions on whether the going rigour/relevance debate is necessary.

Part 5	Ask questions on the things to be done to improve academic research relevance in the industry.

3.3.2 Sampling Method

Sampling strategy is an everyday exercise in life while making decisions (Higson-Smith & Kagee 2006). It's a way of selecting research participants, who are desirable. A research cannot be conducted on everyone in a particular area (Henning et al. 2004). It involves portioning-off participants in the entire population with observations having to be made (Durrheim & Blanche 1999). A population is defined as the entire possible focused elements in a study (Gray 2009). Random sampling is a smaller percentage or subgroup in the entire population in a study (Greener 2011; Higson-Smith & Kagee 2006). Sample selection should be done carefully so as to build confidence in the findings (Henning et al. 2004).

This study's population comes from academic lecturers across South African tertiary institutions but the sample focuses only on the departments of Information Systems, Computer Science, Management of Information Systems and Informatics lecturers. The larger population only focused on South African Institute for Computer Scientists and Information Technologists (SAICSIT 2012) conference participant and the North-West University (Mafikeng Campus) academics, only academia who have publicised or have attended conference in the disciplines above were considered. The population size is estimated at 90 lecturers/academics. According to Krejcie and Morgan's theory, 73 questionnaires would be expected (Krejcie & Morgan 1970).

3.3.3 Types of variables

There are different forms of data used in quantitative research: some authors call them variables and others data. According to Gray (2009), variables are elements that make a difference in values. According to Higson-Smith & Kagee (2006), variables are research entities that differ from one observation to another, within a sample population, their age group and understanding of participants varies. These variations also apply to this study.

Nominal variables: These variables show categories that have no numeric values. Examples of questions on these categories are gender (male and female) and participants have to select between both (Oates 2008). According to Denscombe (2003), nominal data or variables count and allocate numbers in sections in a questionnaire and make comparison with other sections like black/white/Indian/coloured.

Ordinal variable: In this variable, numbers are assigned to questions in the questionnaire scales (Oates 2008). Rather than nominal variables that allocate numeric values in the question

categories, it can have a distinction in percentage. For example, students' marks can be arranged according to their performance. It also counts and places numbers to values like 1 is for male and 2 for female (Denscombe 2003).

Ratio variable: It can place participants' categories from 0 ranges. Like someone's academic work experience can range or start from 0.

Discrete variable: Questionnaires are categorised as whole numbers. For example, participant's age can be ranged as whole number and one's age cannot be 30.5 years. Discrete variable believed that certain data must be presented as a whole number without remainder, looking at age cannot have remainder (Denscombe 2003).

3.4 CHI-SQUARE TESTING

According to Remenyi, Onofrei and English (2011), x2 test is a commonly used approach in hypothesis testing in categories variable, the test of x2 is also called test of goodness of fit; it tests for homogeneity, the relation, the dependence or independence of variable in a data. The test sometimes operates in a one-tailed, a positively skewed in a degree of freedom, meaning that the x2 is always positive when the degree of freedom is larger than 1 (Remenyi et al. 2011). Then, null hypothesis (H_0) tests for true or zero statement or no change in originality, meaning it will test the originality of rigour or relevance in IS research; the alternative hypothesis (H_1) tests for false, when the hypothesis is true, it tests false on the originality of rigour and relevance in IS research.

The study Chi-square focuses on univariate 2-way (tailed) frequency table on alpha level at (0.025) significant level but according to Peck, Olsen and Devore (2012), univariate is usually concluded on one-way frequency table, 1-sided alpha level of significance of (0.05) at 5%, the 2-sided (way) is represented as (0.05/2 = 0.025), meaning 0.05 is divided by 2 = 0.025. The general aim of this Chi-square is to hypothesise the objectives in (4.5) and on the immediate null hypothesis and alternative test. The hypothesis testing is later carried out in chapter 4 (section 4.5 Chi-square analysis).

3.5 ETHICAL CONSIDERATIONS PERTAINING TO THE STUDY

In a research, there is always a distinction between researcher and participants, sometimes the right and privilege of participants are being dishonoured intentionally and unintentionally. However, some classified participant data may not be seen as classified and important by the researcher (Higson-Smith & Kagee 2006). The need for ethical consideration in a research is the result of individuals or group participants' right in research and their protection (Higson-Smith &

Kagee 2006). Presently, ethical considerations are paid attention to in conducting the research, because what is not ethical in the past may be ethical these days.

This study was ethically approved by the ethics committee of North-West University (NWU) and recommendation were made for an improvement, where necessary, to ensure that questions were ethically conducted to avoid abuse of participant's rights and privileges. In case this research has been done before by others, to avoid plagiarism, all authors' materials used were be acknowledged where they have been quoted. A written letter accompanied the questionnaires for permission to conduct the study. At last, the ethics committee approved the questionnaires of the study.

3.6 CONCLUSION

This chapter demonstrates the methodology used in the study. It shows the research strategies, research types, sampling, population, data collection methods and techniques. It further illustrates how these methods and techniques have been applied and presented and the justification of each step. This chapter has shown a clear road map for how this study has been carried out. This chapter proceeds over to chapter four that deals with: data analysis, interpretation and research findings and also covers the extraction of information or converting collected data into valuable information.

CHAPTER FOUR

DATA ANALYSIS

4.1 INTRODUCTION

The chapter and the discussions below show the analysed results of the questionnaires and collected data on the empirical investigation of rigour versus relevance in Information Systems (IS) research. The chapter summaries respondents' questions and answers. The focus is on the highest figures or percentages.

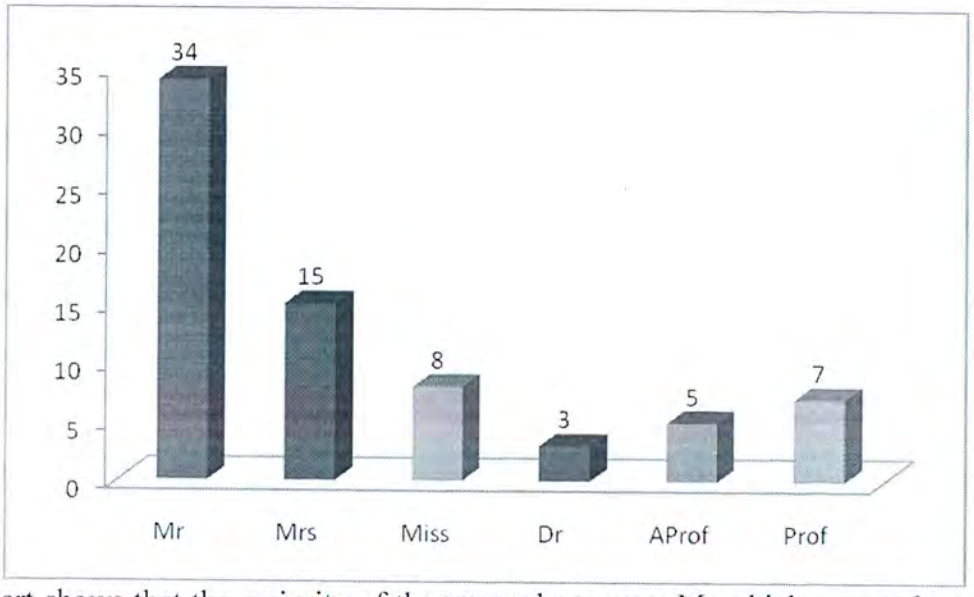
In making the analysis possible, the SPSS statistic software was used. The data analysis, recommendations and conclusions were based on the participants' responses to the questionnaires. Bar charts and pie charts were used to show the figures and percentages of the respondents. The main focus of the questionnaire was to collect enough data that was converted into meaningful information in order to understand the stand point of participants in the on-going rigour and relevance debate. Out of 90 questionnaires distributed, 72 were returned. This chapter starts with the rate of return, the analysis of variables and the correlation, Chi-square and conclusion.

4.2 RATE OF RETURN

This study used a population size of 90 respondents which targets academics in Computer Science, Information Systems, Informatics, Management of Information Systems and Information and Communication Technology (ICT) at the South African Institute for Computer Scientists and Information Technologists (SAICSIT 2012) conference participant and the North-West University (Mafikeng Campus) academics in South Africa. Only 72 questionnaires were returned and analysed. The student tried many times to meet the requirement for the sample. All names were allocated a number and numbers were drawn. If somebody was not available the next number was drawn and the person used (Krejcie & Morgan 1970). The analysed results are shown from the next page.

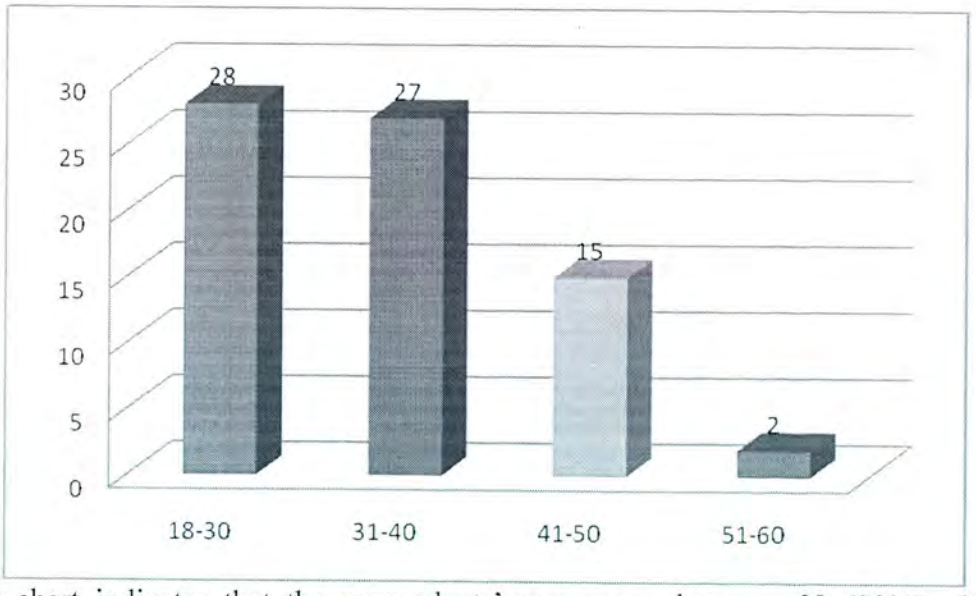
4.3 ANALYSIS OF VARIABLES

Figure 4.1: Status group



The bar chart shows that the majority of the respondents were Mr which ranges from 34 (47%). This illustrates that most of the participants are still publishing to be promoted in their independent departments and also to obtain PhD (Dr), associate Professor and to full Professor.

Figure 4.2: Age group



The above chart indicates that the respondents' age ranges between 28 (39%) of the entire participants in this study. This indicates that the majority of the respondents are young researchers with potentials to research more.

Figure 4.3: Gender group

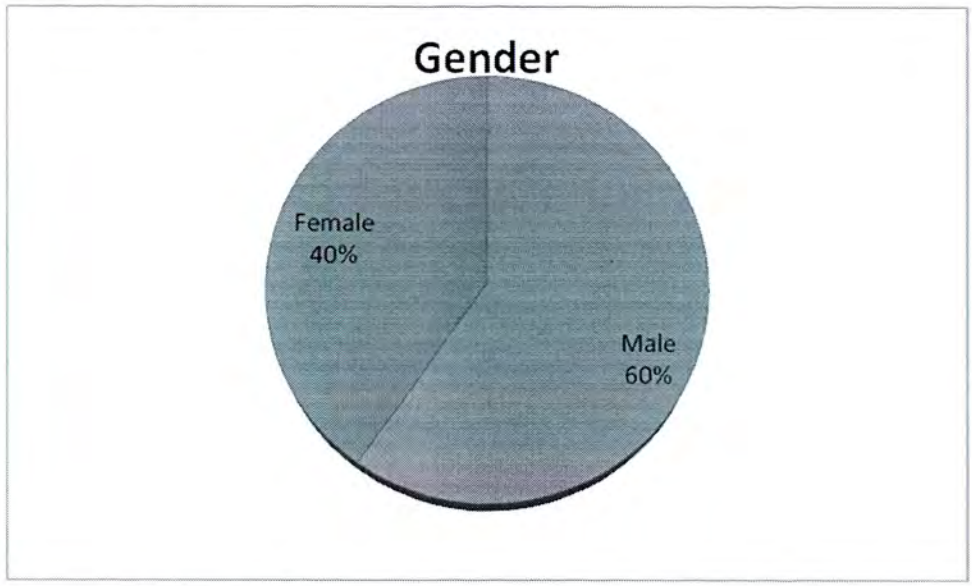
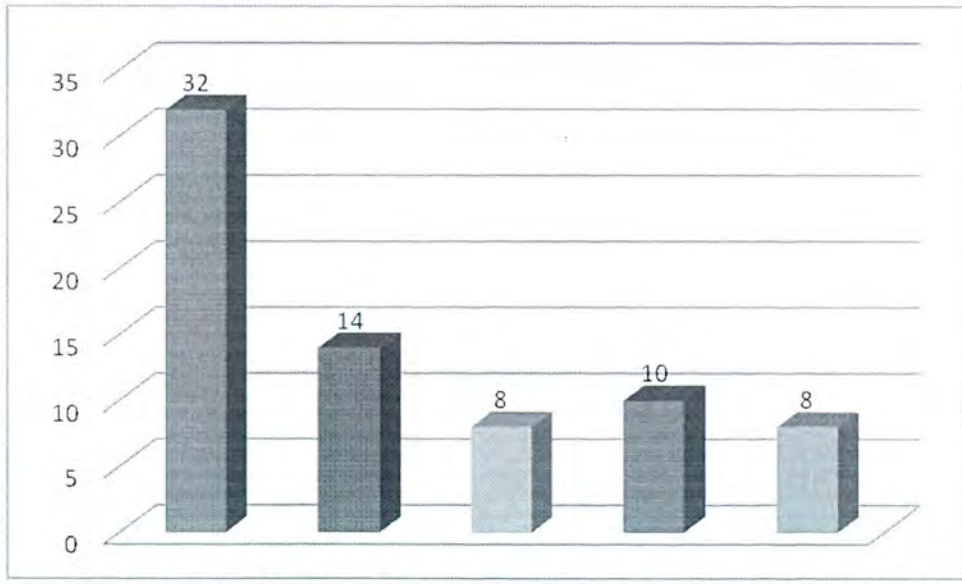


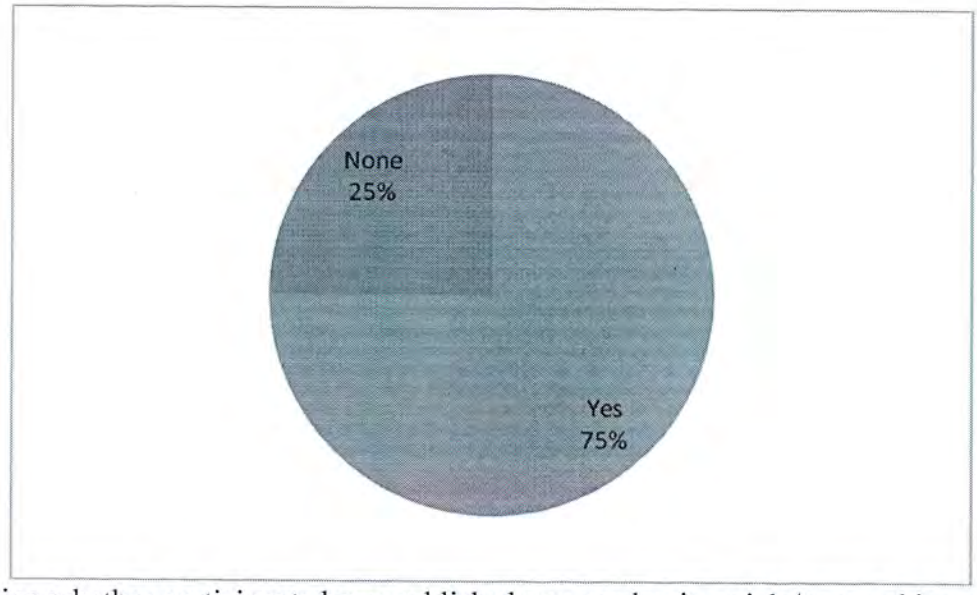
Figure 4.3 above shows that of the overall participants, 60% are male, 40% are female. This indicates that the majority of the participants are male in the discipline.

Figure 4.4: Number of years in academia



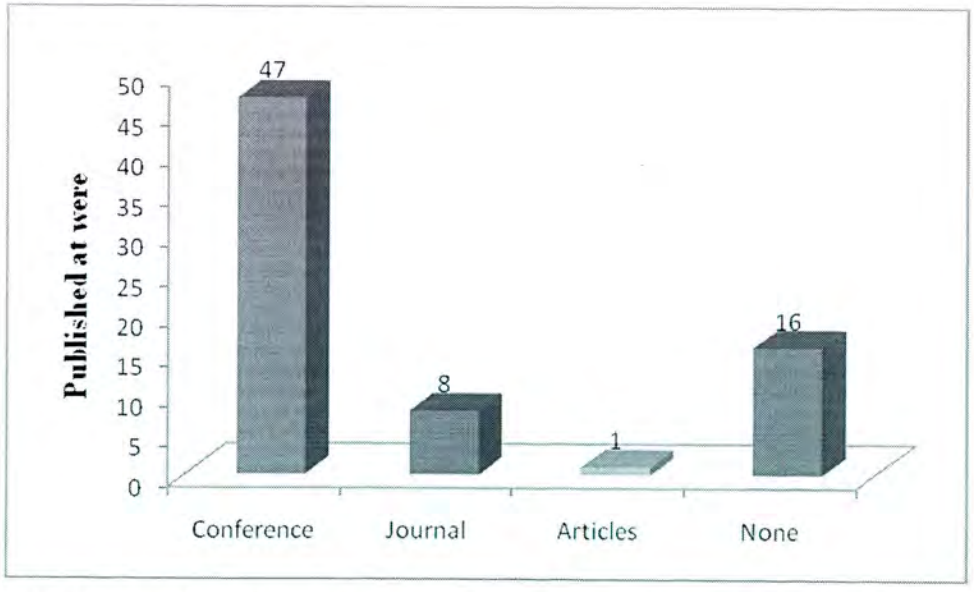
This question aimed to determine how long (years) each participant has been in the academic field, the bar chart above shows that 32 (44%) of the participants have only been in the academic arena between 0 to 5 years. This illustrates that most of the respondents are still young in the discipline.

Figure 4.5: Published



To determine whether participants have published any academic article/paper, this question was asked to determine those people who have published. The above chart shows that 54 (75%) of the overall participants have a publication to their name in the past or present. This indicates that the majority of the participants are publishers. Their publication status (years) and experience can have great impact on the findings and because many that published have an understanding of the survey and with a positive impact.

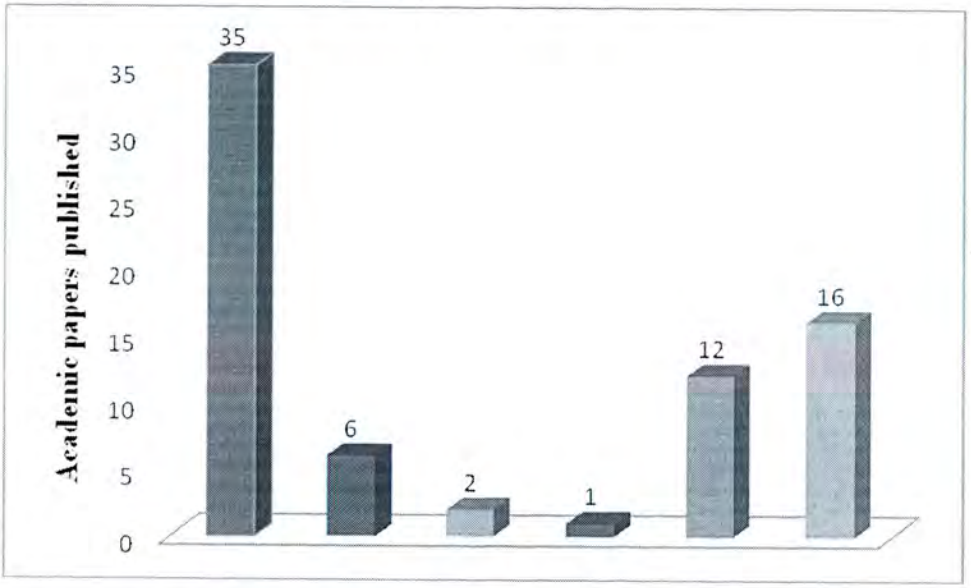
Figure 4.6: The place published



In Figure 4.6, the question aimed to determine where those participants in Figure 4.5 have published. Drawing inference from Figure 4.6 chart above, the chart shows that most (47, 65%) of the participants have published their research paper at conferences. The following (16, 22%) are in connection of those who have not published any paper and the other (8, 3%) difference

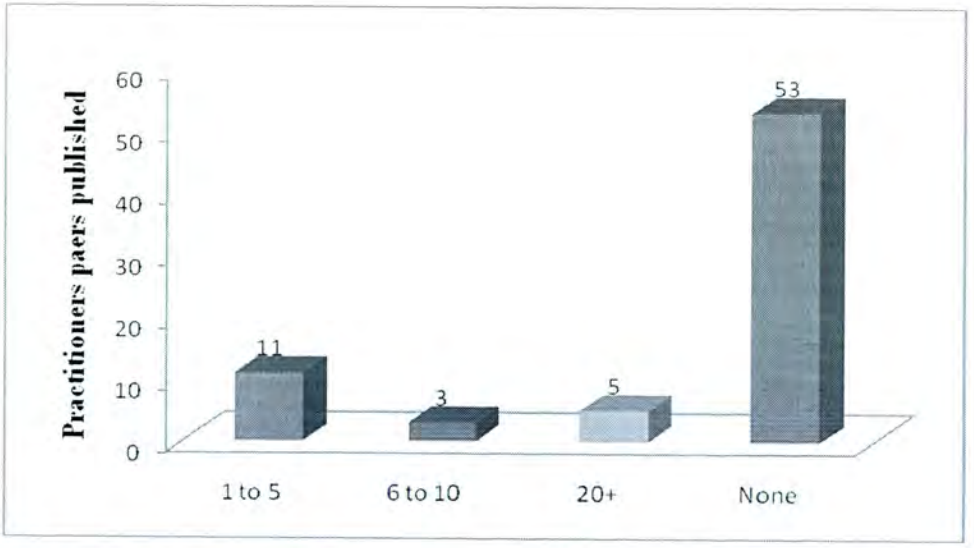
constitute of those who may have attended a conference but have not published either. It shows most of the academia like publishing in a conference.

Figure 4.7: Total number of academic papers published



There are three main categories of research journal (academic journal, practitioner or professional journals and academic-practitioner journals) (Straub & Aug 2008; Lanamäki et al. 2011). This question seeks to understand the number of participants who have focused their research journal paper(s) to academia. From the chart above, only 35 (49%) of the participants have published between 1 to 5 journal papers aimed on academia. The chart indicates that academias are publishing without having a specific group of readers in mind and they have published for self-gratification.

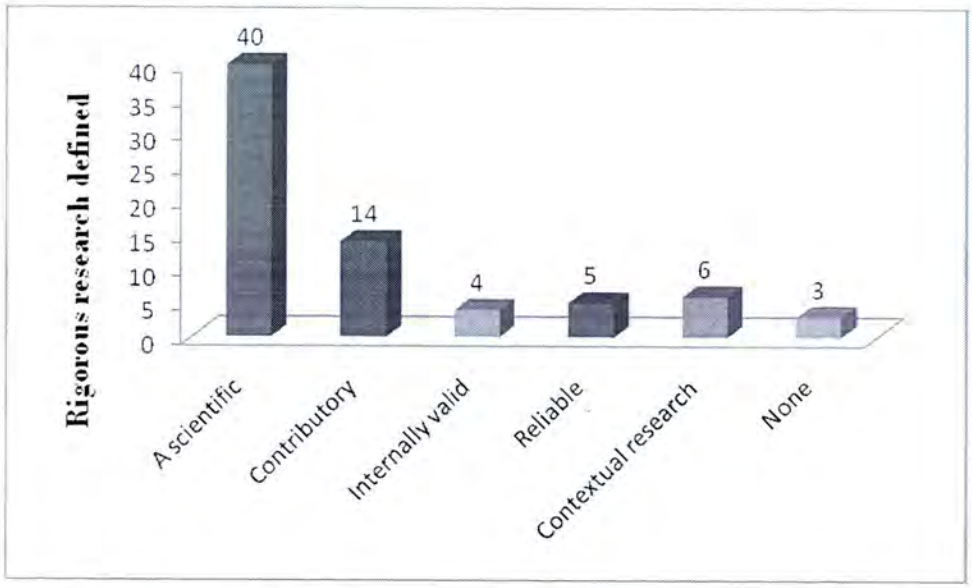
Figure 4.8: Total number of practitioners papers published



According to Lanamäki et al. (2011), relevant research is not published in academic journal but in practitioner's journals. Of the three categories of journal papers, one of the categories aims on

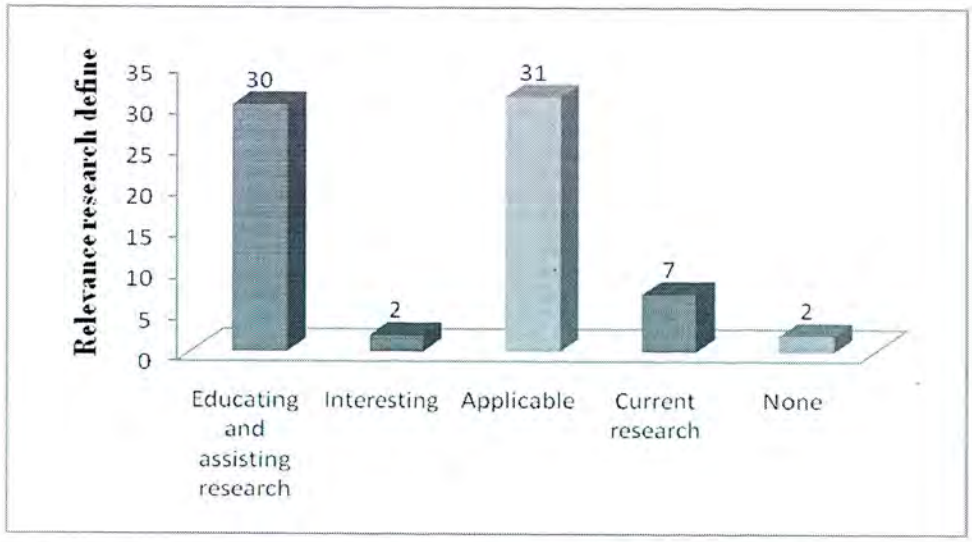
practitioners specifically. The chart above indicates that 53 (74%) of the entire participants have not published any journal paper that focused specifically on practitioners. Only 11 (15%) of the participants have published between 1 to 5 journal papers. This indicates that practitioners' journals have been ignored in the discipline. This makes building practitioner interest and drawing practitioner attentions in reading academic research difficult when the statement and argument of Lanamäki et al (2011) are considered. Another indication from the chart is that both are living in a divided world, this division is that researchers never mind or see the need to publish research papers for practitioners in the industry (Van de Ven & Johnson 2006; Shapiro et al. 2007).

Figure 4.9: The definition of rigorous research



Rigorous research has been defined differently by different researchers. For the sake of this study, the above summarised definition of rigorous research was listed for participants to select their suitable choice. The question was meant to help in the study to decide participant understanding of the research topic issue at hand. According to the chart, 40 (56%) of the participants chose rigorous research as a scientific research in nature. A scientific research, according to Huisman and Conradie (2010), distinguishes between impacting and less impacting research in the industry. It's also a research that passes through strict reviewing progress during panel of review. The response shows that practitioners highly value scientific piece of research for it promotes good research standard (Huisman & Conradie 2010). Respondents recognise the importance of a scientific in a research.

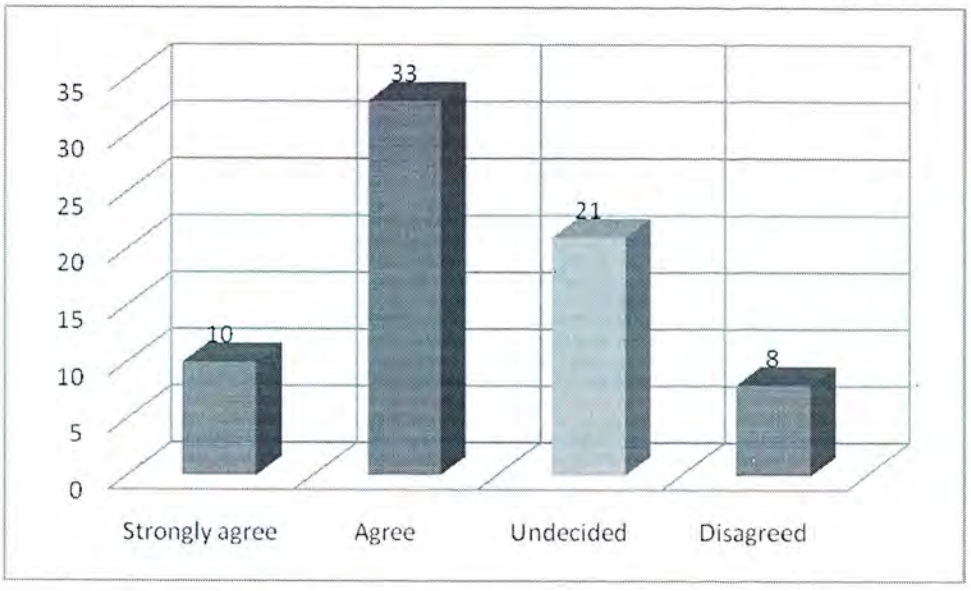
Figure 4.10: The definition of relevant research



Recker et al. (2009) defined relevant research as a research that educates and assists practitioners to solve their problems and challenges. According to Hodgkinson and Rousseau (2009), deep collaborative research effort from the researcher produces relevant research. Relevant research can be defined as practical and applicable research (Lanamäki et al. 2011). To determine how participants understand relevant research, based on Figure 4.10 question, 31 (43%) of the participants understood relevant research as an applicable piece of work in practice and 30 (42%) of others understand relevant research as educating and assisting piece of research.

The relation between the two bars above confirmed greatly multiple definitions of relevant research. The finding from the bar chart confirmed the argument of Vermeulen (2007) and Huisman and Conradie (2010) that relevant research should be a research that users and practitioners can apply in practice in decision making at any given time. In delivering relevant research, researchers have to see themselves belonging in the camp of practitioners (Mohrman & Lawler III 2010).

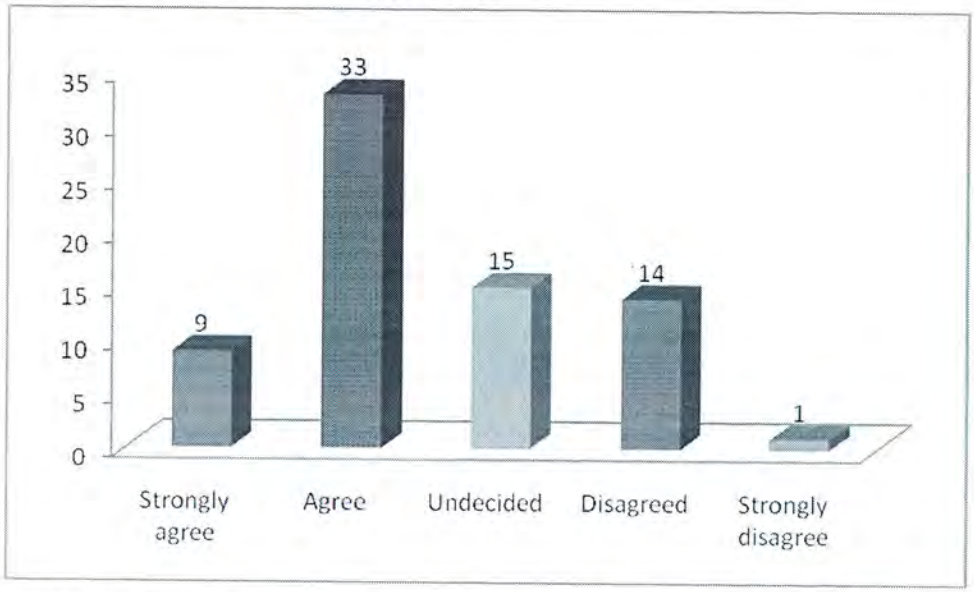
Figure 4.11: The rigour and relevant debate that meets practitioners' expectations



The rigour and relevance debate has been on-going for decades (Straub & Ang 2011). The question in Figure 4.11 aims to understand participants' view on the debate. According to Moody (2000), rigour and relevance debate cannot help to establish the usability of IS research, researchers and practitioners are logically different in needs (Kieser & Leiner 2011; 2007, Shapiro et al. 2007).

Ideally, the rigour and relevance debate works toward encouraging for more research output that will meet (internal and external) needs and expectations of the practitioner. The reverse is the case, from the above chart, 33 (46%) of the respondents still believe that the on-going debate will help in producing rigorous and relevant research that practitioners at all levels will be benefited and be educated. But the benefits of rigour and relevance in a research are yet to be seen (Sambamurthy 2010).

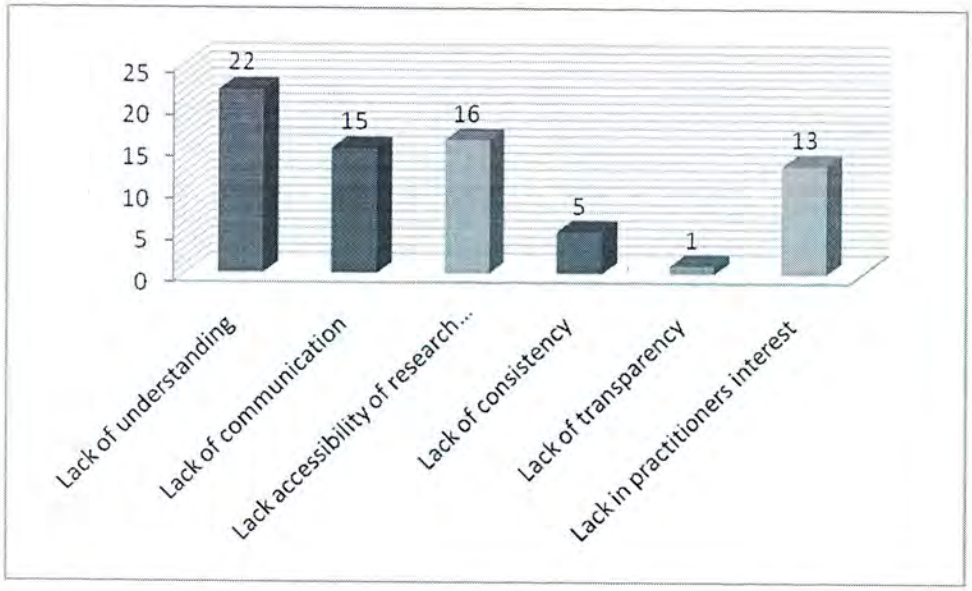
Figure 4.12: Solving challenges facing practitioners.



Practitioners (non-academia) argued that academic research is not informative in a real world setting and to their needs but researchers are mandated to research on informative knowledge that has practical relevance (Recker et al. 2009). IS research is mandated to achieve this mission through its rigorous and relevant research, sustaining legitimacy and identity as a discipline (Raghupathi & Friedman 2009) and the on-going debate if properly managed, will help the mandate to be realisable.

The study aimed to understand whether practitioners are meeting their needs and expectations by reading academic research output. The response from the chart expressed only 33 (46%) of the participants believed that practitioners are getting assistance and help in reading IS research output. This indicates that IS research outputs have some impact in the industry. Respondents strongly confirmed the argued mandate of the few mentioned researchers above that IS discipline and its research have obvious mandates and positive role to play in the industry.

Figure 4.13: The root cause of rigour and relevance debate.



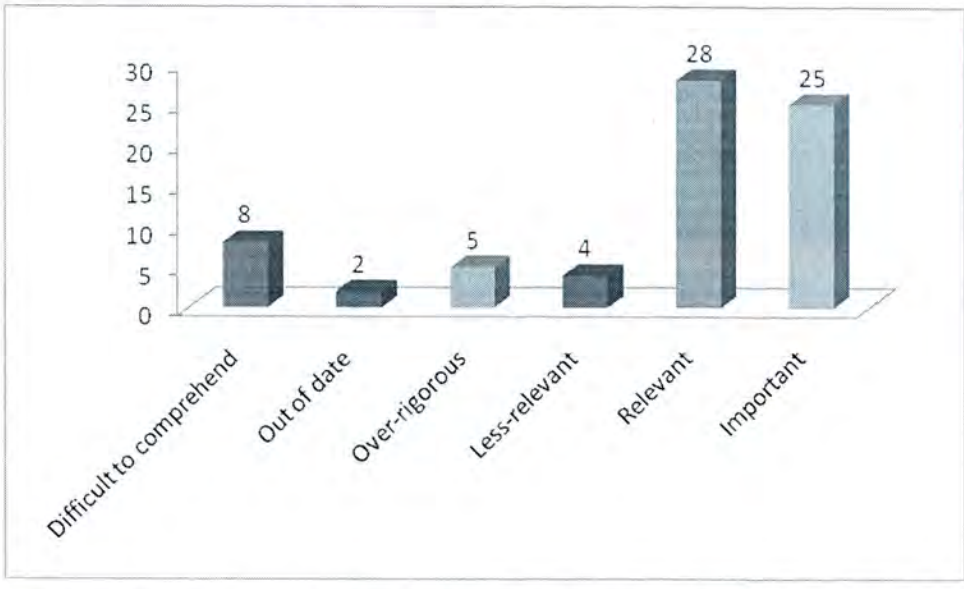
According to Shapiro et al (2007), the persistent gap on IS rigour and relevance is rooted in the translation problem, communications are lost in and before translation. In addition, the root cause of the problem is based on boundary-cross of individuals and interest differences (Bartunek 2007). Van de Ven (2007) states that the root cause (gap) is the result of knowledge distribution problem, research and practice have a different set of knowledge and idea (knowledge) (Sandmann & Thornton 2008). According to Lee and Mohajeri (2012), researchers in academic discipline including IS have two basic problems, lack of practical relevance and gap between academics and practices. Most of rigorous research in IS lays emphasis on theoretical relevance and methodologies but different in practical relevance. Furthermost, IS research topics are selected based on academic ideas and not on practitioner's ideas (Lee & Mohajeri 2012).

As Markides (2011) argued, the link or relationship between research and practice is really separated. However, IS research literatures have appeared irrelevant concurrently (Cranefield & Young 2007). The reason for the cause of irrelevance is still been questioned over many time (Cranefield & Young 2007). The rigour and relevance in IS research has lingered more than expected. To determine why the situation is so, the question in Figure 4.13 tries to understand the participants' view on the cause of the debate.

The presented chart above suggested that only 22 (31%) of the response believed that lack of understanding between researchers and practitioners has caused the debate to linger all these years which brings the summary of the suggested root cause of the problem as mentioned above by the different researchers. This is possible because both parties view their environment

dependently from each other and both are working parallel from each in contrast to other discipline like medical discipline.

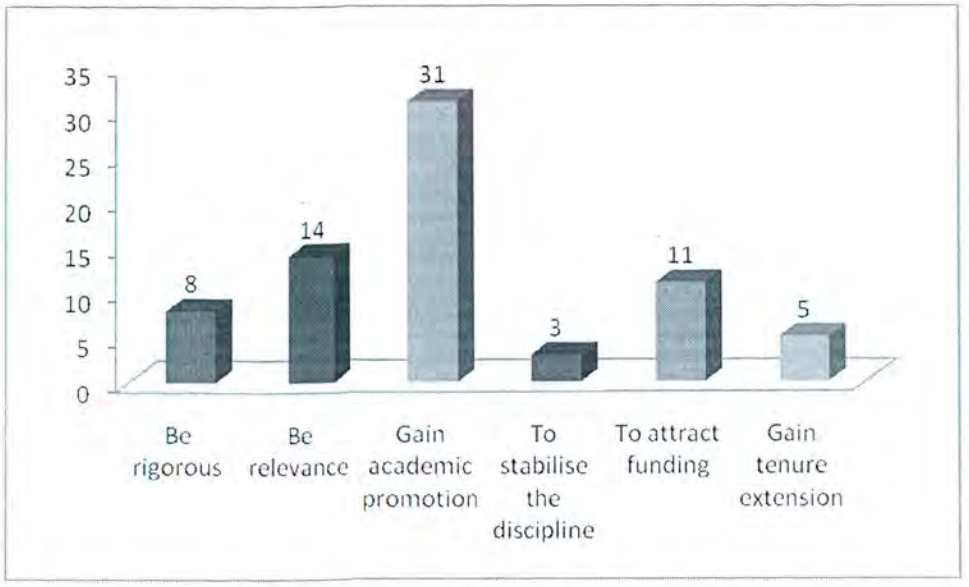
Figure 4.14: The classification of IS/academic research



According to Worrall et al. (2007), IS research lacks relevance. This lack can be traced to lack of incentive and motivation from top academia to conduct relevant research (Rosemann & Vessey 2008). Based on Figure 4.13 arguments, Figure 4.14, the question seeks to determine how participants categorised IS/academic research. Lee and Hubona (2009) argued that researchers are encouraged and mandated to be relevant in their research output.

Looking at the bar chart, only 28 (39%) of the respondents believe that IS/academic is still relevant to its practitioners and followed by 25 (35%) that also believe that IS/academic research is important in the industry. This suggests that the debate has not deviated the attention of practitioners in using the academic of research work. The response contradicts some researchers' view on irrelevance of IS research output, rather participants believe that IS/academic is relevant and important in the industry.

Figure 4.15: The consequences of publish or perish slogan on IS/academic

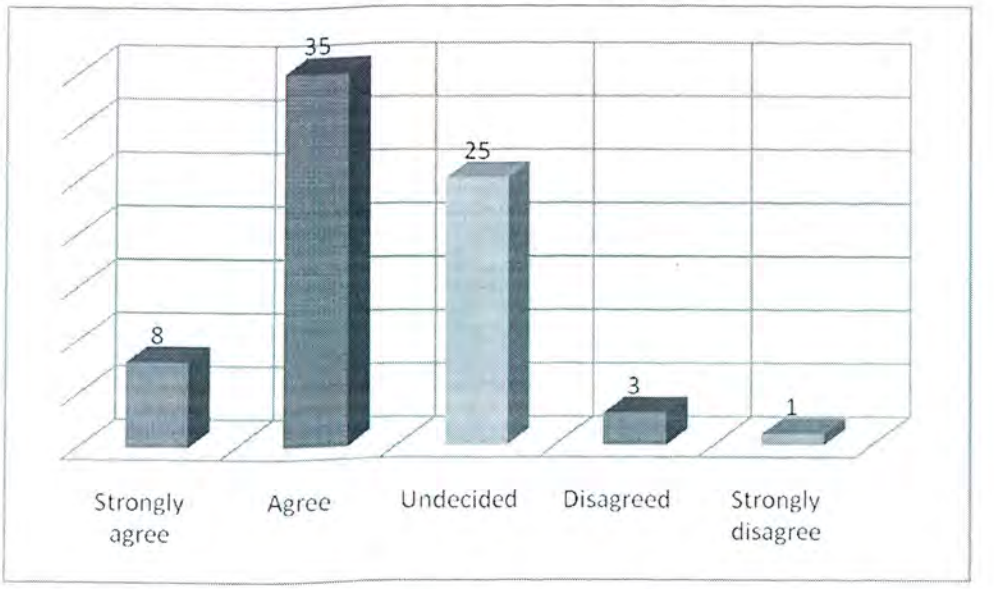


In tracing the root cause of the debate as discussed in Figure 4.13, the root cause of this persistent state of research (rigour) and practice (relevance) gap is that researchers are researching to serve themselves and their faculties (Markides 2011). The above question seeks to address the slogan 'publish or perish' used in academic journal publication which many believe was the hindrance in conducting relevant research in the discipline.

Researchers like Moody (2000) and Young et al. (2006) and many others see the slogan as a great hindrance toward publishing impacting academic research. The indication from the above chart states that merely 31 (43%) believed that researchers across the discipline publish to gain promotion for their self-reward and benefits. The respondents' argument is aligned to some of the above mentioned researchers and many more in the discipline.

According to Kieser and Leiner (2009), the rigour-relevance gap cannot close. The parties are researching on different interests, Hodgkinson and Rousseau (2009) strongly believe that no matter any kind of effort, approach or method deployed, rigour and relevance cannot coexist. This suggest that researchers will continue to research for their self-interest in future. The 'publish or perish' slogan is negatively affecting rigour and relevance of IS research.

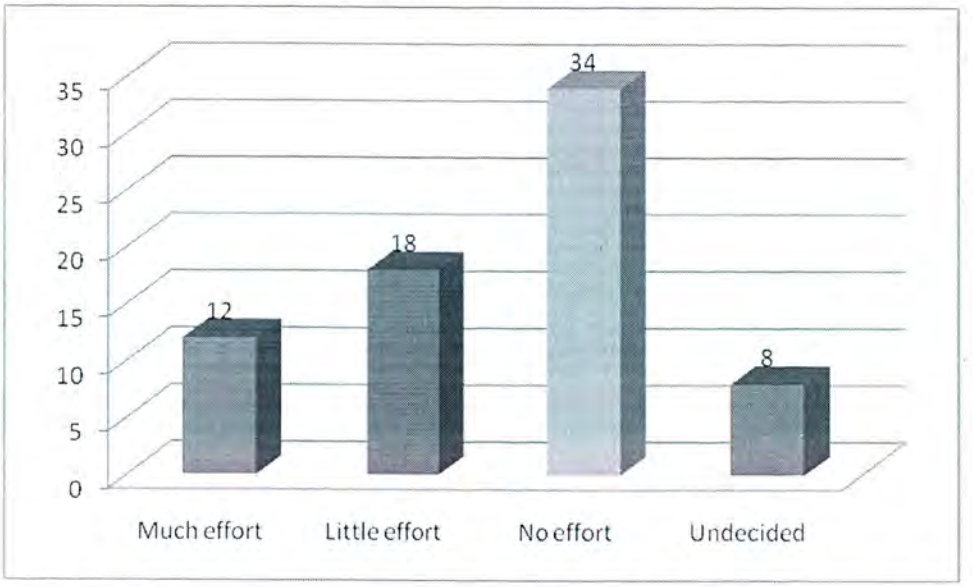
Figure 4.16: The impact/informative nature of IS/academic research



Practitioners (non-academic) argue that IS/academic research is not informative in a real world setting and to their needs but researchers are mandated to research for informative knowledge that has practical relevance (Recker et al. 2009). Academics may not be bothered to conduct research that matters to practitioners; they have different language, framework, methodology, models, rigour and relevant standard but fail to solve problems through rigorous standard (Mohrman & Lawler III 2010).

Many researchers have said a lot regarding the impact of IS/academic research. To balance this, the above question seeks to understand the informative standard of IS research and its effect on the stakeholders. The bar shows that merely 35 (49%) of the respondents agreed that IS research output is informing and impacting enough for the different stakeholders. Informative research makes a difference for the stakeholders and the impacting nature of IS research suggests for relevance. Respondent views are in contrast to multiple views of some researchers. The participants agreed that the main mission of academic researchers is to be active in conducting informative and impacting research that benefits different stakeholders (Mathiassen & Nielsen 2008).

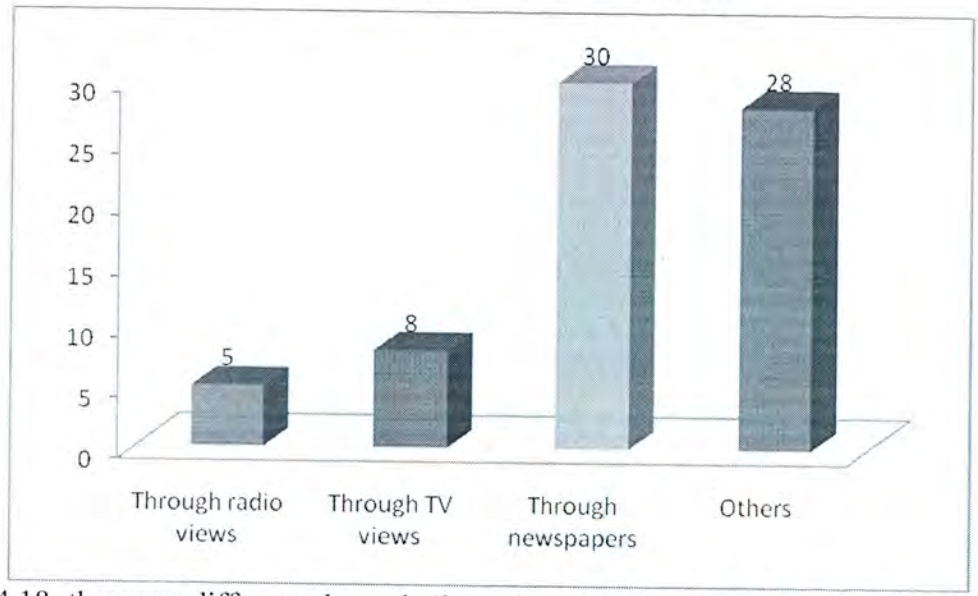
Figure 4.17: The effort to address or contribute to the debate



The debate is on-going but many in the discipline still do not understand the debate. IS researchers are not really working hard to make their research findings relevant to practitioners and to other audiences (Fitzgerald 2003). The above question focused on understanding the effort that the academia in the discipline have made to support or contribute to the debate directly or indirectly in addressing the gap. The indication above shows that only 34 (47%) of the respondents have not made any effort toward the on-going gap. This may be as a result of lack of awareness of the gap or not concerned and not knowing what to do to influence the debate, gap and many more.

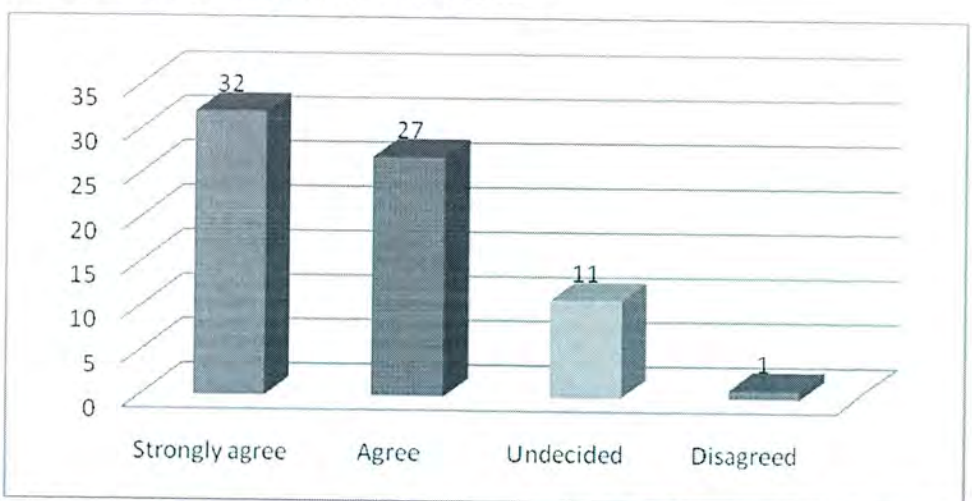
All these can lead to why many suggested no effort. The respondent views in the above chart support the argument below. The effort to bridge the gap between research (rigour) and practice (relevance) has increased over the period (Glass 2009). In all efforts, this ever changing society, no single method has led us to solve the gap; this means collaboration is absolutely needed (Pasmore et al. 2007). According to Benbasat and Zmud (1999), still, very little effort, if any, has been made to resolve the rigour and relevance debate. The biggest challenge why the gap persists is that researchers keep talking about it but not much has been done to close it because it is working in their favour (Markides 2011).

Figure 4.18: Capturing practitioner's attention to read IS articles



In Figure 4.18, there are different channels through which IS stakeholders can be notified about any piece of research out there. These channels draw the attention of practitioners to read and make use of IS/academic research. The above listed options are not the only ones out there but from the listed one's, 30 (42%) of the respondents from the chart believed they draw the attention of different stakeholders through articles in the newspapers. The second bar, 28 (39%) others suggest different channels that can be used to draw the attention of stakeholders in reading and using IS research journal (for example through internet). Where academic journal papers are published really, matters a lot in regard to targeted audience, they read it to gain more knowledge and insight

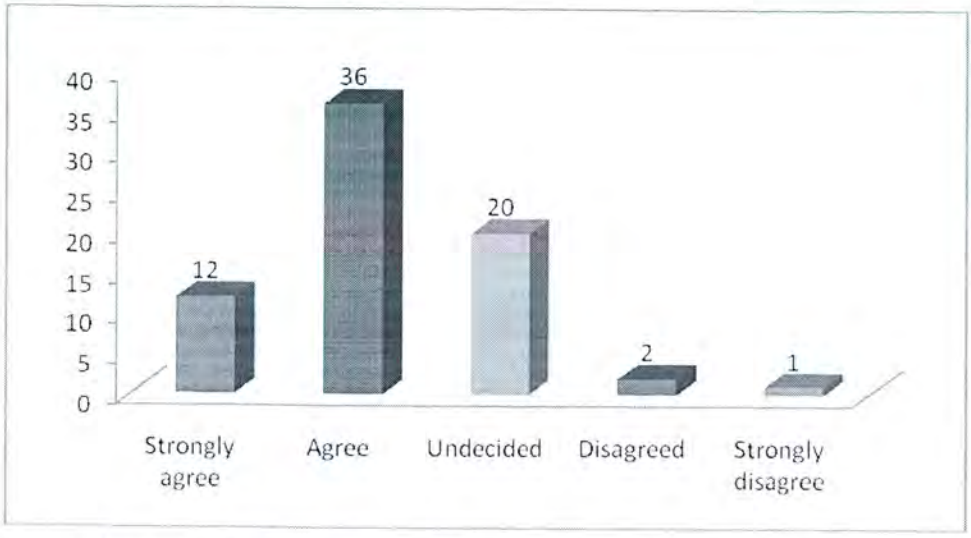
Figure 4.19: Practitioners benefits on IS/academic



IS research is gradually irrelevant, uninteresting and unusable to practitioners (Max-Erik & David 2011). The place where academic research is published matters to the kind of audience that will access and the study. Because there are different kinds of journal papers, each audience has a specific place where to access their research. The benefit of a research can only be seen

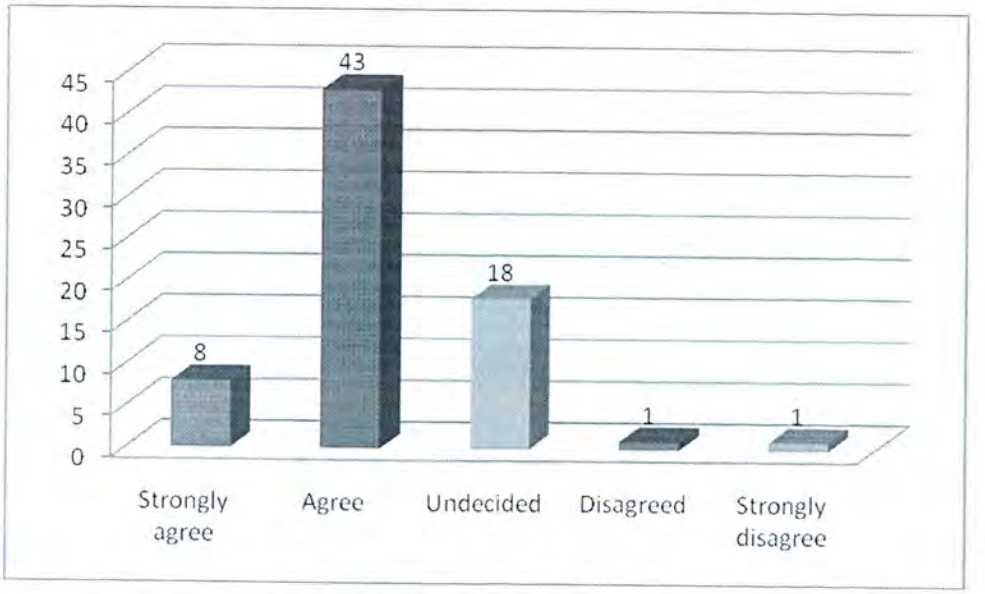
when targeted audiences access it. In contrast to multiple argument on irrelevance of IS research, the above bar chart shows that about 32 (46%) of the respondents strongly believed that IS/academic research is benefiting practitioners. This shows that research findings and outputs are really used in practice by practitioners.

Figure 4.20: The worth of the debate



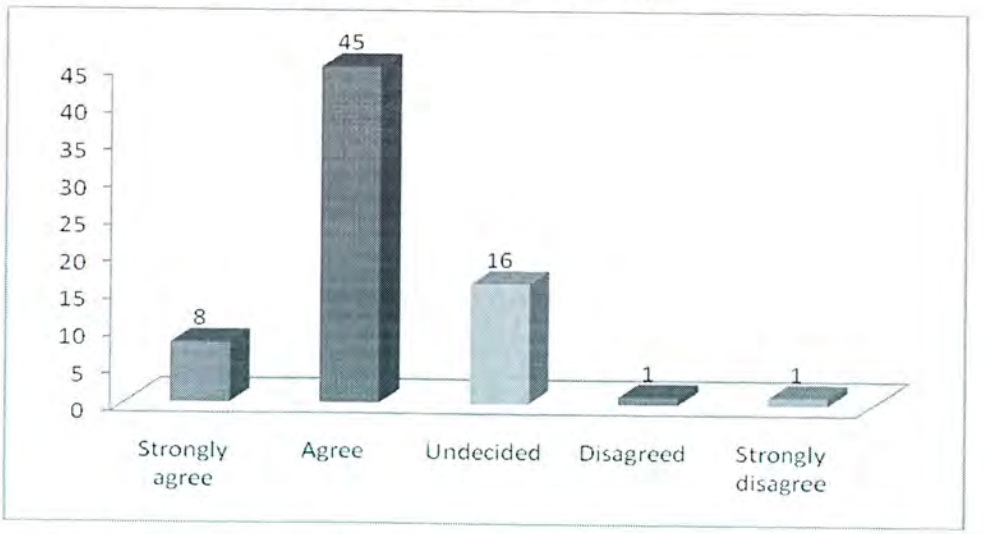
Some in the discipline regard the on-going debate as waste of time and other supports the debate. Conducting appealing research to practitioners and balancing rigour and relevance is still a difficult task (Sambamurthy 2010). The rigour and relevance debate means something to different people in a discipline, to understand the stand point of view of the participants in this study. Figure 4.20 above shows that only 36 (51%) of the respondents believe that the on-going debate is necessary. This implies that the debate can help in encouraging the balancing of rigour and relevance in IS research and achieving a research that meets a practitioner's expectation and needs applicable.

Figure 4.21: The continuity of the debate



The worth of rigour and relevance debate indicates the continuity of debate. The summary from Figure 4.20 makes rigour and relevance worth debating but the implementation of ideas from the debate is vital. Figure 4.21 above suggests that only 43 (61%) of the respondents would like to see the debate going on because it's worth it. That shows that the more the debate lasts, the more rigour and relevance IS research output would be. The present debate can aid researchers and practitioners to close rigour and relevance separation (Hodgkinson & Rousseau 2009).

Figure 4.22: The contribution of the debate to other discipline.

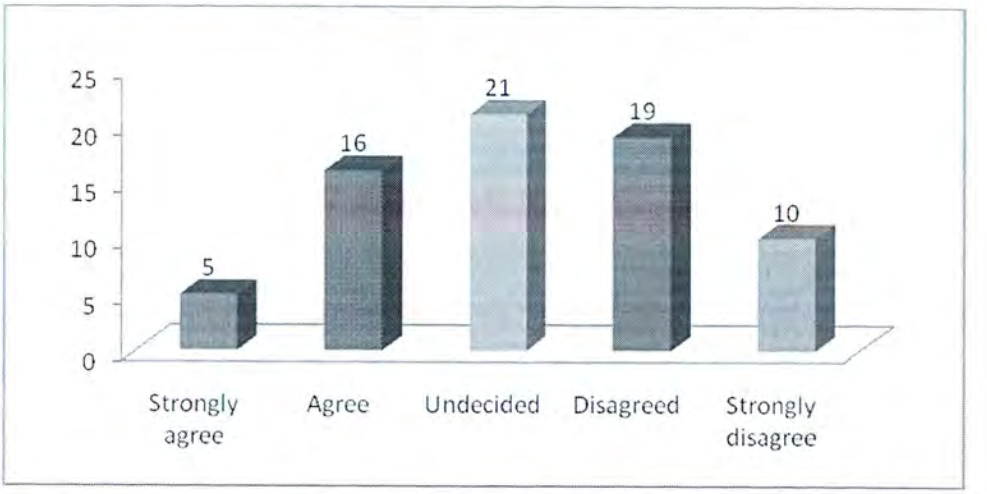


Many researchers, like Benbasat and Zmud (2003) try to define impacting IS research with the aim to create and strengthen IS identity in applied discipline and acceptance by others (Bakshi & Krishna 2007). Other researchers in the discipline also believe that IS discipline lacks academic legitimacy and identity (Bakshi & Krishna 2007).

Based on Benbasat and Zmud's opinion and other researchers' views, is discipline is balanced when other disciplines use its research output in their respective disciplines. This debate can

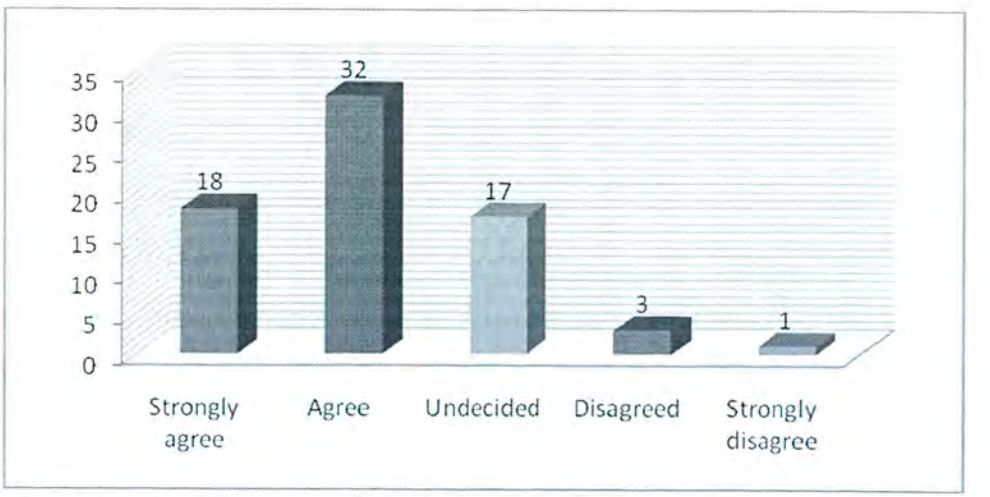
really help to bridge the gap and bring out the best from IS research that can benefit others outside the discipline. The bar chart above (Figure 4.22) shows merely 45 (64%) of the respondents believed that on-going debate in the discipline can help other external disciplines seek contribution from IS research.

Figure 4.23: The separation of rigour and relevance in a research.



The separation between rigour and relevance is the main debate of academic research (Gulati 2007). The present debate can aid researchers and practitioners to close rigour and relevance separation (Hodgkinson & Rousseau 2009). Based on this, some researchers argue for balancing IS research between rigour and relevance. Meaning that IS research should be both rigour and relevant, only 21 (31%) of the respondents are undecided as to whether rigour and relevance should be separated independently in a research or not and merely 19 (26%) of the participants believed that both should not be separated anyway.

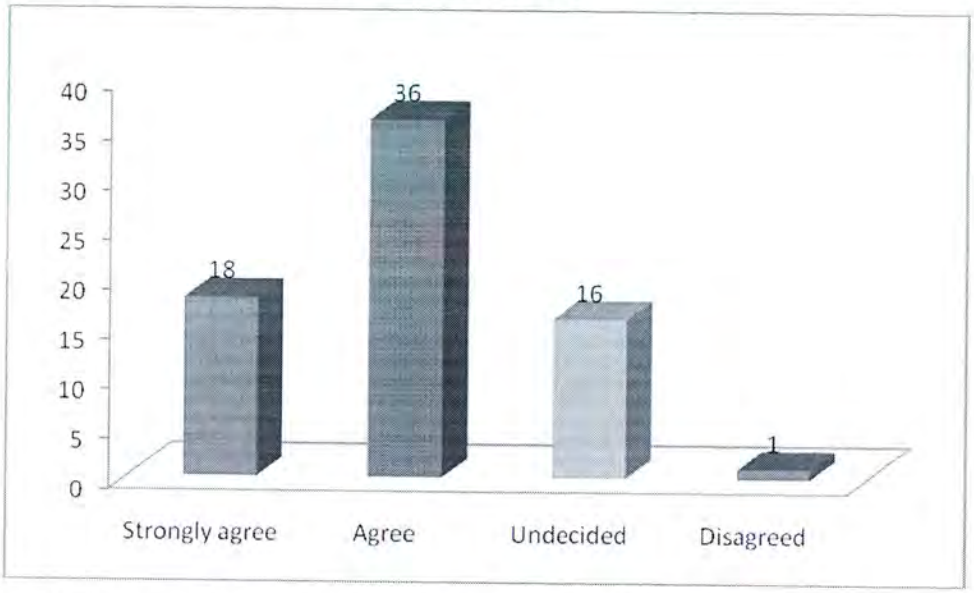
Figure 4.24: Combination of rigour and relevance.



However, many could not realise the gap (separation) between academic and practice as problematic (Shapiro et al. 2007). Some continued to debate as to whether rigour and relevance should be combined in one research which is also heating up continually (Tushman et al. 2007).

The bar chart above (Figure 4.24) supports the argument of these researchers that both should be combined in any piece of research. Looking at the bars, 32 (46%) of the respondents agreed on the combination of rigour and relevance. The combination of both will help in producing, impacting and applicable research on the real world setting.

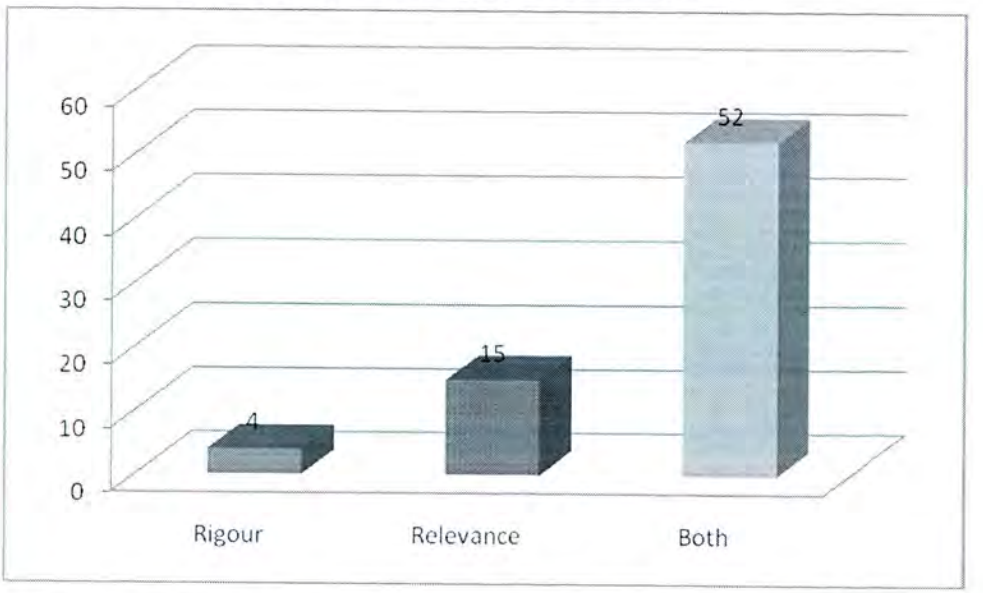
Figure 4.25: The coexistence of rigour and relevance.



The question in Figure 4.25 supports the question in Figure 4.24, where 36 (51%) of the respondents agreed on the co-existing of rigour and relevance in a research, because of the benefits that are attached when both are combined in a research rather than separated.

According to Kieser and Leiner (2009), the academic management rigour-relevance gap cannot close because parties are researching on different interest (Hodgkinson & Rousseau 2009). They strongly believe that no matter what kind of approach or method is deplored, rigour and relevance cannot coexist. The indication from the response is that the participant view is in contrast with Kieser and Leiner and Hodgkinson & Rousseau.

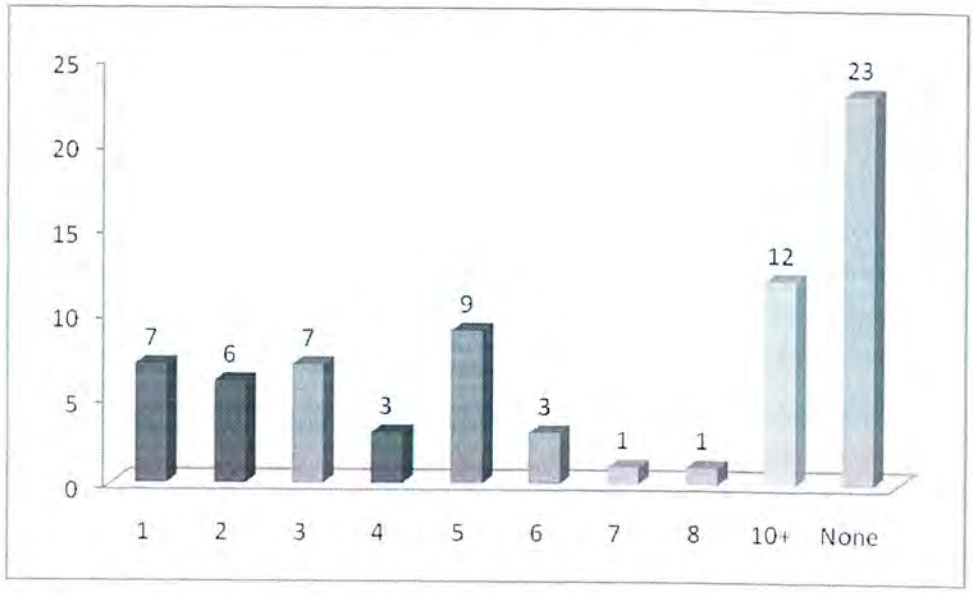
Figure 4.26: The base for acceptance and rejection of IS research.



The rejection on acceptance of a paper is through readability, if not readable, it makes no sense in practice (Straub & Ang 2008). The lack of readability in a research renders an article valueless, some believe that acceptance or rejection of any research should be based on rigour and relevance. Others argue that the rejection of a research paper based on rigour will be killing and hindering the discipline from new innovations and ideas but the both should also be regarded in a research. To justify all these argument the question in Figure 4.26 was asked and it shows that 52 (74%) from the respondents indicate that rejection or acceptance of a research paper for publication by editorial reviewing committees should be based on lack both (rigour and relevance) and not separated.

Whitworth (2007) advised that IS researchers should not kill the discipline in the name of rigour. This means that high research quality should be maintained and that it should not allow the rejection of new low standard knowledge. To ensure rigour and relevance, research reviewer panels should restructure their procedure, process and current decision criteria on rejection or acceptance of a paper and focusing on balancing rigour and relevance in a given manuscript (Young et al. 2006).

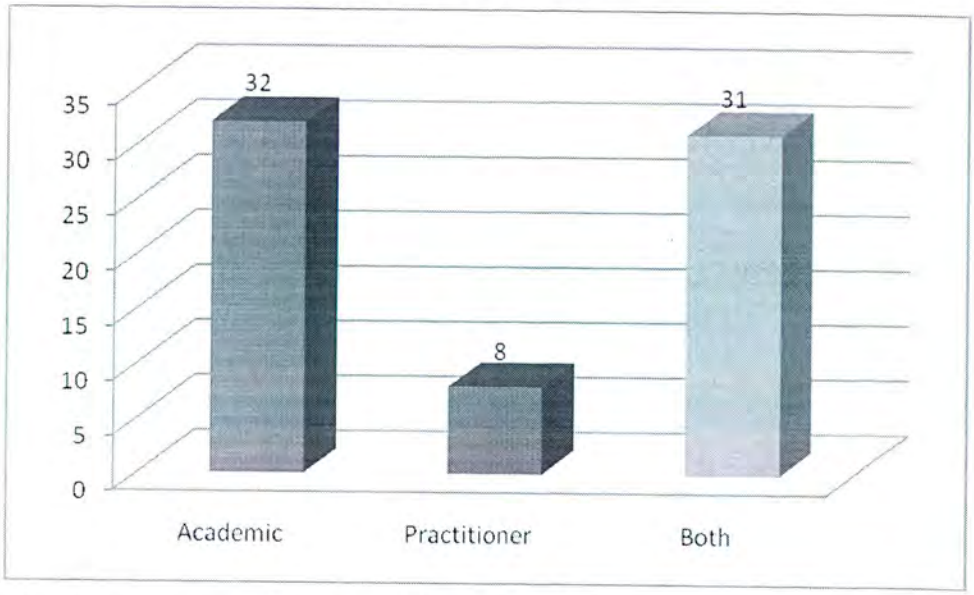
Figure 4.27: Number of years working in practitioners industry.



To suggest a solution in bridging the gap between researchers and practitioners, some researchers in academia believe that IS discipline should copy the footprint of medical discipline that encourages academia to work partly in the industry and in academy (Moody 2000). Others are saying the opposite. To gain more insight into that argument, the question in Figure 4.27 aimed to determine the stand point of participants in the study. The above bar chat shows that 23 (32%) of the respondents have not worked or gained any practical experiences in the practitioner industry now and before, only 12 (17%) of the few respondents have been engaged in the industry practice directly or indirectly. This indicates that researchers have seen the need to participate in the industry.

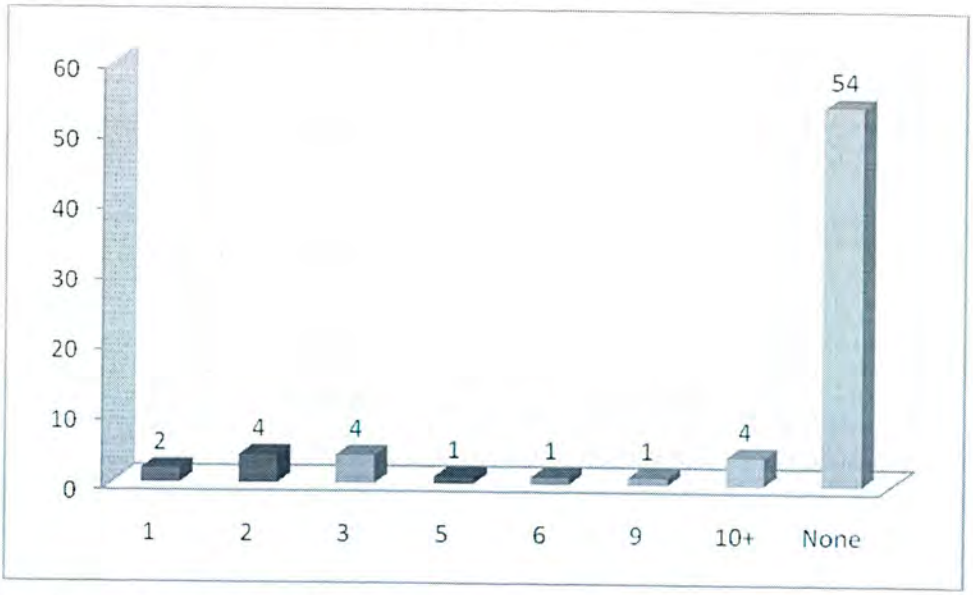
Furthermore, in bridging the gap, practitioners and researchers (academia) should be encouraged and given the platform to work on both sides like in medical discipline, some spend half of their time in teaching and the rest in clinical practice but in IS, this kind of idea is discouraged or prevented (Moody 2000).

Figure 4.28: Researchers working with practitioners.



According to Deadrick and Gibson (2007) and Pasmore et al. (2007), researchers and practitioners should co-operate and work at the same field simultaneously in following the footstep of medical discipline where people are allowed to work partly on both (Moody 2000). The question in Figure 4.28 determines to know how many of the (researcher) participants are working as medical practitioners do. From the respondents' feedback, the bar chart above shows that only 31 (43%) of the respondents have been engaged on both industry at the same time and 32 (46%) of the respondents are working only in the field of academia and this is a normal belief and practice in IS discipline.

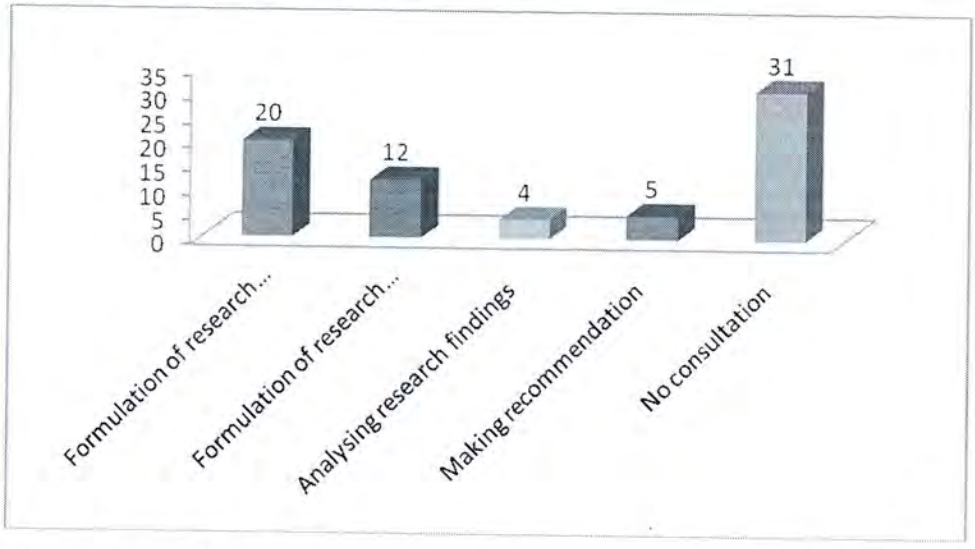
Figure 4.29: Number of practitioner papers published.



The smooth information flow and engagement in the field of medicine should be used as a benchmark to improve disconnected knowledge transfer between academics and practitioners (Moody 2000). The collaboration and engagement among the both is missing, many researchers

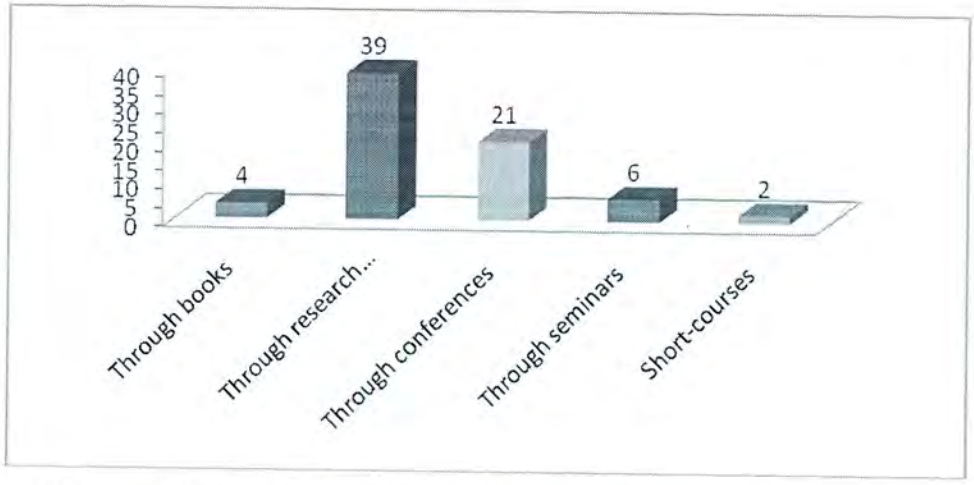
have argued that a separate research publication be focused on practitioners alone. The argument was based on the belief that there is a different research journal category that aimed at practitioners. The Figure 4.29 question seeks to determine the average practitioners publication of each participant but from the look at the bar chart, 54 (76%) of the respondents have no practitioner paper publications in their name, the bar revealed that researchers are not bothered in publishing specific journal paper for practitioners audience.

Figure 4.30: Partnering with practitioners.



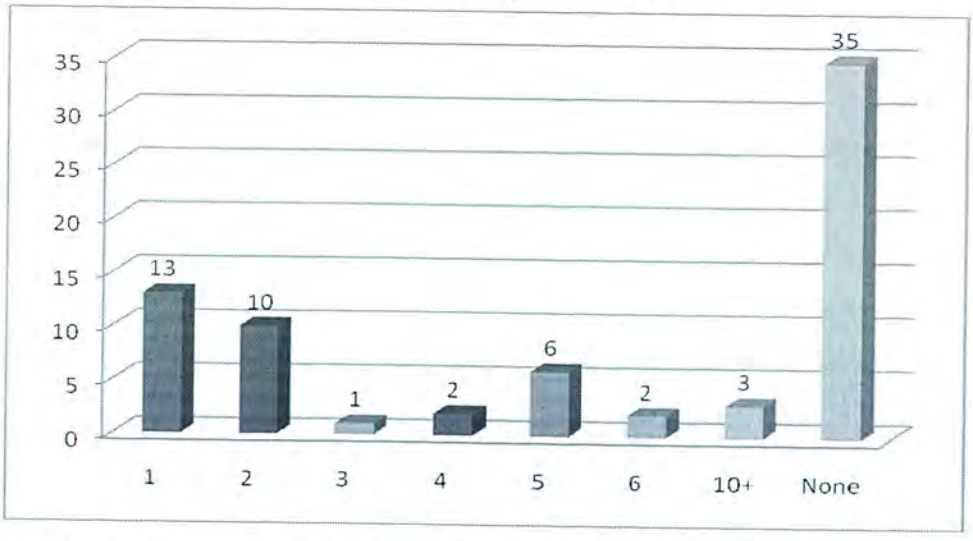
The link between research and practice is really separated (Markides 2011). The researchers consult with practitioners when conducting research. The question in Figure 4.30 was asked to determine whether researchers consult with the practitioner. From the listed options, however, only 20 (28%) of the respondents consult with the practitioners at the level of research question formulation and 31 (43%) of the respondents have not consulted with the practitioners in any form when carrying out research in the industry. This shows that both are independent thinkers and doing things differently.

Figure 4.31: Communicating to practitioners.



According to Kieser and Leiner (2007), self-referential as characterised to social research, means that researchers cannot communicate their findings to practitioners effectively. Research journal papers have to be communicated to targeted audiences through the right channel and available to them. The literature review shows that it's hardly for researchers and practitioners to publish journal papers in the same publication. The question in Figure 4.31 above seeks to balance the argument, it is now revealed from the bar chat that 39 (54%) of the respondents have communicated their research output through research paper publication, these publications are mainly seen on the internet. The second bar chart shows that some are also managing to communicate their research finding to practitioners through the conference publications. In contrast to Kieser and Leiner, researchers have managed to communicate their research findings to stakeholders using different channels as seen in the above chart.

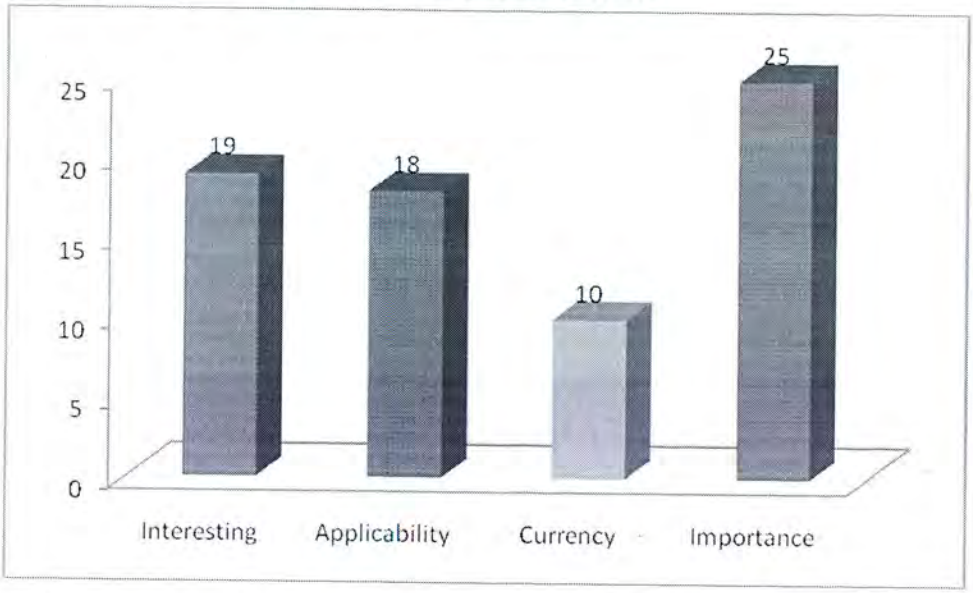
Figure 4.32: Number of time collaborated with practitioners.



Researchers and practitioners collaborating well will help to produce acceptable research in practice (Huisman & Conradie 2010). Researchers (academia) and practitioners in IS discipline are living in a separated world (Markides 2011). To confirm to the independence of both parties,

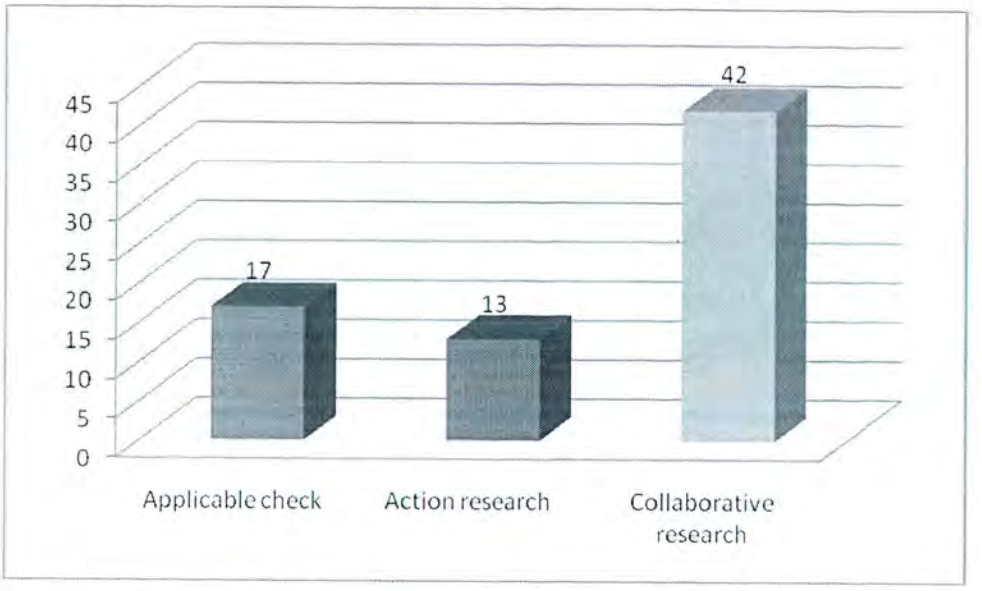
about 35 (49%) of respondents have not collaborated with practitioners when conducting this research. The survey confirms that researchers are not mindful of working with practitioners in any way. According to Moody (2000), they both are living in a divided community (world) with little knowledge transfer between them. Ironically, IS discipline discourages academics from becoming practitioners and no motivation to co-operate with others. This illustrates that the gap still exists between researchers and practitioners.

Figure 4.33: The principle that guides academic discipline.



According to Rosemann and Vessey (2008), Klein et al. (2006), Huisman and Conradie (2010), IS research relevance has three dimensions; importance, accessibility and (suitability) applicability, as suggested by Benbasat and Zmud (1999). Importance research is manageable and able to solve real world situations. Secondly, accessibility research is readable and understandable research and lastly, applicability research is a research that is directive and informative in recommendation. The above chart shows that merely 25 (35%) of the respondents believe that IS researchers are focusing on journal importance while publishing research papers. The second 19 (26%) and third 18 (25%) bars are also an issue of concern for researchers. The responses of participants in the study confirms the argument of the above mentioned researchers and many other's views and research are really working toward rigour and relevance.

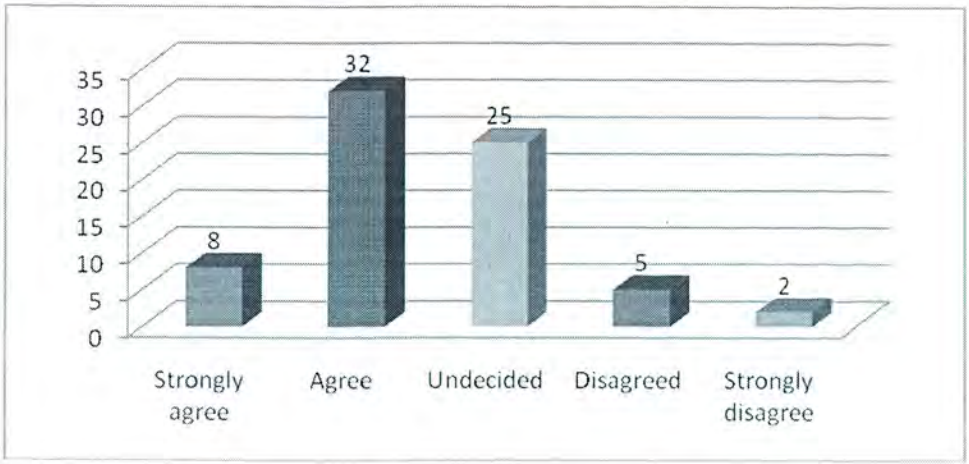
Figure 4.34: Ways of achieving rigorous and relevant research.



Academic researchers understand the difference between practice and research but they continue to publish insignificant research (Lee & Mohajeri 2012). An attempt to bridge the gap is for IS discipline to learn from other applied disciplines regarding how they have managed to address their own gap, like how medicine as applied discipline has managed to be academic rigour and practical relevant (Moody 2000). Van de Ven (2007) collaborative research is conducted with audiences to learn a particular problem. Collaborative research can also be seen as a research that impacts on practice, engaging with each and consulting each other to produce vital knowledge that can add values to practice (Mohrman & Lawler III 2010).

Furthermore, in bridging the gap, practitioners can be trained to become researchers and undertaking a collaborative research (Moody 2000). The bar chart above where majority 42 (58%) of the respondents agreed that collaborative research will be the main platform to be used to achieve more needed impacting research that is both rigour and relevance, because researchers and practitioners will work with one aim and objective in collaborative research, showing that collaborative research will help in achieving rigour and relevance in IS research.

Figure 4.35: Other discipline using IS/academic research in practice.



According to Bartunek (2007), the establishment of equal researchers needed to establish equal association with audiences (practitioners), practitioners and other audiences remains appreciative of academic research knowledge and practitioners and others outside the discipline are the source of academic idea and aspirations in the world. To ascertain the level of confidence that other disciplines have on IS research output, the question in Figure 4.35 was designed to determine the level. From the Figure 4.35 above, only 32 (44%) of the respondents accept that practitioners and other discipline are really using IS research at their different endeavour. They response aligned to Bartunek shows that practitioners and other disciplines still remain confident on IS research output.

4.4 CORRELATION

Correlation is frequently measured as a correlation coefficient and shows the strength and direction of a linear relationship between two random variables. Below are correlation range indications (Remenyi et al. 2011):

Small	0.1 to 0.3
Medium	0.3 to 0.5
Large	0.8 to 1

For the determination of this study, correlation that is above the absolute value of 0.8 is measured to show a strong relationship. The s-value is the probability that shows that the current result has been realised if the correlation coefficient is zero. The Table below present's correlations analysed in this study (Remenyi et al. 2011).

Table 4.1 Correlations Table between Numeric Variables

Correlations

		Status	Group	Age Group	Gender	Academia	Published	Published at where	A-Papers	P-Papers	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27
Status Group	Pearson Correlation	1	.376	.248	.559	-.262	-.186	.323	-.355	-.072	.030	-.160	.144	-.148	.064	.017	.102	-.333	-.046	.090	-.225	-.278	-.133	.013	-.119	-.352	.192	-.096	.207	-.433	-.161	-.160	.008	.047	.069	.107
	Sig. (2-tailed)		.001	.036	.000	.026	.119	.006	.002	.546	.803	.179	.228	.214	.592	.888	.395	.004	.703	.451	.057	.018	.266	.911	.321	.002	.106	.424	.081	.000	.178	.178	.945	.695	.563	.369
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Age Group	Pearson Correlation	.376	1	-.081	.614	-.260	-.179	.162	-.327	-.104	-.048	.046	.146	-.034	.012	-.009	.048	-.191	.116	.076	-.024	.068	.111	.215	-.191	-.322	.062	.187	.208	-.349	-.048	.048	.101	.112	-.017	.040
	Sig. (2-tailed)	.001		.500	.000	.027	.133	.127	.005	.382	.691	.700	.221	.776	.920	.940	.691	.109	.332	.525	.845	.571	.352	.070	.109	.006	.606	.115	.079	.003	.692	.692	.397	.349	.884	.737
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Gender	Pearson Correlation	.248	-.081	1	.058	.049	.100	.042	.060	.138	-.155	-.293	.003	-.044	-.001	-.042	-.053	-.104	.012	-.072	-.001	-.122	-.050	.044	.122	.039	.062	.028	-.186	-.085	-.033	-.071	-.006	.058	-.036	-.106
	Sig. (2-tailed)	.036	.500		.626	.682	.405	.727	.616	.248	.195	.012	.981	.713	.990	.728	.659	.383	.920	.549	.990	.307	.674	.713	.306	.745	.602	.813	.117	.476	.786	.552	.957	.628	.763	.376
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Academia	Pearson Correlation	.559	.614	.058	1	-.292	-.212	.206	-.351	-.020	-.081	-.108	.136	-.030	-.070	.051	.146	-.310	.061	.058	-.014	-.113	.188	.209	-.125	-.268	.194	.126	.088	-.351	.201	-.149	.135	.109	.047	-.013
	Sig. (2-tailed)	.000	.000	.626		.013	.074	.083	.002	.868	.499	.367	.256	.805	.559	.670	.222	.008	.612	.630	.906	.346	.114	.078	.296	.023	.103	.292	.460	.003	.091	.213	.257	.360	.694	.914
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Published	Pearson Correlation	-.262	-.260	.049	-.292	1	.882	.662	.221	.233	.102	.084	-.041	-.032	.122	.012	-.061	.054	-.191	-.042	.131	.057	-.012	-.233	.293	.265	-.126	-.056	-.187	.272	-.095	.010	.041	.046	-.163	.064
	Sig. (2-tailed)	.026	.027	.682	.013		.000	.000	.062	.049	.396	.482	.734	.792	.308	.923	.610	.655	.108	.728	.274	.636	.923	.049	.012	.025	.292	.641	.115	.021	.427	.936	.730	.699	.171	.595
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Published at where	Pearson Correlation	-.186	-.179	.100	-.212	.882	1	.736	.215	.294	-.049	.097	-.073	-.078	.038	-.088	-.087	.004	-.234	-.024	.078	.004	-.080	-.183	.248	.174	-.192	-.038	-.223	.255	-.154	-.035	-.043	.009	-.212	.044
	Sig. (2-tailed)	.119	.133	.405	.074	.000		.000	.070	.012	.683	.416	.541	.513	.753	.460	.469	.974	.048	.843	.515	.970	.506	.125	.036	.143	.106	.751	.059	.031	.198	.770	.722	.940	.073	.712
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
A-Papers	Pearson Correlation	.323	.162	.042	.206	.662	.736	1	-.003	.165	.043	.001	-.048	-.074	.045	.002	-.032	-.189	-.230	.018	.101	.024	-.004	-.149	.127	-.088	-.044	.045	-.007	-.037	-.140	-.142	.097	.115	-.122	.134
	Sig. (2-tailed)	.006	.127	.727	.083	.000	.000		.977	.165	.722	.994	.686	.536	.706	.987	.791	.113	.052	.880	.397	.843	.972	.211	.288	.462	.712	.706	.951	.760	.240	.233	.416	.337	.306	.263
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
P-Papers	Pearson Correlation	-.355	-.327	.060	-.351	.221	.215	-.003	1	.097	.050	.069	-.045	.004	.135	.011	.009	.099	-.075	0.000	.055	.115	-.064	-.208	.337	.314	-.154	.122	-.203	.663	.205	-.035	.186	.024	.053	-.050
	Sig. (2-tailed)	.002	.005	.616	.002	.062	.070	.977		.417	.676	.566	.708	.972	.258	.929	.938	.410	.530	1.000	.644	.337	.595	.080	.004	.007	.196	.309	.087	.000	.084	.768	.118	.839	.659	.676
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

Q1	Pearson Correlation	-.072	-.104	.138	-.020	.233	.294	.165	.097	1	.138	-.048	.064	-.094	-.153	-.103	-.075	.029	-.234	-.023	.002	-.050	-.010	-.191	.090	.139	-.123	.251	.050	.165	.039	.154	.108	.149	-.070	.054
	Sig. (2-tailed)	.546	.382	.248	.868	.049	.012	.165	.417		.248	.688	.591	.431	.199	.388	.532	.806	.048	.851	.987	.678	.937	.107	.455	.246	.302	.033	.679	.167	.742	.195	.367	.212	.559	.654
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q2	Pearson Correlation	.030	-.048	-.155	-.081	.102	-.049	.043	.050	.138	1	.002	.241	.012	-.094	.060	.081	.156	-.235	.166	.141	.243	.088	.002	.103	.065	.035	.205	.356	.072	.169	-.017	.201	-.019	.080	.218
	Sig. (2-tailed)	.803	.691	.195	.499	.396	.683	.722	.678	.248		.989	.042	.921	.434	.615	.500	.191	.047	.165	.236	.040	.462	.986	.390	.590	.771	.084	.002	.546	.156	.887	.091	.874	.503	.066
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q3	Pearson Correlation	-.160	.046	-.293	-.108	.084	.097	.001	.069	-.048	.002	1	.166	.035	-.052	.038	.108	.158	-.025	.306	.373	.284	.423	-.013	.167	.268	-.180	.084	.013	.076	.183	-.177	.177	-.032	.051	-.007
	Sig. (2-tailed)	.179	.700	.012	.367	.462	.416	.994	.566	.688	.989		.162	.768	.664	.750	.366	.185	.833	.009	.001	.016	.000	.917	.162	.023	.130	.484	.914	.527	.124	.136	.136	.791	.671	.954
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q4	Pearson Correlation	.144	.146	.003	.136	-.041	-.073	-.048	-.045	.064	.241	.166	1	-.193	-.303	-.012	.620	.039	-.010	.372	-.030	.006	.088	.066	.095	0.000	.118	-.024	.210	.003	.137	-.118	.105	.104	-.082	.560
	Sig. (2-tailed)	.228	.221	.981	.256	.734	.541	.686	.708	.591	.042	.162		.104	.010	.923	.000	.746	.934	.001	.802	.961	.464	.581	.428	1.000	.322	.838	.077	.983	.251	.323	.380	.385	.495	.000
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q5	Pearson Correlation	-.148	-.034	-.044	-.030	-.032	-.078	-.074	.004	-.094	.012	.035	-.193	1	.096	.147	.027	-.027	.174	-.047	-.042	-.014	.083	.023	-.050	-.097	.066	.073	-.028	-.077	.076	-.063	-.045	.054	-.089	-.240
	Sig. (2-tailed)	.214	.776	.713	.805	.792	.513	.536	.972	.431	.921	.768	.104		.424	.219	.823	.819	.143	.695	.726	.905	.489	.847	.678	.418	.581	.542	.816	.519	.526	.600	.709	.651	.458	.042
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q6	Pearson Correlation	.064	.012	-.001	-.070	.122	.038	.045	.135	-.153	-.094	-.052	-.303	.096	1	.075	-.126	.077	-.119	-.088	-.085	-.106	-.014	-.053	.167	-.010	-.049	-.055	-.186	.043	-.154	.096	.014	.036	.086	-.157
	Sig. (2-tailed)	.592	.920	.990	.559	.308	.753	.706	.258	.199	.434	.664	.010	.424		.533	.291	.519	.320	.462	.479	.375	.908	.656	.160	.933	.686	.646	.118	.722	.197	.422	.910	.761	.474	.187
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q7	Pearson Correlation	.017	-.009	-.042	.051	.012	-.088	.002	.011	-.103	.060	.038	-.012	.147	.075	1	.043	.019	.226	.233	.188	.142	.046	.242	-.070	-.083	.074	.172	-.232	.027	.315	-.373	.100	.410	.127	.188
	Sig. (2-tailed)	.888	.940	.726	.670	.923	.460	.987	.929	.388	.615	.750	.923	.219	.533		.717	.872	.056	.048	.113	.235	.699	.041	.557	.487	.538	.149	.049	.820	.007	.001	.402	.000	.288	.114
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q8	Pearson Correlation	.102	.048	-.053	.146	-.061	-.087	-.032	.009	-.075	.081	.108	.620	.027	-.126	.043	1	.064	-.065	.304	.013	-.085	.084	.036	.043	-.024	.133	-.231	.088	.044	.092	-.141	.067	.032	-.148	.362
	Sig. (2-tailed)	.395	.691	.659	.222	.610	.469	.791	.938	.532	.500	.366	.000	.823	.291	.717		.591	.587	.009	.914	.476	.483	.765	.723	.840	.267	.051	.460	.716	.444	.239	.576	.790	.214	.002
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q9	Pearson Correlation	-.333	-.191	-.104	-.310	.054	.004	-.189	.099	.029	.156	.158	.039	-.027	.077	.019	.064	1	.022	.152	.215	.309	.182	.070	.102	.149	-.104	.202	.116	.113	.111	-.046	.063	-.213	-.115	-.007
	Sig. (2-tailed)	.004	.109	.383	.008	.655	.974	.113	.410	.606	.191	.185	.746	.819	.519	.872	.591		.855	.201	.070	.008	.127	.558	.393	.211	.383	.089	.332	.347	.354	.702	.602	.073	.337	.951
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

Q10	Pearson Correlation	-.046	.116	.012	.061	-.191	-.234	-.230	-.075	-.234	-.235	-.025	-.010	.174	-.119	.226	-.065	.022	1	.031	-.254	-.042	-.082	.311	-.324	-.195	.052	.149	-.046	-.214	.038	-.140	-.086	.037	-.078	-.181
	Sig. (2-tailed)	.703	.332	.920	.612	.108	.048	.052	.530	.048	.047	.833	.934	.143	.320	.056	.587	.855		.797	.031	.727	.491	.008	.005	.100	.667	.210	.701	.071	.753	.242	.473	.755	.516	.128
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q11	Pearson Correlation	.090	.076	-.072	.058	-.042	-.024	.018	0.000	-.023	.166	.306	.372	-.047	-.088	.233	.304	.152	.031	1	.298	.158	.277	-.054	.170	.050	-.107	.057	.143	.001	.196	-.115	.167	.051	.085	.291
	Sig. (2-tailed)	.451	.525	.549	.630	.728	.843	.880	1.000	.851	.165	.009	.001	.695	.462	.048	.009	.201	.797		.011	.165	.019	.652	.153	.678	.371	.637	.231	.992	.099	.338	.160	.673	.476	.013
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q12	Pearson Correlation	-.225	-.024	-.001	-.014	.131	.078	.101	.055	.002	.141	.373	-.030	-.042	-.085	.188	.013	.215	-.254	.298	1	.712	.684	-.149	.186	.335	-.067	.129	-.029	.033	.321	-.111	.226	.121	.204	.002
	Sig. (2-tailed)	.057	.845	.990	.906	.274	.515	.397	.644	.987	.236	.001	.802	.726	.479	.113	.914	.070	.031	.011		.000	.000	.212	.119	.004	.576	.280	.807	.784	.006	.355	.057	.309	.086	.984
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q13	Pearson Correlation	-.278	.068	-.122	-.113	.057	.004	.024	.115	-.050	.243	.284	.006	-.014	-.106	.142	-.085	.309	-.042	.158	.712	1	.547	.040	-.015	.108	-.076	.260	.050	.060	.183	-.172	.153	.089	.183	.070
	Sig. (2-tailed)	.018	.571	.307	.346	.636	.970	.843	.337	.678	.040	.016	.961	.905	.375	.235	.476	.008	.727	.185	.000		.000	.740	.901	.365	.527	.027	.674	.617	.124	.148	.198	.459	.123	.560
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q14	Pearson Correlation	-.133	.111	-.050	.188	-.012	-.080	-.004	-.064	-.010	.088	.423	.088	.083	-.014	.046	.084	.182	-.082	.277	.684	.547	1	-.147	.058	.165	-.065	.176	.071	-.125	.244	-.104	.181	.076	.179	-.113
	Sig. (2-tailed)	.266	.352	.674	.114	.923	.506	.972	.595	.937	.462	.000	.464	.489	.908	.699	.483	.127	.491	.019	.000	.000		.217	.626	.165	.590	.139	.551	.296	.039	.386	.129	.526	.132	.346
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q15	Pearson Correlation	.013	.215	.044	.209	-.233	-.183	-.149	-.208	-.191	.002	-.013	.066	.023	-.053	.242	.036	.070	.311	-.054	-.149	.040	-.147	1	-.342	-.303	.260	-.017	-.060	-.252	.149	-.431	.080	.067	.080	.140
	Sig. (2-tailed)	.911	.070	.713	.078	.049	.125	.211	.080	.107	.986	.917	.581	.847	.656	.041	.765	.558	.008	.652	.212	.740	.217		.003	.010	.028	.884	.615	.032	.212	.000	.503	.578	.502	.242
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q16	Pearson Correlation	-.119	-.191	.122	-.125	.293	.248	.127	.337	.090	.103	.167	.095	-.050	.167	-.070	.043	.102	-.324	.170	.186	-.015	.058	-.342	1	.546	-.123	.045	.071	.416	.064	.135	.335	.111	-.015	.132
	Sig. (2-tailed)	.321	.109	.306	.296	.012	.036	.288	.004	.455	.390	.162	.428	.678	.160	.557	.723	.393	.005	.153	.119	.901	.626	.003		.000	.303	.707	.553	.000	.591	.256	.004	.355	.902	.268
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q17	Pearson Correlation	-.352	-.322	.039	-.268	.265	.174	-.088	.314	.139	.065	.268	0.000	-.097	-.010	-.083	-.024	.149	-.195	.050	.335	.108	.165	-.303	.546	1	-.067	.058	-.061	.407	.139	.184	.237	.016	.091	-.109
	Sig. (2-tailed)	.002	.006	.745	.023	.025	.143	.462	.007	.246	.590	.023	1.000	.418	.933	.487	.840	.211	.100	.678	.004	.365	.165	.010	.000		.578	.630	.612	.000	.243	.123	.045	.895	.445	.364
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q18	Pearson Correlation	.192	.062	.062	.194	-.126	-.192	-.044	-.154	-.123	.035	-.180	.118	.066	-.049	.074	.133	-.104	.052	-.107	-.067	-.076	-.065	.260	-.123	-.067	1	-.153	.164	-.256	.085	-.198	-.079	.042	-.029	.097
	Sig. (2-tailed)	.106	.606	.602	.103	.292	.106	.712	.196	.302	.771	.130	.322	.581	.686	.538	.267	.383	.667	.371	.576	.527	.590	.028	.303	.578		.200	.170	.030	.476	.095	.508	.726	.806	.416
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

Q19	Pearson Correlation	-096	187	028	126	-056	-038	045	122	251	205	084	-024	073	-055	172	-231	202	149	057	129	260	176	-017	045	058	-153	1	020	057	221	-029	173	124	-088	-017
	Sig (2-tailed)	424	115	813	292	641	751	706	309	033	084	484	838	542	646	149	051	069	210	637	280	027	139	884	707	630	200		865	632	062	808	147	298	462	889
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q20	Pearson Correlation	207	208	-186	088	-187	-223	-007	-203	050	356	013	210	-028	-186	-232	088	116	-046	143	-029	050	071	-060	071	-061	164	020	1	-137	009	070	207	-120	012	132
	Sig (2-tailed)	081	079	117	460	115	059	951	087	679	002	914	077	816	118	049	460	332	701	231	807	674	551	615	553	612	170	865		252	943	558	081	315	919	267
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q21	Pearson Correlation	-433	-349	-085	-351	272	255	-037	663	165	072	076	003	-077	043	027	044	113	-214	001	033	060	-125	-252	416	407	-256	057	-137	1	219	-056	222	060	-139	009
	Sig (2-tailed)	000	003	476	003	021	031	760	000	167	546	527	983	519	722	820	716	347	071	992	784	617	296	032	000	000	030	632	252		064	642	061	617	245	937
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q22	Pearson Correlation	-161	-048	-033	201	-095	-154	-140	205	039	169	183	137	076	-154	315	092	111	038	196	321	183	244	149	064	139	085	221	009	219	1	-223	463	245	106	-037
	Sig (2-tailed)	178	692	786	091	427	198	240	084	742	156	124	251	526	197	007	444	354	753	099	006	124	039	212	591	243	478	062	943	064		060	000	038	375	761
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q23	Pearson Correlation	-160	048	-071	-149	010	-035	-142	-035	154	-017	-177	-118	-063	096	-373	-141	-046	-140	-115	-111	-172	-104	-431	135	184	-198	-029	070	-056	-223	1	-272	-095	-003	-247
	Sig (2-tailed)	178	692	552	213	936	770	233	768	195	887	136	323	600	422	001	239	702	242	338	355	148	386	000	256	123	095	808	558	642	060		021	426	980	037
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q24	Pearson Correlation	008	101	-006	135	041	-043	097	186	108	201	177	105	-045	014	100	067	063	-086	167	226	153	181	080	335	237	-079	173	207	222	483	-272	1	292	202	166
	Sig (2-tailed)	945	397	957	257	730	722	416	118	367	091	136	380	709	910	402	576	602	473	160	057	198	129	503	004	045	508	147	081	061	000	021		013	089	163
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q25	Pearson Correlation	047	112	058	109	046	009	115	024	149	-019	-032	104	054	036	410	032	-213	037	051	121	089	076	067	111	016	042	124	-120	060	245	-095	292	1	312	172
	Sig (2-tailed)	695	349	628	360	699	940	337	839	212	874	791	385	651	761	000	790	073	755	673	309	459	526	578	355	895	726	298	315	617	038	426	013		008	149
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q26	Pearson Correlation	069	-017	-036	047	-163	-212	-122	053	-070	080	051	-082	-089	086	127	-148	-115	-078	085	204	183	179	080	-015	091	-029	-088	012	-139	106	-003	202	312	1	-103
	Sig (2-tailed)	563	884	763	694	171	073	306	659	559	503	671	495	458	474	288	214	337	516	476	086	123	132	502	902	445	806	462	919	245	375	980	089	008		390
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Q27	Pearson Correlation	107	040	-106	-013	064	044	134	-050	054	218	-007	560	-240	-157	188	362	-007	-181	291	002	070	-113	140	132	-109	097	-017	132	009	-037	-247	166	172	-103	1
	Sig (2-tailed)	369	737	376	914	595	712	263	676	654	066	954	000	042	187	114	002	951	128	013	984	560	346	242	268	364	416	889	267	937	761	037	163	149	390	
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

The correlation between age group and gender is -0.081, a negative and weak correlation. According to the criteria set in Table 4.1, those correlations above the absolute value of 0.8 measured as a strong relationship. The s-value is shown as 0.500 and it is more than 0.08. The correlation is not statistically significant because it is >0.8. This shows that age group has no significant impact on gender. Age group is not determinant of whether respondents are positive or negative about gender on rigour and relevance debate in IS research (Remenyi et al. 2011).

The correlation between gender and the average number of practitioner papers published (Q21) is -0.085, a negative and weak correlation between the two variables. According to the criteria set in Table 4.1, those correlations above the absolute value of 0.8 are measured as a strong relationship. The s-value is shown as 0.476 and it is more than 0.08. This suggests that gender has no significant impact on the average number of practitioner papers published (Q21). Gender is not a determinant of whether respondents are positive or negative about the average number of practitioner papers published (Q21) on rigour and relevance debate in IS research.

The correlation between academia and the definition of relevant research (Q2) is -0.081, a negative and weak correlation. According to the criteria as set in Table 4.1, those correlations above the absolute value of 0.8 are measured as a strong relationship. The s-value is shown as 0.499 and it is less than 0.08. The correlation is not statistically significant as it is >0.08. This indicates that academia have no significant impact on the definition of relevant research (Q2). Academia years of being in academic industry is not a determinant of whether respondents are positive or negative about the definition of relevant research (Q2) on rigour and relevance debate in IS research (Remenyi et al. 2011).

The correlation between publication and the on-going debate meeting practitioners' expectations (Q3) is 0.084, a positive and weak correlation between the two variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not statistically significant since the s-value is shown as 0.482 which is more than 0.08. Then it can be assumed that there is no significant linear correlation between the two variables. This suggests that publication do not have significant impact on the on-going debate of meeting practitioner's expectations (Q3). The published is not the determinant of whether respondents are positive or negative about the impact of the on-going debate meeting practitioner's expectations (Q3) on rigour and relevance debate in IS research.

The correlation between where one has published (published where) and 'publish or perish' slogan (Q7) is 0.088 a positive and weak correlation. According to the criteria as set above, those correlations above the absolute value of 0.8 are measured as a strong relationship. The s-value is shown as 0.460 and it is greater than 0.08. The correlation is not statistically significant as it is >0.08. This indicates that anywhere one has published (published where) has no significant impact on 'publish or perish' slogan (Q7). The first is not a determinant of whether respondents are positive or negative about the later on rigour and relevance debate on IS research (Remenyi et al. 2011).

The correlation between how researchers capture practitioner's interest (Q1) and on whether rigour and relevance be combined in a research is approximately 0.090, a positive and a very weak correlation between the both variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not statistically significant since the s-value is shown as 0.455, which is greater than 0.08. Therefore it can be inferred that there is no significant linear correlation between the both variables. This suggests that the practitioner's interest in reading the article (Q1) does not have significant impact on combining rigour and relevance in a research (Q16). The Q1 is not the determinant of whether respondents are positive or negative about the impact of Q16 on rigour and relevance debate in IS research (Remenyi et al. 2011).

The correlation between the definition of relevant research (Q2) and approach that can achieve rigour and relevance (Q26) is approximately 0.080, a positive and a very weak correlation between the both variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not statistically significant since the s-value is shown as 0.503, which is more than 0.08. It indicates that there is no significant linear correlation between the both variables. This suggests that the definition of relevant research (Q2) does not have significant impact on approach that can achieve rigour and relevance (Q26). The Q2 is not the determinant of whether respondents are positive or negative about the impact of Q26 on rigour and relevance debate in IS research.

The correlation between "practitioners are solving their challenges with academic research (Q4)" and whether IS debate helping others (Q14) is 0.088, a negative and weak correlation between two variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not

statistically significant since the s-value (significance value) is shown as 0.464, which is more than 0.08 and therefore realised that there is no significant linear correlation between the two variables. This suggests that "practitioners are solving their challenges with academic research (Q4)" does not have significant impact on whether IS debate helping others (Q14). Q4 is not the determinant of whether respondents are positive or negative about the Q14 in rigour and relevance debate on IS research (Remenyi et al. 2011).

The correlation between whether rigour and relevance be separated in research (Q15) and number of time researchers have collaborated with practitioners (Q24) is 0.080, a positive and weak correlation. According to the criteria as set above, those correlations above the absolute value of 0.8 are measured as a strong relationship. The s-value is shown as 0.503 and it is more than 0.08. This indicates that rigour and relevance be separated in research (Q15) have no significant impact on number of time researchers have collaborated with practitioners (Q24). The first is not determinant of whether respondents are positive or negative about the later on rigour and relevance debate in IS research (Remenyi et al. 2011).

The correlation between approach that can achieve rigour and relevance (Q26) and whether rigour and relevance be separated in research (Q15) is 0.080 a positive and weak correlation between the two variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not statistically significant since the s-value is shown as 0.502 which is greater than 0.08. Therefore it can be realised that there is no significant linear correlation between the two variables. This suggests that the approach that can achieve rigour and relevance does not have significant impact on rigour and relevance be separated in research. The approach that can achieve rigour and relevance is not the determinant of whether respondents are positive or negative about the impact on whether rigour and relevance be separated in research on rigour and relevance debate in IS research (Remenyi et al. 2011).

The correlation between number of academic papers published and coexistence of rigour and relevance in research (Q17) is -0.088, a negative and weak correlation between two variables. According to the criteria as set above, those correlations that are above the absolute value of 0.8 are considered to show a strong relationship. The correlation is not statistically significant since the s-value is shown as 0.462 which is >0.08. Therefore it can be realised that there is no significant linear correlation between the two variables. This suggests that the number of

academic papers published does not have significant impact on coexistence of rigour and relevance in research. The number of academic papers published is not the determinant of whether respondents are positive or negative about the impact on coexistence of rigour and relevance in research on rigour and relevance debate in IS research (Remenyi et al. 2011).

4.5 CHI-SQUARE ANALYSIS

The Chi-square of this study is grounded on null and alternative hypothesis as shown in (section 3.4 chi-square testing) chapter three. The hypotheses analysed below are only those questions important to the study, others left out are also important as well but may not be applied at this stage.

Figure 4.36: Published and number of years in academia.

The Chi-squared Table below tests to know the degrees of freedom between published papers and the number of year's academia have been in the academic field.

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.795[a]	4	.066
Likelihood Ratio	10.668	4	.031
Linear-by-Linear Association	6.069	1	.014
N of Valid Cases	72		

H_0: Academia must publish.

H_1: Academia does not have to publish.

The Chi-square statistic is ($x^2 = 8.785$), predetermined alpha level of significance of (0.025) and the degrees of freedom ($df = 4$). Arriving at the Chi-square distribution table with 4 degree of freedom and reading along the row at the value of x^2 to be 8.785. The alpha level of significance is 0.025 at probability levels. That means that the p-value is above 0.025 (actually at 0.066). Since the p-value of 0.066 is greater than the conventionally accepted significance level of 0.025 (i.e. $p > 0.025$) fail to reject the null hypothesis. Meaning, it is not statistically significant that academia should publish research papers.

Figure 4.37: Consequences of publish or perish slogan on IS/academic (Q7) and total number of academic papers published.

The Chi-squared Table below tests to know the degrees of freedom between publish or perish slogan on IS/academic research and the total number of academic papers published.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.495[a]	25	.119
Likelihood Ratio	31.851	25	.162
Linear-by-Linear Association	.000	1	.987
N of Valid Cases	72		

H_0: Publish or perish slogan is not an issue for academia.

H_1: Publish or perish slogan is an issue for academic.

The Chi-square statistic is ($x^2 = 33.495$), predetermined alpha level of significance of (0.025), and the degrees of freedom (df = 25). Arriving at the Chi-square distribution table with 25 degrees of freedom along the row with the value of x^2 at 33.495 value. The probability is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.199). Since the p-value of 0.199 is greater than the conventionally accepted significance level of 0.025 (i.e. $p > 0.025$) fail to reject the null hypothesis. In other words, there is no statistically significant difference in the proportion of the publish or perish slogan.

Figure 4.38: The consequences of publish or perish slogan on IS/academic (Q7) and the worth of the debate (Q12).

The Chi-squared Table below tests to know the degrees of freedom and relationship between the consequences of publish or perish slogan and the worth of the rigour and relevance debate.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.449[a]	20	.371
Likelihood Ratio	23.107	20	.284
Linear-by-Linear Association	2.521	1	.112

N of Valid Cases	72		

H_0: There is a need for rigour and relevance debate.

H_1: No need for the rigour and relevance debate.

The Chi-square statistic is (x^2 = 21.449), predetermined alpha level of significance of (0.025), and the degrees of freedom (df = 20). Arriving at the Chi-square distribution table with 20 degree of freedom and reading along the row at the value of x^2 to be 21.499. The alpha level of significance is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.371). Since the p-value of 0.371 is greater than the predictably accepted significance level of 0.025 (ie p > 0.025) fail to reject the null hypothesis. In other words, there is no statistically significant difference in the rigour and relevance debate.

Figure 4.39: Total number of academic papers published and the contribution of the debate to other discipline (Q14).

The Figure 4.38 above tests to know the degrees of freedom between total number of academic papers published and its contributions to other discipline.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.070[a]	20	.337
Likelihood Ratio	20.299	20	.439
Linear-by-Linear Association	.001	1	.972
N of Valid Cases	72		

H_0: IS/academic research papers are contributing to other disciplines.

H_1: IS/academic research papers are not contributing to other disciplines.

The Chi-square statistic is (x^2 = 22.070), predetermined alpha level of significance of (0.025), and the degrees of freedom (df = 25). Arriving at the Chi-square distribution table with 25 degree of freedom and reading along the row at the value of x^2 to be 33.495. The probability is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.337). Since the p-value of 0.337 is greater than the usually accepted significance level of 0.025 (ie p > 0.025) fail

to reject the null hypothesis. In other words, it is not statistically significant that academic research papers are contributing to other disciplines.

Figure 4.40: Published and number of practitioner's papers published (Q21).

The Chi-squared table below test to determine the degrees of freedom and relationship between published papers and the number of practitioners' papers published by practitioners.

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.418[a]	7	.387
Likelihood Ratio	11.431	7	.121
Linear-by-Linear Association	5.257	1	.022
N of Valid Cases	72		

H_0: Academia's must publish practitioner's papers.

H_1: Academia's are not publishing practitioner papers.

The Chi-square statistic is ($x^2 = 7.418$), predetermined alpha level of significance of (0.025) and the degrees of freedom (df = 7). Entering at the Chi-square distribution table with 7 degree of freedom and reading along the row of x^2 at the 7.418 level. The alpha level of significance is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.387). Since the p-value of 0.387 is greater than the conventionally accepted significance level of 0.025 (ie $p > 0.025$) fail to reject the null hypothesis. In other words, it is not statistically significant that academia's should publish practitioner papers.

Figure 4.41: The number of practitioner's papers published and solving challenges facing practitioners.

Figure 4.5.6 aimed to show the degrees of freedom and relationship between the number of practitioner's paper published and practitioners' addressing their challenges through the use of academic research papers.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.617[a]	12	.042
Likelihood Ratio	16.116	12	.186
Linear-by-Linear Association	.143	1	.706
N of Valid Cases	72		

H_0: Practitioner papers are solving practitioners' challenges.

H_1: Practitioner papers are not solving the challenges of practitioners.

The Chi-square statistic is ($x^2 = 21.617$), predetermined alpha level of significance of (0.025), and the degrees of freedom (df = 12). Arriving at the Chi-square distribution table with 12 degree of freedom and reading along the row at value of x^2 to be 21.617. The probability is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.042). Since the p-value of 0.042 is greater than the conventionally accepted significance level of 0.025 (ie $p > 0.025$) fail to reject the null hypothesis. In other words, it is not statistically significant that practitioner papers are solving practitioner's challenges.

Figure 4.42: The coexistence of rigour and relevance (Q17) and the separation of rigour and relevance in a research (Q15).

The Chi-squared table below test to know the degrees of freedom and relationship between the coexistence of rigour and relevance and the separation of rigour and relevance in a research.

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.347[a]	12	.000
Likelihood Ratio	48.408	12	.000
Linear-by-Linear Association	6.534	1	.011
N of Valid Cases	72		

H_0: Rigour and relevance are separated in IS research.

H_1: Rigour and relevance are not separated in IS research.

The Chi-square statistic is (x^2 = 44.347), predetermined alpha level of significance of (0.025), and the degrees of freedom (df = 12). Arriving at the Chi-square distribution table with 12 degree of freedom and reading along the row at value of x^2 to be 44.347. The probability is 0.025 probability levels. That means that the p-value is above 0.025 (actually at 0.000). Since the p-value of 0.000 is less than the conservatively accepted significance level of 0.025 (ie $p > 0.025$) supports the null hypothesis. This shows there is statistically significant difference in the proportion of separation of rigour and relevance.

4.6 CONCLUSION

Empirically, the rigour and relevance debate has different significant meanings to many. The relevance of IS research can be viewed by many differently, in accordance with the responses gathered in this survey; it's revealed that the IS research relevance to practitioners can only be justified or testified to by practitioners themselves. Researchers that participated on the survey have the belief that no matter the hindrance, like "publish or perish" slogan and the gap between researchers and practitioners, they still have the confidence that their research output is of an importance, relevance and impacting in the industry.

The research analysis concluded that research output has importance in the industry, the on-going rigour and relevance debate should continue and its worth debating, other disciplines are benefiting from IS research output and collaborative research should be encouraged among academia and practitioners. The analysis also shows that researchers have not seen the need to publish practitioners research papers, both researchers and practitioners seem not to understand themselves, the term 'publish or perish' is still what pushes many researchers to publish for self-benefits and many more.

In summation, the rigour and relevance in IS research debate is still in a balance, the future study should try to determine from the side of practitioners in the industry on how benefiting IS research papers are to them. The next chapter is chapter five and deals with the conclusion and recommendation of the study.

CHAPTER FIVE

CONCLUSION

5.1 INTRODUCTION

This chapter deals with the overall summary of the study from chapter one through chapter four. IS research is in a crisis and in a state of worrying to many and rigorous against relevance (Fitzgerald 2003; Bakshi & Krishna 2007). This chapter is structured to present the conclusion and recommendations according to the research objectives and questions layout. It makes inferences and draws conclusion and making recommendations based on the findings in chapter four as well as the literature study.

The following are the research questions: (1) What is a rigorous and relevant research that meets practitioners' expectations? (2) Does IS research output address the concern of IS practitioners? (3) Is the rigour versus relevance debate necessary in IS research? (4) What can be done to improve upon the understanding of rigour-relevance in IS research?

The overall study investigates the rigour and relevance of IS/academic research, its application in solving practitioners needs and expectations to determine the relevance of the rigour and relevance debate. The chapter presents the following format, summary of the study, answer to the research questions, limitations, managerial guidelines and the conclusion.

5.2 SUMMARY OF THE STUDY

The literature survey of this study has shown a lot of debating and argumentation with regard to IS/academic research and across discipline but to the best of the knowledge and understanding of the researcher, the debate is still heating-up in different forms. Considering all the suggestions made by different researchers, the gap between research and practice is not closing and the debate continues (Kieser & Leiner 2009).

The issues of concern to practitioners in terms of rigour, relevance, usability and the impact of IS research in the industry relate to doubt, but according to the analysis in chapter four, many believe that the academic research is used in the industry and practitioners are valuing the input from the research outcomes. Respondents believe in the worth of the debate and its continuation, and the scientific nature of IS research output helps in educating and assisting practitioners in

strengthening their needs and making informed decisions. Rigour and relevance need to coexist in a research, without separation into rejection or acceptance of any IS research papers for publication, it should be based on rigour and relevance.

Well, researchers have managed to distribute their research and reach out to practitioners and other audience through conferences, research journals and articles (online), textbooks and in many other forms. Most of the respondents have 1 to 5 academic papers published in their name, but have not published research papers specifically for practitioners. A large percentage of the respondents have not combined working as researchers (academia) and also working as practitioners in the industry.

However, most of the participants agreed that the on-going debate will help in strengthening the needs and expectations of practitioners. They believe that practitioners resolve their challenges through IS research. In determining the root cause of the debate, many others attribute the root cause to lack of understanding, communication, inaccessibility of research result and lack of practitioners' interest in reading or using IS research with reference to the sayings "publish or perish". Many classified IS/academic research are in contrast to other researchers' views on irrelevant of IS research (Max-Erik & David 2011; Cranefield & Young 2007; Moody 2000).

In determining the effect of "publish or perish" slogan on IS research, a high percentage of the respondents believed that the slogan is negatively impacting IS research, because it forces many to research in order to gain promotion, attracting funding to their independent faculties and departments and to gain tenure at work and only a few support the idea that the slogan helps to strengthen rigorous and relevant research. To estimate the amount of effort put in closing the existing gap between researchers and practitioners, it is suggested that many have not made any effective effort aimed to address the issues.

At this end, many do not consult or partner with practitioners in formulating research problem, problem statements, research questions, in writing up recommendations and conclusion. It indicates that both have no common aims. In rendering solution to the debate and helping in closing the gap, majority of the respondents believed that collaborative research should be a focused research method area for researchers and practitioners because it brings collaborative participation between both and delivering rigorous and relevant research that meets practitioners expectations and establishing the discipline identity now and in future.

5.3 ANSWER TO THE RESEARCH QUESTIONS

5.3.1 What is a rigorous and relevant research that meets practitioners' expectations?

This question seeks the understanding of participants on rigour and relevance research that meets the needs, support and expectations of practitioners. The question contains five sub-questions that try addressing the research question. The response provided by participants in regard to this question is positive, it is positive in the sense that this is a debate. In information gathered, respondents were able to demonstrate from their understanding that IS/academic research that meets practitioners' needs should be scientific research in nature so that it can be applicable in real-world setting.

In accordance with multiple opinions from other researchers like Huisman & Conradie (2010), Dipboye (2007) and Vermeulen (2007) and many more to move IS research forward, it was recommended that researchers should be scientific on any chosen research topic, being scientific should be on top of the agenda in any research. Researchers should base their research topic, questions, problem statements, conclusion and recommendations on what practitioners need to know and use. Researchers should partner with practitioners on every step in doing or conducting research. The main limitation at this level is that definition and explanation of rigour and relevance was not provided to participants, so some of them find it difficult to comprehend what the rigour and relevance is all about in the first place.

5.3.2 Does IS research output address the concern of IS practitioners?

This research question aims to understand from participants whether IS research is really relevant and impacting in practice. The response was positive but most of the participants' feedback shows they have different viewpoints; the research questions were answered within each sub-question in the section. Most of the participants agreed that IS/academic is addressing the needs and expectations of practitioners, in contrast to the opinion of others in chapter two of this study, this shows that practitioners are really benefiting from IS/academic research output, the main challenge here is that many believed that "publish or perish" slogan is playing down and hindering effective success of IS/academic research and impacts because many agreed that researchers engage in research to gain academic promotions and other self-rewards for researching and attending conference.

The slogan "publish or perish" and other issues are really hurting and hindering the rigour and relevance of IS/academic research in general. IS and academic researchers should produce

research papers, conference papers and books that tackle and deal with practitioner needs and expectations and the publications should balance between rigour and relevance. To understand the majors in place to address issues in academic research, the result shows that no effective effort or actions have been taken to address the slogan and other issues.

5.3.3 Is rigour versus relevance debate necessary in IS research?

IS research on rigour and relevance debate has lasted many decades. This research question tries to determine the rigour and relevance and importance of this debate over the years. Many have argued that IS should be rigour, some say relevance and others stand on balancing the both in a research. This has been a major issue of concern all these years in the academia.

Most of the respondents argued that the debate should continue and they believed that rigour and relevance should coexist in a research and not separated because it helps in identifying some gap in the discipline, it helps to reshape the research in the disciple and balancing academic research between rigour and relevance. Their response demonstrates that the debate is generally to the advantage of the discipline. Lack of rigour and relevance should be based on accepting or rejecting IS/academic research during the review for publication by editorial boards.

5.3.4 What can be done to improve the understanding of rigour-relevance in IS research?

IS/academic research has to move on high, for a positive onward progress of the discipline. The question and its sub-questions were intended to suggest ways and how IS/academic research could be both rigour and relevance and at the same time meeting practitioners' expectations and needs.

The feedback from participants is that communicating of research findings to practitioners should be through a channel apprehensible to practitioners, again, collaboration research between researchers and practitioners is highly recommended because through collaboration and partnership among them better research will be delivered. It is also suggested that researchers and practitioners should collaborate in formulating or framing research question, research problem statement, research topic, in analysing research findings, making research recommendations and conclusion. In reality, through collaboration, the right research problem statements will emerge; impacting research questions formulated, impacting and informative research conclusion and recommendations formulated as well and practitioners will be interested to read such research.

5.4 LIMITATIONS

This study encountered some form of challenges. The limitation that was encountered during the circulation of the study questionnaires was that the study background was not provided; it led to some of the participants finding it difficult to understand the term rigour and relevance and the overall aims and objective of the study. Some participants failed to return the copies of the questionnaires handed out to them and some delayed them. On the demographic questions, the age group between 41 and 50 was omitted from the questionnaire, question number 8 and question 29 overlapped. This omission was discovered by a participant during the survey. Despite the few errors discovered, the final analysis and result was not affected by the errors.

5.5 MANAGERIAL GUIDELINES

1. There are three types of research journals, according to many researchers' views in the literature review above; they recommended that researchers should publish research papers directed specifically to practitioners. Figure 4.29 suggests that researchers are not publishing practitioners' research papers. This means that specific research should aim in a specific group or audience, because practitioners should be the ones to determine the kind of publication type they want (Benbasat & Zmud 1999).
2. Researchers and practitioners hardly engage in a conference. According to the literature review, it was argued that both should engage in one conference to discuss their issues, challenges and expectations. Figure 4.32, shows lack of engagement or collaboration among both (researcher and practitioner). Researchers should enquire from practitioners the kind of research topic they would want academics to research (Vermeulen 2007).
3. Again, researchers should engage practitioners when drafting research problem statement, questionnaires and research conclusion and recommendations. The same idea was supported by participants in the survey because from the questionnaires, researchers hardly consulted with practitioners when framing research. In reality, Figure 4.30, shows no consultation between academia and practitioners.
4. Once more, both parties should regard themselves as co-authors and researchers.
5. IS academia (researchers) should be allowed to combine part-time work in teaching and practicing in the industry as well. This will deepen their observation and understanding of the way things happen and are done in the industry (Moody 2000). However, Figure 4.28, indicated that academia hardly combine both professions.

6. Rigour and relevance should be conducted together in a research (Benbasat & Zmud 1999). Figure 2.25, suggests the combination or coexistence of rigour and relevance in a research. The combination both in research marks for a great value and importance in a research and as well in a discipline (Mårtensson & Mårtensson 2007).
7. Young researchers should be attracted into the discipline the through creation of opportunities that will enable them to grow and explore. Figure 4.2, indicates a high number of young prospective researchers.
8. The "publish or perish" slogan used in the discipline should be used in conducting a high quality, rigorous and relevant research, not on the basis of research in obtaining PhD or gaining promotion at the tertiary level. Figure 4.15, shows that academia are conducting research for personal gain in getting academic promotion at the work place.
9. Researchers should be able to inform and communicate to practitioners whenever research papers are published. Figure 4.31, demonstrates that researchers are able to communicate with practitioner audience through research papers.
10. A work station should be created where practitioners can post in their problems and challenges in the industry and researchers should have to use those resources. Benbasat and Zmud (1999) advise that every research publications should be aligned to importance, accessibility and applicability.
11. In accordance with Benbasat and Zmud (1999) advice every research publications should be aligned to importance, accessibility and applicability. Figure 4.33, illustrates researchers supporting Benbasat and Zmud three dimensions suggestion in research.
12. Both parties should advocate for one goal, vision and objectives when conducting research as to benefit both parties. Figure 4.32; suggests no collaboration between the both.
13. There should be a dedicated research journal for practitioner and one for researchers and a combined journal for both in academic writing. Figure 4.29, recommends that researchers conduct research specifically focusing on practitioners.

5.6 CONCLUSION

Some researchers' views were utilised but some others could not be used due to a limitation in the length of the discussion. The four sections of the research questions from chapter one has been answered and analysed in this chapter. The result shows that four of them were answered in the questionnaires distributed. The result and findings indicate from the participants believe that

IS research is making impact in the industry in contrast to multiple views of others in literature review (chapter two); IS/academic research papers are making impact in the industry; a similar research should be conducted around practitioners in the industry as to understand their honest views and opinion in regard to the relevance of academic research and it benefits to them.

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Annexure A: TABLE OF CONSTRUCTION

Research Questions		Survey Question	Variable(s) and/or relationship measured	Question Type	Data Type
Demographics	1.1	Status group	Demographic question	Mr, Mrs, Miss, Dr, Prof	Dichotomous
	1.2	Please indicate your age group as shown in the block	Demographic question	21-30, 31-40, 51-60, 60+	Discrete
	1.3	Please indicate your gender	Demographic question	Male, Female	Dichotomous
	1.4	How long have you been in academia	Historic question	0-5, 6-10, 11-15, 16-20, 20+	Discrete
	1.5	Have you published before? [If none, you can still complete the questions or you can opt out at this stage]	Historic question	Yes, None.	Ordinal
	1.6	Where have you published?	Historic question	Conference, Journal, Textbook, Articles, None	Ordinal
	1.7	In total, how many academic papers have you published?	Historic question	1-5, 6-10, 11-15, 16-20, 20+, None	Discrete
	1.8	In total, how many practitioner papers have you	Historic question	1-5, 6-10, 11-15, 16-20, 20+, None	Discrete

		published?			
What is a rigorous and relevant research that meets practitioners' expectations?	2.1	In your own word, please tick the applicable block that defines rigorous research?	Rigour and relevance question	A scientific, Contributory, Internally valid, Reliable, Contextual research, None.	Ordinal
	2.2	In your own word, please tick the applicable block that defines relevant research?	Rigour and relevance question	Educating and assisting research, Interesting, Applicable, Current research, None.	Ordinal
	2.3	Do you think that the on-going rigour and relevant research debate could meet practitioners' expectations?	Rigour and relevance question	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	2.4	Do you think that practitioners are solving their challenges as a result of reading IS/academic research?	Rigour and relevance question	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	2.5	In your opinion, what is the root cause of rigour and relevance debate? [Tick all that are	Rigour and relevance question.	Lack of understanding, Lack Communication, Lack accessibility	Ordinal

		applicable].		of research result, Lack of consistency, Lack of transparency, Lack in practitioners interest	
Is IS research output addressing the concern of IS practitioners?	3.1	How do you classify academic research?	Addressing practitioner concerns.	Difficult to comprehend, 0ut of date, Valueless, Over-rigorous, Less-relevant, Relevant, Important	Ordinal
	3.2	Is the idea 'publish or perish' slogan in academic research helping researchers in the following ways? [Tick all that are applicable]	Addressing practitioner concerns.	Be rigorous, Be relevance, Gain academic promotion, To stabilise the discipline, To attract funding, Gain tenure extension	Ordinal
	3.3	Is IS/academic research informative enough for practitioners and researchers?	Addressing practitioner concerns.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	3.4	What effort have you made to address or contribute to this	Addressing practitioner concerns.	Much effort, Little effort, No effort, Undecided	Ordinal

		debate?			
	3.5	How do you capture the practitioner's interest to read an article?	Addressing practitioner concerns.	Through radio views, Through TV views, Through newspapers	Ordinal
	3.6	Can IS/academic research benefit practitioners?	Addressing practitioner concerns.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
Is rigour versus relevance debate necessary in IS research?	4.1	Is the rigour and relevance on IS/academic research worth debating?	The debate in IS research.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	4.2	Should the debate on rigour and relevance on IS research be continued?	The debate in IS research.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	4.3	Is debating on IS/academic research helping to identity contributions from other discipline?	The debate in IS research.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	4.4	Would you like rigour and relevance to be separated?	The debate in IS research.	Strongly agree, Agree, Undecided, Disagreed,	Ordinal

				Strongly disagree	
	4.5	Should rigour and relevance be combined in IS/academic research?	The debate in IS research.	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	4.6	Can rigour and relevance coexist in a research?	The debate in IS research	Strongly agree, Agree, Undecided, Disagreed, Strongly disagree	Ordinal
	4.7	Is it critical to accept/reject based on the following?	The debate in IS research	Rigour, Relevance or Both	Ordinal
What can be done to improve the understanding of rigour-relevance in IS research?	5.1	How many years of experience do you have working in the industry?	Ways of improving academic rigour and relevance	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10+, None.	Discrete
	5.2	Have you worked as academia and practitioner?	Ways of improving academic rigour and relevance	Academia, Practitioner, Both	Discrete
	5.3	In average, how many practitioner papers have you published?	Ways of improving academic rigour and relevance	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10+, None.	Discrete
	5.4	Do you consult with practitioners when doing the	Ways of improving academic rigour	Formulation of research question, Formulation of	Ordinal

		following?	and relevance	research problem, Analysing research finding, Making recommendation and conclusion.	
	5.5	How do you communicate to practitioners?	Ways of improving academic rigour and relevance	Through books, Through research papers, Through conferences, Through seminars, Short-courses	Ordinal
	5.6	How many times have you collaborated with practitioners in conducting a research?	Ways of improving academic rigour and relevance	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10+, None.	Discrete
	5.7	Do academic disciplines work with the following principles?	Ways of improving academic rigour and relevance	Interesting, Applicability, Currency or Importance	Ordinal
	5.8	What kind of approach can achieve rigour and relevance in academic research?	Ways of improving academic rigour and relevance	Applicable check, Action research, Collaborative research.	Ordinal
	5.9	Are practitioners and other audiences actually using academic research	Ways of improving academic rigour and relevance	Strongly agree, Agree, Undecided, Disagreed,	Ordinal

		in practice?		Strongly disagree	

Annexure B: RESEARCH QUESTIONNAIRES

FOR OFFICE USE ONLY: Respondent Code: _____

VOLUNTARY QUESTIONNAIRE FOR

AN EMPIRICAL INVESTIGATION OF RIGOUR VERSUS RELEVANCE IN INFORMATION SYSTEMS RESEARCH

Graduate School NWU
North West University
Researcher: Joshua Chukwuere. E
Supervisor: Prof S Lubbe

Note to the respondent

- We need your help to understand
- Although we would like you to help us, you do not have to take part in this survey.
- If you do not want to take part, just hand in the blank questionnaire at the end of the survey session.
- What you say in this questionnaire will remain private and confidential. No one will be able to trace your opinions back to you as a person.

The questionnaire as four parts:
Part 1: Permission to use your responses for this academic research
Part 2: Ask demographic questions of the participants; age, gender to academic historical questions.
Part 3: Ask questions on practitioner knowledge on rigorous and relevance research that meets practitioner's needs.
Part 4: Ask questions on the kind of IS research that participants regards impacting in the industry.
Part 5: Ask questions on whether the going rigour/relevance debate is necessary.
Part 6: Ask questions on the things to be done to improve academic research relevance in the industry.

How to complete the questionnaire

1. Please answer the questions as truthfully as you can. Also, please be sure to read and follow the directions for each part. If you do not follow the directions, it will make it harder for us to do our project.

2. We are only asking you about things that you and your fellow researchers should feel comfortable telling us about. If you don't feel comfortable answering a question, you can indicate that you do not want to answer it. For those questions that you do answer, your responses will be kept confidential.

3. You can mark each response by making a tick or a cross, or encircling each appropriate response with a PEN (not a pencil), or by filling in the required words or numbers. For any enquiry you can contact the supervisor Prof. S. Lubbe on sam.lubbe@nwu.ac.za.

Thank you very much for filling in this questionnaire.

Part 1: Permission to use my responses for academic research

I hereby give permission that my responses may be used for research purposes provided that my identity is not revealed in the published records of the research.

Initials and surname _____ Postal address:

_____

_____ Postal code:

_____

Contact numbers: Office: _____ Cell: _____

No.	**PART 2: General personal particulars (Demographic questions)** Please mark only ONE option per question on this section below.	18.	How do you capture the practitioner's interest to read an article? ☐ Through radio views ☐ Through TV views ☐ Through newspapers
1.	Please tick your status group in an appropriate box. ☐ Mr ☐ Mrs ☐ Miss ☐ Dr ☐ Ass Prof ☐ Prof Others_____	19.	Can IS/academic research benefit practitioners? ☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagreed ☐ Strongly disagree
2.	Please indicate your age group as shown in the block ☐ 18-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 60+		**Part 5: Is rigour versus relevance debate necessary in IS research?**

3.	Please indicate your gender □ Male □ Female	20.	Is the rigour and relevance on IS/academic research worth debating? □ Strongly agree □ Agree □ Undecided □ Disagreed □ Strongly disagree
4.	How long have you been in academia □ 0-5 □ 6-10 □ 11-15 □ 16-20 □ 20+	21.	Should the debate on rigour and relevance on IS research be continued? □ Strongly agree □ Agree □ Undecided □ Disagreed □ Strongly disagree
5.	Have you published before? [If none, you can still complete the questions or you can opt out at this stage] □ Yes □ None	22.	Is debating on IS/academic research helping to identity contributions from other discipline? □ Strongly agree □ Agree □ Undecided □ Disagreed □ Strongly disagree
6.	Where have you published? □ Conference □ Journal □ Textbook □ Articles □ None	23.	Would you like rigour and relevance to be separated in research? □ Strongly agree □ Agree □ Undecided □ Disagreed □ Strongly disagree
7.	In total, how many academic papers have you published? □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 20+ □ None	24.	Should rigour and relevance be combined in IS/academic research? □ Strongly agree □ Agree □ Undecided □ Disagreed □ Strongly disagree

8.	In total, how many practitioner papers have you published? ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 20+ ☐ None	25.	Can rigour and relevance coexist in a research? ☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagreed ☐ Strongly disagree
	Part 3: What is a rigorous/relevant research that meets practitioners' expectations?	26.	Is it critical to accept/reject based on the following? ☐ Rigour ☐ Relevance ☐ Both
9.	In your own word, please tick the applicable block that defines rigorous research? ☐ A scientific ☐ Contributory ☐ Internally valid ☐ Reliable ☐ Contextual research ☐ None		**Part 6: What can be done to improve the understanding of rigour-relevance in IS research?**
10.	In your own word, please tick the applicable block that defines relevant research? ☐ Educating and assisting research ☐ Interesting ☐ Applicable ☐ Current research ☐ None	27.	How many years of experience do you have working in the industry? ☐ 1 ☐ 7 ☐ 2 ☐ 8 ☐ 3 ☐ 9 ☐ 4 ☐ 10 ☐ 5 ☐ 10+ ☐ 6 ☐ None
11.	Do you think that the on-going rigour and relevant research debate could meet practitioners' expectations? ☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagreed ☐ Strongly disagree	28.	Have you worked as an academic and practitioner? ☐ Academic ☐ Practitioner ☐ Both
12.	Do you think that practitioners are solving their challenges as a result of reading IS/academic research? ☐ Strongly agree ☐ Agree	29.	On average, how many practitioner papers have you published? ☐ 1 ☐ 7 ☐ 2 ☐ 8

	☐ Undecided ☐ Disagreed ☐ Strongly disagree		☐ 3 ☐ 9 ☐ 4 ☐ 10 ☐ 5 ☐ 10+ ☐ 6 ☐ None
13.	In your opinion, what is the root cause of rigour and relevance debate? [Tick all that are applicable]. ☐ Lack of understanding ☐ Lack Communication ☐ Lack accessibility of research result ☐ Lack of consistency ☐ Lack of transparency ☐ Lack in practitioners interest	30.	Do you consult with practitioners when doing the following? ☐ Formulation of research question ☐ Formulation of research problem ☐ Analysing research finding ☐ Making recommendation ☐ Conclusion ☐ No consultation
	Part 4: Is IS research output addressing the concern of IS practitioners?	31.	How do you communicate to practitioners? ☐ Through books ☐ Through research papers ☐ Through conferences ☐ Through seminars ☐ Short-courses
14.	How do you classify academic research? ☐ Difficult to comprehend ☐ Out of date ☐ Valueless ☐ Over-rigorous ☐ Less-relevant ☐ Relevant ☐ Important	32.	How many times have you collaborated with practitioners in conducting a research? ☐ 1 ☐ 7 ☐ 2 ☐ 8 ☐ 3 ☐ 9 ☐ 4 ☐ 10 ☐ 5 ☐ 10+ ☐ 6 ☐ None
15.	Is the idea 'publish or perish' slogan in academic research helping researchers in the following ways? [Tick all that are applicable] ☐ Be rigorous ☐ Be relevance ☐ Gain academic promotion ☐ To stabilise the discipline ☐ To attract funding ☐ Gain tenure extension	33.	Do academic disciplines work with the following principles? ☐ Interesting ☐ Applicability ☐ Currency ☐ Importance
16.	Is IS/academic research informative enough for practitioners and researchers? ☐ Strongly agree ☐ Agree ☐ Undecided	34.	What kind of approach can achieve rigour and relevance in academic research? ☐ Applicable check ☐ Action research

	☐ Disagreed ☐ Strongly disagree		☐ Collaborative research
17.	What effort have you made to address or contribute to this debate? ☐ Much effort ☐ Little effort ☐ No effort ☐ Undecided	35.	Are practitioners and other audiences actually using academic research in practice? ☐ Strongly agree ☐ Agree ☐ Undecided ☐ Disagreed ☐ Strongly disagree

Annexure C: THE MATRIX

Theme and Journal	Authors	No	Years	Decline over the years	Problem of informing systems	Major challenges facing IS (academic) research	The engaging practice between researchers	Contribution to body of knowledge	Lack of discipline in IS	Absence of theory	Rigour and relevance
Crisis in the Information Systems discipline: A reflection	Bakshi	1	2007	×	×		×	×	×	×	×
Beyond Rigor and Relevance Towards Responsibility	Desouza	2	2006	×	×	×	×	×	×		×
Rigor and Relevance in IS Research: Redefining	Straub	3	2011	×	×	×	×		×	×	×
Combining Rigor and Relevance: The open Electronic	Whitworth	4	2007					×			×
The Relevance of IS Research: Informing the IS	Knight	5	2006	×	×	×	×			×	×
Research Importance in the IS Field: A Citation Analysis	Loebbecke	6	2007	×	×			×			×
Rigor and Relevance: The Application of The Critical	Serenko	7	2010			×					×
Balancing Rigor and Relevance in IS Research: Strategies	Sambamurthy	8	2006			×	×	×			×
Rigorously Relevant Action Research in IS	Vries	9	2007								×
Making Research More Relevant While Not Diminishing	Glass	10	2009		×				×	×	
ACIS 2007 panel report: Lack of relevance in IS research	Recker	11	2009	×	×		×	×	×	×	×
Extending rigour and relevance: Toward credible	Martensson	12	2007					×			×

The end of IS research: The paragmatic redefinition of the	Constantinides	13	2010	×						×	×
Readability and the relevance versus rigour debate	Straub	14	2008	×				×			×
Innovating on a dime: Design science for small teams	Max Erik	15	2011		×	×	×	×		×	×
Toward improving the relevance of IS research to practice	Rosemann	16	2008	×		×			×	×	×
Rigour and relevance under uncertainty toward frameworks	Kraaijenbrink	17	2010	×	×		×		×	×	×
Relevance and rigour: Executive education as a lever	Tushman	18	2007		×	×	×	×		×	
On the impossibility of collaborative research and on the usefulness	Kieser	19	2007	×	×	×	×	×	×	×	×
Useful Research: Advance for theory and Practice.	Mohrman	20	2010		×	×	×	×	×	×	×
Whom are we informing? Issues and recommendation for MIS	Gill	21	2009	×	×	×					
Bridging the Rigour-Relevance gap in management: Its	Hodgkinson	22	2009		×			×			
Introduction: Can we bridge the Rigour-Relevance gap?	Fincham	23	2009		×		×				
Tent poles, Tribalism, and Boundary spanning: The rigour-	Gulati	24	2007	×	×	×	×				×
Collaborative for whom? A methodological critique	Found	25	2009		×		×	×		×	×
Academic Research and Management practice: Is the relevance	Worrall	26	2007	×	×	×	×		×		×
Rigor and Relevance in organisation studies	Palmer	27	2009		×			×	×	×	×

Response Van De Ven Johnson's "Engaged Scholarship": Nice	Mckelvey	28	2006		×	×	×	×		×	
Mutual informing between IS academia and practice: Insights	Lanamäki	29	2011	×	×		×	×		×	×
Promoting Relevance in IS research: An informing system	Kuechler	30	2011	×	×	×	×	×			×
Collaboration with practitioners: But beware of collaboration research	Kieser	31	2011	×	×	×	×	×			×
Why the rigour-relevance gap in management research IS	Kieser	32	2009	×	×	×	×	×			
Crossing the chasm: How to convert relevant research	Markides	33	2011	×	×	×	×	×		×	×
Research and relevance: Implication of pasteur's quadrant	Tushman	34	2007		×	×	×			×	×
To whom should IS research be relevant: The case for an	Cranefield	35	2007		×	×	×	×	×	×	×
Marshalling the professional experience of doctoral students:	klein	36	2008			×	×				×
The great academic-practitioner divide: A Tale two paradigms	McNatt	37	2010	×	×	×	×	×	×		×
Leading the horse to water	klein	38	2006	×	×						×
In search of ambidextrous professors	Markides	39	2007			×	×		×		
Engaging scholarship in IS research: The Scandinavian case	Mathiassen	40	2008	×		×	×				×
A framework for IS metaresearch: The quest for identity	Raghupathi	41	2009	×	×	×	×		×	×	×
Development of an IS relevance index	Young	42	2006		×	×					×
That's relevant! Different forms of practical relevance	Nicolai	43	2010	×	×	×					×

Challenges and opportunities of community engaged research	Hartmann	44	2011	×	×	×	×	×			
The bridging scholarship	Sandmann	45	2008			×	×				
Academic-practitioner collaboration need not require joint or relevant research	Bartunek	46	2007	×	×	×	×	×	×	×	×
The construction and contributions of "Implication	Bartunek	47	2010		×			×			
Managing industry-academia partnership	Naude	48	2009		×		×	×			
Academic research matters to managers: On zebras, dogs	McGahan	49	2007		×						×
The practice of applicability check in IS research: An	Huisman	50	2010	×	×	×	×			×	×
"I shall not remain insignificant". Adding a second loop	Vermeulen	51	2007	×	×		×		×	×	×
The IS academic-practitioner disconnect: Exploring	Darroch	52	2010	×	×	×	×			×	
Linking relevance to practical significance	Lee	53	2012		×	×	×		×		×
A scientific basis for rigour and relevance in IS research	Lee	54	2009			×				×	
The promise of collaborative management research	Pasmore	55	2007			×	×	×	×		×
Rigour versus relevance revisited: Evidence from IS	Rosemann	56	2009		×	×					×
Building links between IS research and professional practice	Moody	57	2000	×	×	×	×	×	×	×	×
Relevance in IS research: An empirical analysis	Srivastava	58	2005	×	×	×		×			×
Perceived causes and solutions of the translation problem	Shapiro	59	2007		×	×	×		×		×
Informing Each Other: Bridging the Gap	Fitzgerald	60	2003		×		×				×

between researchers and practitioners											
Eight outrageous statement about HR science	Dipboye	61	2007								×
Reflections on engaged scholarship	Van de Ven	62	2007				×				
Improving links between information systems research	Moody	63	1999		×						
Narrowing the Science–Practice Divide: A Call to Action	Aguinis	64	2008	×			×				
When Does Trust Matter to Alliance Performance?	Krishnan	65	2006				×				
Social yet creative: The role social relationships in facilitating	Perry-Smith	66	2006				×				
Trends in theory building and theory testing: A five-decade	Colquitt	67	2007				×				
Communicating Academic Research Findings to IS	Lang	68	2003							×	
Empirical research in Information Systems: The practice	Benbasat	69	1999		×	×					×
The identity crisis within the IS discipline: Defining	Benbasat	70	2003							×	
'Quest for an engaged scholarship'	Cummings	71	2007	×							
An examination of the research – practice gap in HR	Deadrick	72	2007				×				
University-industry collaboration: Grafting the entrepreneurial	Dooley	73	2007			×					
Collaborative Research: Developing Mutually	Hinkin	74	2007		×			×			
Editor's forward: Tackling the 'Great Divide' between Research	Rynes	75	2007		×		×			×	
Knowledge for theory and practice.	Van de Ven	76	2006			×	×	×			