

**DEVELOPING A CONSTRUCT VALIDITY FOR
MOTIVATION OF EMPLOYEES IN THE NATIONAL AGRICULTURAL RESEARCH
ORGANISATION (NARO) –UGANDA: VALIDATION OF HERZBERG’S THEORY**

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Motivation of employees has been identified as key to job performance and organization's outputs (Latt, 2008). In a business context, organizational goals, profitability and competitiveness are determined significantly by employees' performance; who in turn are grossly influenced by the employees' attitude about work (Alharji & Yusoff, 2011; Chaudhary & Sharma, 2012). The attitude is highly influenced by how motivated employees are at work; hence their level of job satisfaction. In the competitive world, differences in these parameters would determine the success or failure of the organization (Dongho, 2006). Likewise managers should recognize this global competition and develop strategies that motivate employees to come to work and to be productive. Behaviour of positive attitude employees would be passed on to others in the organization which ultimately makes the organization competitive. This requires organizations to have effective Human Resource Management (HRM), where motivation is fully integrated. Managers should know what motivates their employees to satisfaction and what factors of motivation are applicable in that environment making motivation a core competence of leadership (Latham, 2007). Heathfield (2013), for example, described motivation as an employee's intrinsic enthusiasm about and drive to accomplish activities related to work. Employees in an organization when well-motivated pull their weight effectively behind the organization; they remain loyal and contribute, to the organization's goals and objectives (Shahid, 2013). There have been limited studies on employee motivation in public sector worldwide and Africa in particular which has constrained a detailed understanding of the

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underlying factors of employee motivation (Kuvaas, 2009; Munga & Mbilinyi, 2008; Reily, 2003; Tongo, 2011). This is contrary to the private sector organizations where empirical evidence on employee motivation is largely available (Ehiorobo, 2004; Mensah & Dogbe, 2011; Oladolun & Ozturen, 2013). Agricultural research institutions, in Uganda by their nature, present a unique context whose attempt to adopt traditional approaches or theories of motivation may post different results altogether.

A few studies in Uganda on employee motivation have mainly focused on areas of health, public service and education ((Namuddu, 2008; Odubuker, 2014; Oywak, 2002; Ssesanga & Garrett, 2005). The studies on education have focused on job satisfaction of university academia, secondary school teachers and staff in tertiary institutions. Ssesanga and Garrett (2005) investigated job satisfaction among the University academics in Uganda and indicated in accordance with Herzberg's two factor theory, that interpersonal relationship, tenure, promotion and workplace influenced the context of job satisfaction. Hygiene factors such as reward, remuneration, however, were found not to be mutually exclusive and also affected the satisfaction continuum. Studies on motivation have discouraged generalization of findings as applicable in all situations and instead recommended for institute specific motivational studies (Alharji & Yusoff, 2011; Bassy, 2002; Bjorklund, 2001; Kuvaas, 2009; Malik & Naeem, 2012; Quartey & Attiogbe, 2013).

This study intends to develop construct validity for motivation of employees in National Agricultural Research Organization of Uganda (NARO), specifically focusing on researchers, using the Herzberg's theory. This study will identify specific motivational factors that will be incorporated into the human resource practices of the organization which in turn would enhance

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the researchers' capacity to deliver on NARO objectives. NARO's mission is to generate and disseminate appropriate, safe and cost effective technologies through its various national and zonal based agricultural research institutes (NARS Act, 2005). NARO as a public institution charged with agricultural research in Uganda should, therefore, have motivated researchers to enable improved work performance, efficient generation of technologies and achievement of its goals embedded in the national aspirations of food security, poverty eradication and economic growth. The strength of NARO should, therefore, be built on, among others, availability of well-motivated researchers. NARO has 15 Public Agricultural Research Institutes (PARIs) categorized as either National Agricultural Research Institutes (NARIs) or Zonal Agricultural Research and Development Institutes (ZARDIs); and a NARO Secretariat (NAROSEC).

Herzberg's two-factor theory for motivation a widely renowned practical approach towards motivating employees has been identified as appropriate construct validity for the study. NARO researchers have various categories of employees that include directors of research, researchers, research assistants and technicians whose motivation is expected to vary according to the Herzberg's two factor theory. The outcome of the study would be useful to NARO management in the generation of appropriate HRM strategies that inevitably will lead to improved motivation and performance of the researchers. This research proposal is organized as follows: Chapter One is introduction where background, problem statement, purpose objectives, research questions, hypotheses, conceptual framework, justification and scope of the study are given. In Chapter Two literature review on motivation and relevancy to the study are argued. Methodology of the study is described in Chapter Three where research design, study population sample size, sampling techniques data collection methods, reliability and validity of data, as well as procedures of data collection, data analysis and measurement of variables are given. Limitations

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of the study are outlined. References, study instrument and details of sampling procedures are then followed.

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1.2 Background to the study

1.2.1. Historical Background

The history of management and motivation is interrelated and extends many centuries in the past.

Summaries of the historical perspective of motivation are given by various authors (Ganu, 2013;

Golliwitzer & Oettingen, 2001; Robbins & Judge, 2008). Ganu (2013) indicated how Plato, a

great thinker (427 B.C. -347 B.C.) identified the desire for truth as one of the greatest motivators

in life. He further indicated that during these early periods strategies for motivation were

characterized by “fear of punishment”, “fear of God”, coercion, superiority, power and force.

Pleasure Principle emerged in the theories of motivation in the 18th and early 19th Century.

Freud, one of the key Proposers of this principle asserted that people prefer optimism to

pessimism and that all behaviour is motivated by the desire to feel pleasure. Hedonism was

propelled by Cyrene during early time of Christianity to explain that pain and pleasure shaped

behaviour (Roos, 2005). The concept of unconsciousness as part of hedonism revolutionized art

and culture in early parts of the 20th Century and has continued to shape the modern world

through artists such as Andre Baton, Man Ray and Rene Magritte (Kazlev, 2004). Behaviour

and human motives were further linked as various schools of management and motivation also

emerged. The classical management theory developed by scholars such as Fredrick Taylor,

Henry Fayol and Max Weber in early 19th was premised on economic rationality of both

employees and employers and therefore promoted economic incentives as motivators (Hitt,

Middlemist, & Mathis, 1979; Sridhar, 1978). The theory hinged on the fact that unless there is

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reward, people will not work. Fredrick Taylor (1910) further promoted this theory through the Principles of Scientific management elements of task management, science to ensure work is done, division of labour where management takes overall responsibility and rewards for efficiency. In modern HRM, these elements can still be traced in employee relations, people resourcing, rewarding people and human resource policies, procedures and systems (Armstrong 2009). The neo-classical theory later appeared; Elton Mayo (1933) one of the theorists illustrated through Hawthorne studies that, in addition to economic incentives, there are strong motivational linkages between relationship among workers and work environment that influenced job satisfaction (Gillespie, 1991; Mayo, 1933; Sonnenfeld, 1985). Hawthorne studies created the foundation of human relations in human resource management where effects of social relations, motivation and employee satisfaction on productivity are studied and linked to organizational development. Human resource actions on areas such as recruitment, performance, reviews, social management, promotion, career development and rewards have been identified as key in human relations (Armstrong, 2009). Satisfaction of psychological needs of worker is taken as a priority (Sridhar, 2009). Thompson and Harley (2007) further explored the relationship between workplace and organizational labour dynamics in human relation studies. The human relations school is criticized, among others, by the fact that not everyone can be satisfied in an organization (Korajczyk, 1961).

Behavioural schools of thought as an extension of human relations later evolved promoted by scholars such as Abraham Maslow (1943), Herzberg et al (1957), Rensis Likert (967) and Warren Bennis (1973) where various approaches to improved worker motivation and productivity were developed. Behavioural schools of thought were largely concerned with motivation focusing on employees' diverse and challenging work. The complexity of

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organizations, individuals and diversity of their needs, motives and aspirations, led to the emergence of the modern management theory that acknowledges these complexities and underscores the fact that no single managerial strategy works for all the people all the times (Sridhar, 2009). This is the dilemma HRM has found itself in where increased productivity is sought through such factors as motivation. Modern management theory therefore promotes the view of complexity of employees and proposes 4 modern management theories of systems theory, contingency theory, organizational humanism and management science all of which have motivation as key factor in human behaviour and management complexities (Sridhar 2009). Motivation theories since then have emerged from these modern management theories aimed to illustrate the relationships among human behaviors, performance, job satisfaction and motivation. Among these theories are Maslow's needs theory (1943) and Herzberg two-factor theory of motivation (1959). Maslow identified five levels of basic needs. These needs are hierarchically arranged where one need rests on the prior satisfaction of the previous, a more pre-potent need (Simons, Irwin, & Drinnien, 1987). Mwala and Mwale (2011) found, in the investigation of influencing factors on motivation agricultural researchers in Zambia, that key issues of motivation mainly rotated around physiological and security needs of Maslow's hierarchy of needs.

Alderfer (1969) re-defined Maslow's needs hierarchy theory into empirical research in his own terms under the needs of Existence, Relatedness and Growth theory –ERG Theory where he acknowledged that if a higher level of remains unfulfilled, the person may regress to lower levels' needs that appear to satisfy. Caulton (2012) illustrated in a vast field of literature review the development and use of the ERG theory citing a number of studies undertaken for its validation and contrast and recommendations for further research.

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Sridhar (2009) asserted that there is no single unified management theory but rather more names of management schools that overlap each other. These names, he re-affirmed, have adapted key words that have applied in understanding human resource practices. These key words with attached approaches, he stated, are now used in studies and application of HRM. He singled out administrative management with an approach that seeks to study the management process and where functions and effective principles of management have been developed. Likewise there is a behavioural school of management whose approach is embedded in psychological and sociological themes where interpersonal and intrapersonal aspects of management are key with strong concerns of human psychology, motivation and leadership. Other key words of concern are decision making, democratic leader, leadership, management principles, laissez-faire leadership and managerial functions with specific approaches all of which are key in human resource management. These approaches form part of the contemporary schools of management thought where management research and practices continue to evolve and new approaches to study management have been proposed (Barnett, 2014).

Under HRM, motivation strategies are proposed in order to create a working environment, develop policies and practices that will lead to higher employee performance (Armstrong 2009). The factors affecting the choice of strategies include the complexity of motivation as a subject, how to value employees, providing employees with meaningful work and opportunities to grow, and good leadership that supports employees (Armstrong 2009). Armstrong (2009) therefore proposed development of competent frameworks, performance management, training and development as human resource contributions arising out of motivation requirements. Motivation, therefore, has formed a key area in HRM where various motivation theories continue

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to be applied to understand the complexities. [Armstrong \(2009\)](#) identified Herzberg's two factor theory among the leading motivation theories in organizational behaviour.

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In Uganda, in an effort to develop motivation strategies, studies on application of motivation [theories are](#) necessary and especially so in Uganda's varying environments in public sector where underlying factors of motivation have not been empirically analyzed. Studies in Uganda on motivation of employees have mainly focused on areas of health, public service and education ([Bwire et al, 2014; GoU, 2007; Hagopian et al., 2009](#)). The studies on education have focused on motivation of university academia, secondary school teachers and staff in tertiary institutions (Namuddu, 2008; Odubuker, 2014; Oywak, 2002; Ssesanga and Garrett 2005). Ssesanga and Garrett (2005) investigated job satisfaction among the University academics in Uganda and indicated, in accordance with Herzberg's two factor theory, that interpersonal relationship, tenure, promotion and workplace affect job satisfaction. Studies on motivation in agricultural research, [however](#), are lacking yet this is an area whose context needs to be understood to improve on its performance, and especially so as agriculture accounts for over 66% of Uganda's economic activities (GoU, 2012). It is therefore imperative that theories of motivation be validated in an agricultural environment. The proposed study seeks to close this gap by validating Herzberg's theory of motivation on researchers of NARO in Uganda.

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1.2.2. Theoretical background

Theories that view job satisfaction as an outcome of factors have been categorized as either content theories or process theories (Locke, 1976 cited from Manisera, Dusseldorp & Kooj, 2005). Under the process theories, interactions and combinations of variables such as needs, values, perceptions, and expectancies determine job satisfaction. On the other hand, content

theories identify factors that lead to job satisfaction (Manisera Duseldorp & Kooij, 2005). Maslow's Need Hierarchy theory (Maslow, 1954) and Herzberg's two-factor theory (Herzberg, Mausner & Synderman, 1959) are content theories.

The study has focused on Herzberg's two factor theory due to its wide use for other frameworks and practicability in human resource development (Herzberg, 1987). The theory provides a foundation to major issues of HRM, such as job satisfaction, employee motivation, and reward system. Herzberg's theory is also largely applied in the fields of economics and psychology (Furnham, 1997; cited from Manisera et al., 2005). Despite its historical context in which the theory was developed and the changing dynamics of the workforce worldwide, many researchers have maintained the theory as relevant (Ford, 1969; Lawler, 1970; Maher, 1971, cited from Manisera et al; 2014; Lodahl, 1964; Schwab De Vitt & Cumming 1971, cited from Stello, 2011).

Theoretically, Gawel (1997) described Herzberg's two factor theory of motivation of employees where he indicated that the two-factor theory is constructed on a two-dimensional paradigm of factors affecting employees' attitudes about work. The first set of factors consists of hygiene factors such as company policies, supervision, interpersonal relations, job security, working conditions, and salary. According to the theory, the absence of hygiene factors can create job dissatisfaction, but their presence does not motivate or create satisfaction. This is contrasted with a set of factors Herzberg called motivators which enriched an employee's job (Herzberg et al., 1959). These were termed strong determiners of job satisfaction and included: recognition, work itself, responsibility, growth and advancement. These motivators (satisfiers) were associated with long-term positive effects in job performance while the hygiene factors

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(dissatisfiers) consistently produced only short-term changes in job attitudes and performance, which quickly fell back to its previous level (Loiseau, 2011).

According to Herzberg et al (1959), overall job satisfaction can be measured separately using job satisfaction and job dissatisfaction parameters. Under each of these, he emphasized, there are various variables that are related to factors of satisfaction and dissatisfaction. Herzberg (1968) further contrasted the short term movement of satisfaction and long term motivation derived from hygiene factors to satisfaction, respectively. In HRM, implication of this theory is far reaching. Focusing on job enrichment, a motivation factor under the theory, for example, studies have shown how job enrichment provides satisfaction among employees through long term motivation and the subsequent need to provide these employees with management support, training and developing programs (Ford, 1969; Hague, 1985; Herzberg, 1974; cited from Hackman, 1980; Reif, Ferrazi & Evans, 1974; Sirota, 1973; cited from Stello, 2011). Similar studies with implications on human resource development have been undertaken to validate this theory focusing on stress, empathy, satisfaction and their relationships to performance (Stello, 2011). Johnson (2000) described best work practices as those HR methods and systems that are universal and impart positive effects on organizational performance. Both hygiene and intrinsic factors form part of the HRM strategies and practices. There have been classical studies that have linked HRM to motivation (Petrescu & Simmons, 2008; Bailey 1993, Tzafrir et al., 2004; White & Bryson, 2011). White and Bryson (2011) showed high positive and significant effects of HRM in the developmental, participatory and incentive domains on employee motivation in Britain. Employee motivation has been singled out by the proposed study as a best work practice for validation using Herzberg's two factor theory of motivation.

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However, [White and Bryson \(2011\)](#) mainly looked at private sector firms and recommended for application of HRM on motivation in workplaces of varying sizes. [Fey et al \(2007\)](#) in the study on relationship between HRM practices ([HRMP](#)) and firm performance indicated that employee ability and employee motivation are mediating variables in the HRMP and firm performance. The authors demonstrated using 241 firms in USA, Finland and Russia that HRMP are levers through which employee ability and employee [motivation](#) can be increased and how, in turn these practices improve on firm's performance. They stressed the contextual importance in their analysis. [Similar studies](#) have also identified hygiene and motivational factors as appropriate in motivation studies especially in Africa and the developing world ([Acom, 2005](#); [Kwasi & Amoako, 2011](#); [Manzoor, 2011](#); [Mwala & Mwale, 2011](#); [Sene et al., 2011](#)). Contradictions in some cases have, however, been indicated in the analysis of these factors ([Malik & Naeem, 2012](#)). Hygiene factors such as reward, remuneration, however, were found not to be mutually exclusive.

There have been various studies in support of Herzberg's two factor theory. [Focused on work motivation in Hyderabad Industries of roofing products in India, Shahid \(2013\)](#) illustrated how financial incentives, performance appraisal system, [good relationship](#) with co-workers, promotional opportunities in the present job, and employee empowerment largely affect the level of employee motivation. His study did not, however, score the varying importance of these factors to motivation. His sample size was only 50 respondents limiting wide generalization of his findings. [He also recommended continued studies on motivation over time as these factors may vary their motivation roles with time.](#) The [current study](#), proposes to carry out a similar investigation in an agricultural research setting and with a bigger sample size. [Chien \(2013\)](#) tested the validity of Herzberg's two factor theory and found it to be plausible for studying job

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satisfaction among employees in a Chinese chemical fiber company. He proposed to management areas of improvement as workforce planning, succession planning and clarity of performance standards. The sample, however, excluded all foreign labourers in the company who faced similar motivational challenges as citizens and therefore tended to bias results. Job rotation that he identified as an important hygiene factor is not common in agricultural research where there is high professional specialization. The proposed study will determine motivational factors in a setting that is different from that of a manufacturing industry. Kwasi and Amoako (2008) in Ghana justified for application of this theory on Ghanaian worker in particular and Africa in general which the study intends to undertake in Uganda.

Kwasi and Amoako (2008) further indicated that in Africa, hygiene factors such as pay are critical to motivation; however the study depended on non-systematic review of secondary data for empirical evidence and did not indicate the order of importance for each of the factors identified. This study will use both primary and secondary data to draw inferences and determine the importance of each motivation factor. Worlu and Chidozie (2012) applied Herzberg's theory in the context of the Nigerian political marketing practice using correlation analysis. They showed that hygiene (salary, party policies, interpersonal relations and working conditions) and motivating factors (recognition, work itself, growth, responsibility, and advancement) all influenced job dissatisfaction and satisfaction, among the political marketers, a variance from the theory. They were able, however, to measure overall job satisfaction using the job factors. This inconsistency arises when different methods of validation of the theory are used (Malik & Naem 2012). The gap of validating the theory and measuring employee motivation in the context of agricultural researchers will be filled by the proposed study under Uganda's economic and social settings conditions which differ from those of Nigeria.

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Herzberg's theory has, however, had some criticisms. The criticisms range from inconsistency findings, [unreliability and](#) faulted methodology (House & Widgor, 1967), [to](#) variations in findings and [interpretations](#) (Behling, Labovitz & Cosmo, 1968; cited from Stello, 2011; Ewen et al., 1966; Graen, 1966; King, 1970).

Herzberg's two-factor theory for motivation, however, is widely renowned as a practical approach towards motivating employees. Herzberg (1968) detailed the practical approach where he introduced KITA ("kick in the pants") Management, management through motivation and job enrichment, theories that [have](#) since been incorporated into HRM.

While the theory, however, gives an in-depth explanation of factors those employees find satisfying or dissatisfying about their jobs, [the](#) context of this explanation may differ from sector to sector and from country to country. A need to subject the theory's validation to the agricultural sector in a developing country context suffices. The proposed study aims to undertake this validation in NARO.

In [the study](#), the dependent variable which is employee motivation will be measured in terms of intrinsic and extrinsic motivation. [The study](#), will specifically concern itself with the variables for job satisfaction of work itself, growth, advancement, recognition, and responsibility. These variables are directly linked with motivation and have been identified as applicable under NARO's research environment. Agricultural research is a discipline where researchers yearn to achieve, be recognized, advance, grow and be empowered. The hygiene factors identified for the study are also applicable under NARO and these are company policy, supervision, working conditions, interpersonal relations, job security and; salary and fringe benefits.

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1.3 Problem Statement

Efforts to improve the performance of government organizations are partly dependent on the ability to motivate public employees (Houston 2000). This is against a background of increased competitiveness among organizations both locally and internationally, limited skills resources and the need for sustainability. This calls for a dedicated, loyal, committed and highly motivated employees to generate higher productivity gains for less (Khalid, 2000; Roos, 2005). While numerous studies have been undertaken on employee motivation, and using Herzberg's two factor theory, no one same study has been empirically undertaken to show relationships between employee motivation, hygiene and motivational factors in an agricultural research context. NARO as a public institution charged with agricultural research in Uganda should have sufficiently motivated staff for improved performance, and achievement of its goals. The strength of NARO should be built on availability of technical agricultural expertise which is not only competent but also committed, loyal, and dedicated on a consistent basis. This presupposes employees who are motivated with their work and are willing to continue to be in the institution. This presupposition, however, does not hold. Since NARO inception in 1994, a total of over 974 staff have left the organization and of these 225 are researchers who have resigned, absconded or terminated their contracts (NARO, 2014). DFID (2007) questioned the motivation and commitment of agricultural researchers of Uganda given the attitudinal and poor remuneration. While this is largely true, there has been little effort to establish the relationship between the attitude of agricultural researchers and motivation. Factors influencing employee motivation in this context are not empirically known. In the absence of such information, there is a likelihood of deficiency of employee motivation dimensions in strategic human resource policies, strategies and practices, there is suppressed innovativeness, reduced organizational

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performance, high staff turnover and decreased overall efficiency as employees do not perform to the best of their abilities (Roos, 2001). Given that skills resources for agricultural research are limited, poor motivation stands out as a major problem and especially so to the country whose majority rural households are largely dependent on agriculture both for employment and food. Such a situation would lead to reduced generation of agricultural technologies ultimately resulting in a poor agricultural population depicted by low household food security, low food nutrition security, low household incomes and increased poverty levels. The study proposes to fill this gap by identifying motivational factors in agricultural research. Under the study, a literature review of motivational factors affecting agricultural research in Africa will be explored. This will enable the researcher to identify those factors that are relevant to Uganda. The study proposes to validate Herzberg's theory, to determine motivators and hygiene factors that specifically influence research staff motivation and in turn generate information for inclusion in the human resource management strategies and practices.

1.4 Objectives of the Study

The overall objective of the study is to develop construct validity for motivation of employees in NARO using the Herzberg's two factor theory.

1.5 Specific Objectives

- (i) To explore motivational factors in agricultural research organizations,
- (ii) To empirically determine the motivators and hygiene factors of motivation of agricultural researchers.

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(iii) To assess how employee characteristics moderate with identified motivators and hygiene factors to explain motivation of agricultural researchers.

(iv) To empirically test a construct validity of motivation.

(v) To draw implications of the validated construct to improved performance of agricultural researchers.

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1.6 Research questions

(i) What are the possible motivational factors of agricultural researchers?

(ii) What are the specific motivators and hygiene factors of employee motivation applicable to agricultural researchers?

(iii) What employee characteristics act as moderators to explain employee motivation of agricultural researchers?

(iv) Does Herzberg's theory provide a validated construct of motivation in agricultural research?

(v) How would performance of agricultural researchers be improved upon by such a validation and what are the necessary motivational strategies?

1.7 Hypotheses

(i) Motivators and Hygiene factors under Herzberg's two factor theory are applicable in an agricultural research environment.

(ii) Hygiene factors under Herzberg's theory are in resonance with dissatisfiers in agricultural research.

(iii) Motivators under Herzberg's theory are in resonance with motivators in agricultural research.

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- (iv) Age, gender, education and experience influence motivation in agricultural research.
- (v) Herzberg' theory provides a validity construct of motivation in agricultural research.

1.8 Conceptual Framework

The conceptual framework of Herzberg's Theory is illustrated in figure 1.

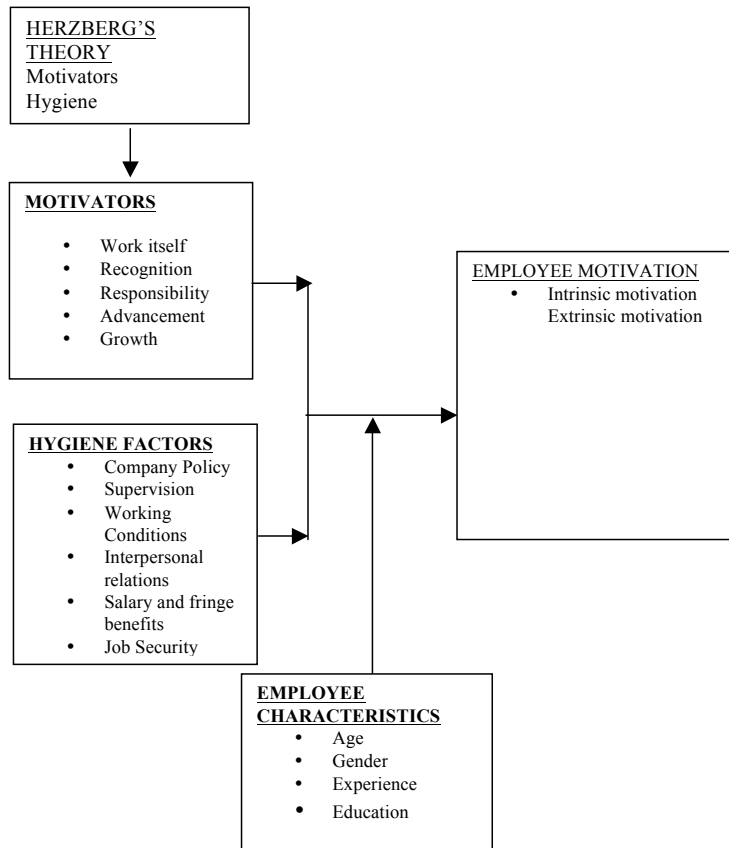


Fig 1: FRAMEWORK OF CONSTRUCT VALIDITY FOR MOTIVATION BASED ON HERZBERG'S TWO FACTOR THEORY

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Employee characteristics of age, level of education, marital status, experience and gender have been included in the framework to determine their possible influence on employee motivation. Construct validity will be determined for agricultural researchers using this framework.

NARO has a variety of supervisors embedded at all layers: research assistants, technicians, research officers, senior research officers, principal research officers, senior principal research officers and directors of research at NARO institutes. Working conditions vary from rural to urban research institutes and between national research institutes and zonal agricultural research institutes. Likewise there are those institutes that are able to attract funding better than others. Job security also varies from category of researcher, with categories of research officers and above having long term contracts. Employee motivation variables identified are extrinsic motivation arising out of hygiene factors and intrinsic motivation from motivators, respectively.

It is on this premise that the theory has been conceptualized to provide appropriate construct validity for motivation in NARO as a basis for improvement in hygiene and motivators in order to improve overall employee motivation. Previous studies on staff motivation have determined the values of the various factors of motivation with precision using Herzberg's theory (Oladotun & Ozturen, 2013), while some studies have implied Herzberg's theory (Malik & Naeem, 2012).

1.9 Significance of the Study

Agricultural research generates technologies aimed to improve farming communities at household levels in three major livelihood areas of food security, nutrition security and household incomes.

Given the importance of the agriculture in Uganda's economy these technologies must be generated for use by farming communities and enable them achieve in these livelihood areas.

The study aims to investigate the motivational factors that are specific to NARO.

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If motivational factors appropriate to NARO are identified and construct validity indicated for each of the factors, then the study will generate relevant information that can be applied in human resource policies for improved performance. Critical factors of motivation will be identified and recommended for inclusion in motivation enhancement strategies. A study of this nature is timely given the importance of agriculture in Uganda's economy and the need to generate appropriate technologies for the purpose and especially at the time of high staff turnover, high demand for technologies, and the need to increase food productivity in the wake of high population growth rate and climate change.

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Appropriate and timely adjustment mechanisms can hence be designed to improve on motivation which in turn will facilitate generation of agricultural technologies, improving the competitiveness of the agricultural sector, which is the engine of Uganda's economic development. The study will therefore go a long way in contributing to the general livelihood of Uganda's agricultural community. The study will also contribute to the body of research knowledge. In a nutshell agricultural community, policy makers, research managers, researchers and students will find the study findings useful.

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1.10 Justification of the study

The lack of empirical evidence on factors that influence employee motivation in agricultural research in Uganda has led to limited strategic human resource interventions and practices. This limitation has grossly undermined the generation of motivation-resourceful strategies and debates on appropriate actions to take in order to increase employee motivation, reduce staff turnover and increase performance in agricultural research. If these factors are redressed then it would inevitably lead to improved staff motivation, committed and loyal researchers, increased agricultural technology generation, improved agricultural productivity to ensure household food

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security, nutrition security and ultimately increased household incomes for improved livelihoods of communities. Employee motivation varies from institutes, environments and approaches and this opportunity will help to analyze motivation factors under an agricultural research [context](#). NARO is a very strategic organization in Uganda's economy as it generates technologies for farmers' adoption. The study would help in answering questions that are related to improved staff motivation.

The proposed study uses Herzberg's theory, a theory that is world-wide renown to determine motivation. In this study, hygiene and motivational factors will be used as independent variables and employee motivation as the dependent variable. Influence of employee characteristics on motivation will also be investigated.

1.11 Scope of the study

This study will be undertaken in Uganda focusing on agricultural researchers in Public Agricultural Research Institutes (PARIs) under NARO. The study consists of 3 parts: An exploratory review of literature on employee motivation in agricultural research institutes in Sub-Saharan Africa; an in-depth interview for 10 selected stakeholders in agricultural research in Uganda and a major part where quantitative data will be collected [from](#) the PARIs using stratified sampling. The NARO Secretariat will also be included in the sample, as it contains the NARO Top Management. [Stratified sampling](#) method will enable generate a sample with a continuum [of agricultural](#) researchers at all levels of decision making and work relations, [rural](#) and urban based, to enable capture data that will depict variations [in employee](#) motivation. Using the available departments in institutes, a sample of researchers will be selected unto who a structured questionnaire will be administered to collect data on employee motivation. [These data](#)

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will be analyzed to relate to the corresponding variables in the theory to create construct validity.

Data collection will take three months and final report will be presented within a period of 3 years.

1.12 Operational definitions

Employee Motivation- A set of internal and external forces that stimulate work-related behaviour, that determine its form, direction, intensity and duration. In the workplace, motivation manifests itself specific behaviour that is measurable (Ambrose and Kulik, 1999).

Hygiene factors- Those factors under Herzberg's theory that prevent job dissatisfaction. These factors surround the job context, are granted, and provided by others to employee. These factors include supervision, interpersonal relations, physical working conditions, salary, company policy and administration, benefits and job security. They largely lead to extrinsic motivation (Yusoff, Kian & Idris 2013).

Motivation factors- Those factors under Herzberg's theory that pertain to job content that lead to positive job attitudes and job satisfaction. These factors are; advancement, work itself, recognition, responsibility and advancement. They largely lead to intrinsic motivation (Kwasi, & Amoako, 2011)

Construct validity: It is a measure of a variable that is itself not directly observable. In the quantification of construct validity the procedure to measure the correlations and the relative magnitudes of these correlations are, be clearly shown (Westen & Rosenthal, 2003).

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1.13 Chapter Summary

This chapter presented an introduction to employee motivation and how it is interrelated with job satisfaction, employee performance and organization's outputs. The chapter further conceptualized motivation, linking it to the historical and theoretical perspectives of the underlying famous authoritative theories of management and motivation and; focusing on Herzberg's two factor theory as an appropriate theory in further understanding of motivation in the agricultural research context. The chapter describes the research setting, where the study's objectives, and scope are given and the relevancy of Herzberg's theory and its application in the contemporary HRM best practices are summarized. In the next chapter, a critical overview of literature on classical motivational theories is given. The Chapter singles out Herzberg's theory relating it to motivation, profiling previous classical research studies that relate the theory to its assumptions, findings and; contextualizing all these in the perspective employee motivation in an agricultural setting in a developing country.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Employees are the most valuable asset to an organization and their motivation at workplace is a critical in any given management style (Urdzikova & Kiss, 2009). Organization's goals, profitability and competitiveness are determined significantly by employees' attitudes about work (Wasilu, 2013). Employee's attitude determines his performance at workplace (Awadh & Ismael, 2013). This performance in turn is highly influenced by how motivated he is at work and hence his level of job satisfaction (Hong & Waheed, 2011). This chapter presents the re-known theories of motivation: Maslow's Needs Hierarchy Theory, Theory X and Theory Y; ERG theory of motivation and finally and more critically the Herzberg's two factor theory, the theory that the study proposes to use in its construct validity of employee motivation in NARO. Numerous studies on the theories are cited, identifying critical areas of convergence and gaps for the proposed study. Similarly, empirical studies on motivation and practical application of Herzberg's theory are also evaluated pointing out relationships in their constructs to employee motivation and job satisfaction. Validation studies of Herzberg's two factor theory of motivation are contextualized, furthermore identifying their dimensional behaviours of the constructs of Herzberg's theory. The chapter highlights the findings, conclusions of these studies and their contributions to understanding employee motivation, and; in shaping the proposed study in terms of context, methodology, objectives, and eventual interpretations of the study results. The

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review enables to make a strong justification for applying the theory in understanding employee motivation in an agricultural research context of a developing country. Studies on motivation in Africa and Uganda are particularly evaluated to identify the gaps for validation of Herzberg's theory in employee motivation in NARO.

2.2 The Concepts of Motivation, Organizational Performance and Productivity

Motivation has been widely defined. Motivation is defined as the act or process of giving someone a reason for doing something (Ryan & Deci, 2000). Synonyms of motivation include impetus, boost, encouragement, goad, incentive, stimulant, impulse and provocation (Webster, 2013). Heathfield (2013) describes motivation as an employee's intrinsic enthusiasm about and drive to accomplish activities related to work. Employees in an organization when well-motivated pull their weight effectively behind the organization; remain loyal and contribute, to their satisfaction, the organization's goals and objectives (Asim, 2013). In terms of motivation, job and organizational performances, motivation is very important for an organization as it provides a number of benefits both to the employee and to the organization (Manzoor, 2010). Motivation puts human resources in action and it's through motivation that full potential of human resource can be utilized (Macky & Boxell, 2008, cited from White & Bryson, 2011). The issue of how employees can be motivated to enable organization achieve its goals therefore becomes paramount (Achim, Dragolea & Balan, 2013). To motivate employees requires an incentive plan which benefits them (Arnolds & Venter, 2007).

2.3 Theories of Motivation

There are outstanding theories of motivation some of which have been practically applied for the purpose of improving employee motivation. These theories and their merits are discussed below.

2.3.1 Maslow's Need Hierarchy Theory

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Abraham Maslow believed that human beings are not pushed or pulled mechanically but that they strive to achieve the highest capabilities (Simons, Irwin, & Drinnien, 1987). He identified five levels of basic needs: physiological, safety, social, esteem and actualization. These needs are hierarchically arranged where one need rests on the prior satisfaction of another, a more pre-potent need. Under this arrangement, the person does not feel the second need until when the demands for the first need are fulfilled.

Various authors have underscored the practical applicability of Maslow's need hierarchy theory into management of improvement performance of organizations (Ajang, 2003; Greenberg & Baron 2003). Ajang (2003) used Maslow's needs hierarchy theory to analyze motivational factors of employees using students of UMEA University as a representative sample. Job satisfaction and recognition were scored highest as motivation factors. The study is faulted as students' environment differs from that at workplace. Mwala and Mwale (2011) found, in the investigation of influencing factors on motivation agricultural researchers in Zambia, that key issues of motivation mainly rotated around physiological and security needs of Maslow's hierarchy of needs. McLeod (2007) however, criticized the theory pointing out that self-actualization is a continual process and not a perfect state that one reaches. He questioned the assertion that lower needs must be satisfied before a person achieves potential and self-actualization, citing poor people who have reached higher needs such as love in the absence of physiological needs. Rutledge (2012) criticized the theory arguing that the pyramid undervalues the role of social connection as a driver of behavior. This theory has, however, had limited application in sub-Saharan African motivation studies. The proposed study will use Herzberg's theory where motivational factors are categorized as either hygiene or motivators to explore employee motivation in Uganda.

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2.3.2 Theory X and Theory Y

In 1960, Douglas McGregor formulated Theory X and Theory Y suggesting two aspects of human behavior at work, or in other words, two different views of individuals (employees): one of which is negative, called Theory X and the other is positive, so called as Theory Y. According to McGregor, the perception of managers on the nature of individuals is based on various assumptions (McGregor 1960). Under theory X it is assumed that people dislike work, prefer to be directed, avoid responsibility and must therefore be forced or threatened to work towards organizational objectives. Under theory Y work is natural and people are committed, and have self-control and direction in pursuit of organizational objectives without external control or threats. Kiyingi (2007) noted in a study of application of theory X and theory Y in motivation in primary schools in Luwero district, that theory X and theory Y had motivated teachers' commitments to school schedules, and activities, regular attendance and enhanced decisions among teachers. The theory has had little application in Uganda. The proposed study will address this gap by investigating employee motivation using Herzberg's theory under an agricultural research setting that will eventually enable generation of information on motivational factors.

2.3.3 ERG Theory of Motivation

In an effort to bring Maslow's needs hierarchy theory into empirical research, Alderfer (1969) re-defined it in his own terms under the needs of Existence, Relatedness and Growth theory – ERG Theory. The framework pre-supposes that focusing exclusively on one need at a time will not effectively motivate. It, however, acknowledges that if a higher level of need remains unfulfilled, the person may regress to lower levels needs that appear to satisfy, hence the

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frustration-regression principle. ERG theory has been validated by human experience as a model of human need (Ivancevich, Konopaske, & Matteson, 2007) and its construct is therefore included with other motivation approaches. Caulton (2012) illustrated, in a vast field of literature review, the development and use of the ERG theory citing a number of studies undertaken for validation and contrast. She recommended, for further research, the process of motivational preference: what causes it and why. The proposed study aims to analyze the underlying factors of motivation in an agricultural research context of NARO by validating Herzberg's theory.

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2.3.4 Herzberg's Two factor Theory of Motivation

Herzberg's two factor theory of motivation was conceived by Herzberg in the 1950s. The theory states that job satisfaction and dissatisfaction are affected by different sets of factors. The origins of genesis of the theory are described in detail by Stello (2011). Due to the prevalence of strikes, slowdowns, grievances and other indicators of dissatisfaction in USA during the 1950s, Herzberg and his team conducted a five year study on job attitudes (Herzberg, Mausner, Peterson, & Aapwell, 1957). Through intensive literature review, Herzberg and his colleagues found contradictions on the subject but confirmed the relationship between job attitudes and productivity, agreed with existed defined characteristics of dissatisfied workers and factors related to job attitudes. Herzberg (1965) then hypothesized that satisfaction and dissatisfaction could not be reliably measured on the same continuum. This hypothesis was further refined into 2 areas: factors leading to positive attitudes and those leading to negative attitudes differed and; factors and effects involved in long range sequences of events would differ from those in the short range sequences. A study was subsequently conducted in Pittsburg among 203 accountants and engineers. Using the data, Herzberg (1965) restated the original hypothesis and then became

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the two factor theory of job satisfaction. Factors affecting job satisfaction are divided into two groups:

- a) Hygiene factors-Those factors that surround the doing of the job or job context and include supervision, interpersonal relations, physical working conditions, salary, company policy and administration, benefits and job security. They largely lead to extrinsic motivation.
- b) Motivation factors- Those factors that lead to positive job attitudes or job content and these are; Growth, work itself, recognition, responsibility and advancement. They lead to intrinsic motivation.

Herzberg (1965) then asserted that the opposite of satisfaction is no satisfaction and that the opposite of dissatisfaction is no dissatisfaction. He further asserted that satisfaction of hygiene factors can prevent dissatisfaction and poor performance but only the satisfaction of the motivation factors will bring improvement in productivity. He established that favourable attitudes influence job performance more than unfavorable attitudes and that to increase job satisfaction, motivation factors must be improved. Numerous studies have since been undertaken using Herzberg's two factor theory with some agreeing while others criticizing it as deficient. An outline of a selection of these studies is given together with their relevancy for the study.

2.4 Empirical studies on motivation and Application of Herzberg's theory

Schwab and DeVitt, (1971) investigated the relationship between satisfaction and performance, among 124 employees in a public accounting management consulting firm in USA and found no significant performance implications that could distinctly be linked to hygiene and motivation factors. The study, however, only sampled male workers. This study is useful to the one being

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proposed as it has generated information on key factors of motivation and categorized them under hygiene and motivation as recommended under Herzberg's theory. Nonetheless, Schwab and DeVitt (1971) show weaknesses as it only sampled males and in the context of an accounting firm. The proposed study will sample both male and female employees given the importance of women in agricultural production in Uganda. Our study will focus on agricultural research context in a developing world and the underlying factors of motivation are expected to differ from those of USA whose economy is developed and social conditions are different from [those](#) of Uganda.

Lindner (1998) in his study of importance of certain factors in motivating employees at Piketon Research and Extension Centre and Enterprise Centre in Ohio, USA, ranked motivational factors as interesting work, good wages, full appreciation of work done, job security, good working conditions, promotions and growth in the organization, feeling of being in on things, personal loyalty to employees, tactful discipline and sympathetic help with personal problems. [The study](#), however, did not recommend a single motivational theory to managers for improvement. The study is relevant as it is taken in an agricultural research setting similar to that of NARO. [USA](#) is a developed economy and these factors are likely to differ in Uganda. Secondly, the methodological differences in terms of sample sizes and data analysis will suggest any differences in findings.

Manzoor (2010) explored, using integrative literature review mainly focused on business organizations, the factors affecting employee motivation and the relationship between organizational effectiveness and employee motivation. He empirically revealed the influence of empowerment and recognition on motivation and how in turn these impacted on organizational effectiveness. The proposed study has identified empowerment and recognition as motivators

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for investigation and will use both primary and secondary data in an agricultural research institute where conditions differ from those under business-oriented organizations. Business oriented organizations are private and profit-oriented and therefore their motivation factors are expected to differ from those in a public sector like agricultural research. This will be investigated by the proposed study.

Elding (2011) in a study on motivation of staff in four private business organizations in UK showed how similarities between variables under different theories of motivation could be used to produce a practical model of motivation for use in employee motivation and performance. He, however, faulted his methodology on data collection on motivators as employees in the sample tended to glorify their achievements on self and blamed others for shortcomings. He also got a poor response of his sampled population as organizations took motivation to be a sensitive issue. The proposed study will specifically validate Herzberg's theory and will be undertaken in a context of a public organization where motivation is not taken as sensitive as in business organizations. This is therefore an area for further investigation by the proposed study. Wesley (2012) justified for mixed methods in his study of worker motivation in Lincoln Manufacturing Company, Nebraska. The quantitative part relied on the survey data designed using Herzberg's two factor theory as a basis. He used a triangulated analysis where data from multiple sources were compared and cross checked with data collected from people with different perspectives or from follow-up interviews with the same people. He identified the top 10 hygiene factors in the study among which were as: Childcare, lounge facilities, salary/relationship peers, workload, Micromanagement, and -Disability benefits. Wesley's triangulation approach in data analysis is plausible as two or more methods of analysis in the approach, offset biases and results are converged and corroborate one another, giving enhanced construct validity. His respondent size

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was poor as only 10% of the sample size (500 respondents) responded to his questionnaire leading to limitations in statistical analysis and implications associated with such small sizes. His study, however, is useful as it provides an insight into the factors affecting employee motivation using Herzberg's two factor theory. Our study has focused on validation on Herzberg's theory in a research setting in Uganda and will generate information that would be comparable given the differences in the context and economic and social differences between USA and Uganda. [A mixed methods design will be used for the study.](#)

Chein (2013) tested the validity of Herzberg's two factor theory and found it to be plausible for studying job satisfaction among employees in a Chinese chemical fiber company. He proposed to management areas of improvement as workforce planning, succession planning and clarity of performance standards. He recommended further research by other companies as his results could not be generalized. It would be great interest to apply this study in an agricultural research setting and establish where his recommendations are equally applicable. It would also be useful to compare the motivation of employees under the socio-economic environment of China and those of Uganda in order to draw lessons.

Within Africa, there have been numerous applications of Herzberg Theory in the study of motivation in Africa. For example, Ehiorobo (2004) conducted a study in Nigeria on the implication of adequate motivation on workers' productivity in a power generating company. In a sample of 100 respondents, he concluded that salaries and other rewards were equally as important as other motivational factors. He juggled among most theories of motivation including Herzberg's and recommended further studies in other organizations to further analyze motivational factors with other predictors other than age and experience which he had used in [his](#)

study. The proposed study will investigate motivational factors under Herzberg's theory in an agricultural research setting in Uganda where the environment is different from that of Nigeria.

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Kwasi and Amoako (2008) justified, through exploratory literature, for application of Herzberg's theory in Ghana context, given relevancy of hygiene and motivation factors and Africa in general, to employment conditions. The paper calls for re-assessment of the thinking that workers rate motivators higher than hygiene factors which forms part of the proposed study. Meanwhile, Marnewick (2011) in South Africa investigated the applicability of Herzberg's two factor theory to Africa 50 years after the theory's existence and in Africa where it's "foreign". He researched into motivation of IT Managers and concluded that IT team members were indeed motivated by achievement, recognition, responsibility. He indicated that age, race and gender did not influence motivation. Lack of in-depth analysis underlying the motivation factors is identified as the gap that the proposed study tends to fill. It also proposes a context of agricultural research which is different from that of IT and as such the results may differ.

Mawoli and Abdulsalam (2012) investigated motivation and job performance of academic staff in State universities in Nigeria and found a significant relationship between motivation and teaching performance. There was, however, no relationship between motivation and research performance. Given that a University's primary objective is to teach and graduate students, these findings are valid. Under an agricultural research setting, this is expected to change as research is a primary objective. This study will take the opportunity to contrast these two professionals in terms of motivation.

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Studies on motivation in Uganda have mainly focused on areas of health, business, public service and education. For example, Oywak (2002) applied Herzberg's theory on motivation of

Makerere University academic staff and revealed that factors of satisfaction and dissatisfaction of the staff were not in accordance to Herzberg's theory. Salary and fringe benefits were identified as strong motivators. The study was analytical and partially explained the causes of regular academic staff strikes of the University as poor remuneration. The proposed study will validate Herzberg's theory in an agricultural research setting where research is primary as opposed to teaching and may account for absence of such strikes in NARO. A similar study by Ssesanga and Garrett (2005) recommended that incentives and rewarding systems be re-examined among Uganda Universities and factors related to job satisfaction be regularly reviewed. The proposed study will examine the influence of these factors in an agricultural research setting where the primary objective is generation of technologies which is secondary to universities. Namuddu (2008) used Herzberg's two factor theory to understand the performance of Sebagala and Sons, a private supplier of electric equipment. With a purposive sample of 60 respondents, she focused her study on salary, company policy, career development, and causes of higher turnover rate. The study revealed that most employees would leave due to job insecurity and if offered better pay elsewhere. The proposed study focuses on a public institution where the main objective is to give services to the agricultural communities as opposed to business where profits are the guiding principle. The study will therefore enrich such a comparison. Lubogo et al (2011) in the study on motivation of health sector in Uganda found half of the doctors in Uganda dissatisfied and would consider leaving the health sector or the country. It would be of importance also to know how agricultural researchers feel about motivation in their workplace.

Despite the criticisms, Herzberg's Theory is valid and is widely accepted because of its theoretical and practiced simplicity and has been endorsed by most researchers (Idris & Wan, 2012; Malik & Naeem, 2012). The studies referred to and other studies worldwide and in

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Uganda specifically lead us to a conclusion that studies based on Herzberg's theory are inconclusive. The theory, however, provides a satisfactory framework for studying motivation. Therefore efforts to validate the theory should be continued in respect of other similar organizations in an effort to improve on motivation and job satisfaction. Studies on motivation using Herzberg's theory have cautioned on generalization of findings and recommend application of the theory in other environments as motivation differs in workplaces and under different environments. None of the studies has been done in the agricultural research setting in Uganda. It is from this conclusion that the study for construct validity using Herzberg's theory on motivation has been proposed for National Agricultural Research Organization, an agricultural [research institution](#) in Uganda.

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There have been few studies on motivation in agricultural research in Africa not necessarily directly applying Herzberg's theory. For instance, Sene et al (2011) analyzed trends, challenges and opportunities in agricultural research and development in Sub-Saharan Africa (SSA) focusing on five National Agricultural Research Institutes of Zambia, Kenya, Burkina Faso, Senegal and South Africa and identified poor salaries, and poor working environment as major causes of poor researcher retention. The study is, however, exploratory and avoids any analytical construct validity of the factors. Lack of analytical studies directed to the agricultural sector further makes it imperative to undertake a study to fill this gap. Overall, some studies have indicated indifference in motivation between hygiene and motivational factors an invalidation of Herzberg's theory while others have validated the theory. Very few of these studies, however, have validated Herzberg's theory in an agricultural research setting. The proposed study therefore will validate Herzberg's theory in agricultural research focusing on

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NARO a public research organization in Uganda to generate the missing information on employee motivation.

In conclusion, the cited literature review has indicated that employee motivation is behavioural and that Herzberg's theory is applicable in analyzing this behaviour. Literature has also shown that due to different contexts, validation of Herzberg's theory differs between profit-oriented or public organizations. While factors underlying motivation have been analyzed under the theory in organizational settings of businesses, universities, schools and hospitals, motivational factors under agricultural institutions have not been analyzed. The proposed study will therefore analyze the underlying factors of employee motivation and validate Herzberg's theory in NARO to address these gaps.

2.5 Chapter summary

This chapter has reviewed literature on employee motivation, highlighting re-known motivation theories and focusing on Herzberg's theory as the most appropriate one for the study. The empirical studies on [Herzberg's](#) two factor [theory](#) have provided us with insights in the behaviour of the theory's constructs under various contexts that has enabled us to focus the study [objectives](#) and to hypothesize. It expected that these studies will help us to critically present our results, identifying gaps the study has covered, and the convergences and [contrasts of](#) these studies. In the proceeding chapter, the methodology of the study is detailed when the research setting is described. The research design, study population, sampling techniques and data analysis are given. The chapter further indicates how the mixed methods research design and regression analysis are appropriate in the validity construct of Herzberg's theory in an agricultural research context.

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CHAPTER THREE

METHODOLOGY

3.1 Introduction

Chapter 3 contains the research design for the study, study population, sample size and sampling techniques, data collection and analysis. Mixed designs of qualitative and quantitative methods (qual→QUAN) will be used sequentially with complementary and development purposes in understanding the motivation constructs of Herzberg's theory in an agricultural research context (Morse, 1991; Johnson & Onwuegbuzie, 2007). The results from the qualitative method will be applied to improve on the implementation of quantitative method, corroborate, correspond and expand the results from the quantitative method (Olalz & Azorin, 2010). Qualitative method will help to make a deep understanding of motivation factors under Herzberg's theory in the context of agricultural research (Olatz and Azorin, 2010). Qualitative method will be used to collect data in review of literature and in the in-depth interviews; a survey will collect quantitative data. The quantitative method will be applied to understand the relationships among the constructs of Herzberg's two factor theory. However there will be more emphasis on quantitative method hence the use of the qual→QUAN notation (Morse, 1991). The study population is the researchers in agricultural research from who the target population is the researchers in PARIS under NARO. A sample size of 184 respondents has been drawn. Literature review of documents, interview guide and questionnaire will be used to collect data. Data collected will be analyzed by research synthesis of documents, and multiple regressions to generate a correlation matrix where magnitudes and directions of variables will be determined.

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3.2 Research Design

A mixed methods research design has been adapted for the study using qualitative-QUANTITATIVE (Qual-QUANT) pattern and emphasis as defined by Morsi (1991). Mixed methods design has been found appropriate as it will enable the researcher to apply results from qualitative approach to enrich the understanding of the factors of motivation factors in NARO for application in the quantitative survey. The mixed methods will employ rigorous quantitative research assessment for magnitude and frequency of constructs of motivation under the Herzberg's theory and; rigorous qualitative research exploring the identity, meaning, and understanding of these constructs (Johnson, Onwuegbuzie & Turner 2007; Johnson & Onwuegbuzie, 2004; Onwuegbuzie, Johnson & Collins, 2010) in an agricultural research setting. Through corroboration, complementarity and expansion, mixed methods approach will enable a deep understanding of employee motivation in NARO. Qualitatively, through exploratory design there will be research synthesis of literature review on research articles, essays, monographs, dissertations, and government documents on motivation of agricultural research staff that are available in the Sub-Saharan region. These sources have been conveniently selected among those proposed by Onwuegbuzie, Leech & Collins (2012) for representation and legitimation. This will enable identify appropriate motivational variables in the context of agricultural research, help researcher to distinguish what has been undertaken and what needs to be undertaken, identify contradictions and inconsistencies (Onwuegbuzie et al, 2012). Likewise the strengths and weaknesses of the research approaches that have been utilized will be identified. As part of qualitative approach, the researcher also intends to use in-depth interview to gather data about motivation in NARO by targeting key top management members. This is intended to explore, in depth, the respondents' views, experiences, feelings, uncover valuable

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insights and perspectives about motivation (Guion, Diehl & McDonald, 2011). This will be undertaken using an interview guide (Appendix.1). This qualitative approach will enable researcher identify appropriate motivational factors for validation of Herzberg’s Two factor theory among NARO employees, These factors will then be validated through the main method of data collection of the study using quantitative approach. For purposes of capturing data on magnitudes, [relationships and](#) direction of motivational factors, a quantitative survey is proposed using cross-sectional design where each of the variables to be studied will have a quantified indicator incorporated in the questionnaire with a numerical scale. Cross sectional designs are appropriate in correlational studies that aim to understand relationships by taking a snap-shot of a given population about the prevalence of a phenomenon (Calson & Morrison, 2009). Worlu and Chidozie (2012) found cross sectional research design appropriate for validation of Herzberg’s two factor theory in the study to job satisfaction to political marketers in Nigeria. Because Uganda and Nigeria largely share the same socio-economic environments, the cross sectional design offers a particular relevance even though the sectors may differ. [Mixed methods of Qual](#) and QUAN patterns have been used in studies on validation of Herzberg’s theory in Africa (Kwasi & Amoako, 2011; Marnewick, 2011; Namuddu, 2008). Therefore to undertake a construct validity for motivation in NARO using Herzberg’s Two factor theory, these patterns have been found appropriate.

3.3 Study population

The main data collection is the quantitative survey and the study population is the employee [continuum](#) involved in agricultural [research and](#) the target [population is](#) the researchers in PARIs under NARO. Specifically, the unit of analysis will be researchers in PARIs and [in](#) NARO

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Secretariat. NARO has the mandate of overseeing, coordinating and guiding agricultural research in Uganda making it an appropriate study population on agricultural research in Uganda. NARO consists of 6 NARIs and 9 ZARDIs. NARIs undertake research of national interest while ZARDIs mainly concentrate on research issues of a specific ecological zone. The NARO Secretariat is tasked with the coordination. NARIs are well developed having been in place for a long time. Therefore their organizational structures are well defined with departments comprising of a continuum of agricultural research staff. On the other hand ZARDIs were formed following the NARS review of 2006 and therefore their organizational structures are just emerging. There are a total of 340 research scientists in the all NARO institutes including the Secretariat. Table 1 shows the researchers at each institute categorized under NARI, ZARDI and; rural (R) and urban (U). The study population for qualitative data aimed to identify appropriate motivational factors is a continuum of various literatures that are available on motivation both physical and electronic. However, for the purpose of the study these have been narrowed to research articles, essays, monographs, dissertations, and government documents on motivation of agricultural research staff that are available in the Sub-Saharan region. While both physical and electronic methods will be explored to access these literatures, the latter method will be mainly used. For qualitative data from in-depth interviews, the study population and target population are similar to that of quantitative data approach and; 10 respondents will be purposively selected.

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Table 1: Distribution of Research staff in NARO Institutes and NAROSEC of Uganda

Institute/Category	Researchers	Support staff	Total
NALIRRI /NARI-R	27	36	63
NAFORRI/NARI-R	25	35	60
NARL/NARI-U	37	45	82
NAFIRRI/NARI-U	34	48	82
NaCRRRI/NARI-U	41	45	88
NASARRI/NARI-R	23	32	55
Rwebitaba/ZARDI-R	11	11	22
Kachwekano/ZARDI-U	13	10	23
Mbarara/ZARDI-U	15	14	29
Mukono/ZARDI-U	18	15	23
Ngetta/ZARDI-U	13	14	27
Abi/ZARDI-U	16	19	35
Buginyanya/ZARDI-R	13	14	27
Nabuin/ZARDI-R	12	15	27
Bulindi/ZARDI-R	14	17	31
NAROSEC-U	28	38	66
Total	340	408	748

Source: Directorate of Human Resource, NAROSEC 2014. **Note:** Researchers include Directors of Research, Research Scientists, Research Managers and Technicians. Support staffs

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include Finance and Audit Departments, Administrators, messengers and drivers. Urban and rural categories developed by researcher.

3.4 Sample Size and Sampled Institutes

The sample population is NARO researchers 340 out which 184 scientists (47%) will be selected as a sample size at 95% level of confidence and ±5% level of precision. This is derived from the formula provided by Yamane (1967: 886) indicated below:

$$n = \frac{N}{1 + N(e^2)}$$

Where n = sample size required, N = Population size, and; e = Desired

level of precision. This method is simple and takes into consideration the size of the study population. A sample between 120-200 respondents has been well justified in terms of time, costs and analysis (Mawoli & Abdulsalam, 2012). Using stratified sampling two strata have been derived for the study namely National Agricultural Research Institute (NARI) and Zonal Agricultural Research and Development Institute (ZARDI) and; rural and urban. Subsequently 3 rural and 5 urban based PAIRs were derived and using the SPSS syntax random number generations the specific institutes and sample size proportionately derived are summarized in table 2.

Table 2: NARO Institutes of Uganda and sampled research scientists

S/No	PAIR	Category	Researchers
1	NALIRRI/NARI-R	Rural	27
2	NAFORRI/NARI-R	Rural	25
3	Rwebitaba/ZARDI-R	Rural	11
4	Buginyanya/ZARDI-R	Rural	13
5	NAFIRRI/NARI-U	Urban	34

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7	Mukono/ZARDI-U	Urban	18
8	Abi/ZARDI-U	Urban	16
9	NAROSEC-U	Urban	28
			Total:184

Details are contained in Appendix 3.

[This sample will provide a variety of data for investigating into motivation levels among urban and rural based researchers, motivation levels among researchers at NARIs and ZARDIs; to enable derive a construct validity of motivation.](#)

3.5 Sampling techniques and Procedures

The sampling techniques and procedures related to qualitative approach have been explained above. For simplicity 10 respondents well known in agricultural research management and easy to approach will be drawn from NARO unto who an in-depth interview guide will be administered for collecting information on Herzberg’s constructs (Workbook E, 2014). For quantitative data, proportional stratification has been adopted in sampling at research institutes to ensure all programs, departments and units are taken into consideration. At selected institute lists of departments/programs will be derived and proportionately each department will get a quota allocation. Respondents will then be randomly picked from the departmental staff lists. It is to this sample the questionnaire will be administered. Oywak (2002) used a similar approach in the study of motivation of academic staff in Makerere University where he was able to give quotas for schools, colleges, departments and units in the sample study.

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3.6 Data Collection Methods

Qualitative data will be collected using research synthesis of literature review on motivation of agricultural staff in sub-Saharan Africa (Onwuegbuzie, Leech & Collins, 2012). The sources will include libraries both physical and electronic, and documents published for the purpose. Likewise in-depth interviews will be used on 10 selected respondents. An in-depth interview guide will be used to collect qualitative data on variables of Herzberg's theory that are appropriate in the agricultural research setting. A quantitative survey method using cross-sectional design will be applied where a questionnaire will be administered to respondents.

3.7. Data Collection Instruments

Research synthesis will be undertaken of literature review on research articles, essays, monographs, dissertations, and government documents on motivation of agricultural researchers that are available in the Sub-Saharan region mainly using internet. In addition, an interview guide will be used to collect qualitative data to enable further understanding factors of Herzberg's theory in an agricultural research setting (Appendix 1). A standardized questionnaire will be administered to all respondents to collect quantitative data (Appendix 2). The questionnaire will be designed to capture data the measures of motivation using most of the questions in the Herzberg's questionnaire as well as questions to capture employee characteristics and employee motivation. Questions will be formulated to capture data on variables related to factors of hygiene and motivators, employ characteristics and employee motivation. Using a Likert Scale of 1-5 where 5 is most ranked and 1 least ranked, scores will be given by the respondents. The questionnaire will have 4 sections: section 1 will give the bio-data and employee characteristics of the respondent; sections 2 and will focus on hygiene factors and

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motivators, respectively and section 4, employee motivation. Majority of these questions have been adapted from those used in the instrument by Smerek and Peterson (2007) in the study of job satisfaction in among employees in USA where Herzberg's theory was validated. This approach is expected to increase validity and reliability of the instrument as most of it has been proved valid. Kundratova (2009) used a similar instrument to validate social workers' motivation in Slovakia. A general circulation letter from NARO administration will be used to introduce and define the importance of the study with the clauses of confidentiality highlighted. The questionnaires will be physically delivered to respondents. Explanations of some questions will be given where necessary. Where a respondent is not available at station an electronic version of the questionnaire will be sent to him. These methods have been applied to obtain a sufficient 55-100% response (Ajang, 2003; Warsi et al., 2009; Worlu & Chidozie, 2012). Literature review of publications on employee motivation in agricultural research will be undertaken to identify relevant motivational factors (Manzoor, 2010).

3.7 Reliability of Instrument

Cronbach Coefficient Alpha has been justified for determining reliability of instrument in the study since it is widely used in motivation studies (Govender & Paramasur, 2010; Khan & Mansoor, 2013; Oywak, 2002; Smerek & Peterson, 2007). Factor analysis using factor loadings will be applied to test whether data generated by the questionnaire are consistent with Herzberg's theory.

3.8 Validity of instrument and construct

The questionnaire will be reviewed by selected experts for validity. The Content Validity Index will be used to measure validity as was demonstrated by Oywak, (2002). In addition, exploratory factor analysis will be used to generate loading numbers as a validity measurement

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of the questionnaire as was shown by Oladolun and Ozturen (2013). Given that the objectives of the study have been well defined and that motivation will be measured with Herzberg's theory as a construct, face validity will be achieved. The study is focused on assessing motivation in NARO using the theory and the findings will be used to improve on motivation in NARO. This will address the formative validity. The construct validity has been addressed because the construct consists of items that would measure motivation through validation of the theory. A panel of experts from NARO will be used to examine the items in the instrument and what they intend to measure. The content validity will be addressed as the questions used have been drawn from items that determine motivation. These questions have been used to determine employee motivation and job satisfaction and to predict Herzberg's theory (Kundorotova, 2009; Messick, 1989; Smerek & Peterson, 2007). Herzberg's theory is renowned for determining employee motivation and therefore its application for validation is a good criterion-related validity.

3.9 Procedure of Data Collection

A literature review of selected documents on motivation in agricultural research institutes in sub-Saharan Africa will be undertaken. A recorder will be used in administering an interview guide, to obtain information on motivation in NARO. A quantitative survey will be undertaken using a questionnaire in order to capture primary data on the variables on hygiene, motivation factors, employee characteristics and employee motivation to be studied.

3.10 Data Analysis

Rigorous research synthesis will be undertaken on documents that will be reviewed. Qualitative data collected during the in-depth interview will be coded and analyzed using common themes, topologies and key words. These themes, topologies and key words will be corresponded with

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results from the quantitative survey [to complement](#) and expand on results. Regression analysis will be [undertaken](#) on the quantitative data. [Regression](#) will enable the researcher predict hygiene and motivational factors towards employee motivation. Correlation matrix will quantify the magnitude and directions [of the relationship](#) between hygiene, motivators and employee motivation. Factor analysis will help to find out the underlying variance among the variables (Mangi, Soomro, Ghumro, Abidi, & Jalban, 2011) and will be useful in developing the validity construct. Multiple regression, independent t-tests and analysis of variance (ANOVA) will be used to answer the research questions and hypotheses set in the study and to examine the predictive power of each independent variable on motivation.

3.11 Measurement of variables

Our variables are the constructs contained in Herzberg's theory and their variances, mean values, correlations, and factor analysis will be measured to validate the theory. [Regression analysis](#) will enable us predict the model using R-square and beta values. Hong and Waheed (2011) in the application of Herzberg's theory on job satisfaction in the Malaysian retail sector conducted a regression analysis and demonstrated a correlation matrix and significance between motivational factors and employee motivation. [Abdusalam and Mawoli \(2012\)](#) conducted a regression analysis and used R-square (coefficient of determination) and Pearson-coefficient to explain the variance of research and teaching performance in staff motivation in Babangida University, Nigeria. Worlu and Chidozie (2012) demonstrated in the study of motivation of political [marketeers](#) that the higher the correlation factor, the greater the relationship between independent variables and dependent variables. Pearson and Seiler (1983) and; Saner and Eyupoglu (2012) used mean scores to develop a satisfaction-dissatisfaction scale to categorize the variables as

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either satisfiers of dissatisfiers. The ANOVA will be used to show the moderator factors behaviour and to test hypotheses set as demonstrated by Hong and Waheed (2012). Applying the 5 areas of evidence as demonstrated by Messick (1989), construct validity will be demonstrated.

3.12 Ethical Issues

The anticipated ethical issues are:

- 1) Protection of interviewee information: The proposed research will ensure that information provided by interviewees is protected and no respondent's name will be published. In the introductory letter this requirement will be stressed.
- 2) Informing interviewees about the nature of the study: The proposed study is aimed to improve on motivational aspects of employees, through generation of critical data for inclusion in human development strategies. This understanding will be explained to the interviewees
- 3) Benefits of research to respondents: The proposed study will benefit respondents who are all agricultural researchers as the study intends to validate apply a classical theory of motivation in an agricultural research setting. The results will be communicated to them and NARO Top management. Efforts will be made to convince NARO Top Management to include the findings into HRM strategies. This, also, will reduce the risk of exploitation of respondents.

3.13 Limitations to the Study

The study has focused on Public Agricultural Research Institutes under NARO. The respondent sample is drawn from one organization. A larger sample drawn from various

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agricultural research, organizations would have increased the view for generalization of results. The study has also mainly focused on respondent's opinion which is subjective.

3.14 Conclusion

The chapter has presented the methodology of the study undertaking, the research design, instruments of data collection, sampling techniques, data analysis, and measurement of variables. It is clear that the methodology presented will lead to appropriate study results that will present the construct validity of employee motivation under Herzberg's theory in an agricultural research context.

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APPENDICES

Appendix 1: In-depth interview: Interview Guide to identify Motivation factors in NARO

1. Purpose and Introduction

Dear Respondent,

I thank you for accepting to provide data by appropriately answering questions below. The purpose of this exploratory survey is to obtain your views which motivation factors are applicable to NARO. This interview will be recorded for further analysis. Your views and those of other staff in NARO who have been approached for the interview will provide a valuable input to the work currently undertaken to understand the underlying factors of motivation in an agricultural research setting of NARO. Please respond to each question according to your opinion. This is a qualitative survey and the information to be generated will be used identify motivational factors under NARO for inclusion in a related survey in the same study. Information from this interview and from the other survey will be submitted in a written thesis with feasible proposals for improvement of motivation in NARO. You will also be given a feedback on the overall results.

Your answers to the interview will be completely confidential. No individual will be identified and no one in NARO will have access to the recorded information.

Thank you for the acceptance.

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APPENDIX 1. INTERVIEW GUIDE TO IDENTIFY MOTIVATIONAL FACTORS IN NARO

Particulars of Interviewee

Section 1: BIO-DATA

Interviewee No.

Gender: M _____ F _____ (Tick appropriately)

Date of Birth:

NARO Institute/Place of interview..... Time:

Department/Prog.....

Current Rank/Job in NARO.....

Date of first appointment in NARO.....

Level of Education (Tick appropriately)

Diploma

Degree

Masters

PhD

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	<u>Notes</u>
1. <u>How do you describe as NARO's culture</u>	
2. <u>Who are your clients?</u>	
3. <u>How do you know their satisfaction about your products/technologies?</u>	
4. <u>What is your vision for the organization/institute/ department/ for the next two years</u>	
5. <u>What are the major challenges that you are currently facing as a senior research officer/Research Director?</u>	
6. <u>Can you tell me about other people in the organization/institute/department you are working with? (relationships, team work, recognition)</u>	
7. <u>What is your management style?</u>	
8. <u>What is your preferred communication method with your team?</u>	
9. <u>What are the attributes of your job you'd like to see improved?</u>	
10. <u>What are your organization's policy on attending workshops, seminars, research conferences and other training opportunities?</u>	
11. <u>What have you liked about working here in NARO/Institute/Department?</u>	

12. How are your leadership responsibilities measured?	
13. How is your performance measured?	
14. What are the important traits you look for in a subordinate?	
15. How would like your subordinates to communicate with you?	
16. What personal qualities or characteristics do you most value?	
17. How would you describe the experience of working with NARO/ZARDI/	
18. Why did you decide to work with NARO?	
19. Were your expectations met?	
20. Have you ever considered leaving the organization?	
21. If 20 is yes, why did you decide to stay?	
22. How many hours do you work per day?	
23. What incentives are related to your work? (e.g., travel locally and abroad, financial bonuses, presenting papers)	
24. Does your organization support you in training?	
25. What do you like working with your director/supervisors?	
26. What do you like most working with him?	
27. What do you like least?	
28. What do you consider as NARO's strengths?	

29. And what do you consider as weaknesses?	
30. What do you know now that you wished you knew before you started in your position?	
31. How much does your position pay?	
32. Is it sufficient for your family obligations?	
33. If no, how do you meet the obligations/gap?	
34. What benefits are provided to you/your employees?	
35. What is the single benefit you value most?	
36. What is the single benefit you value least?	
37. What is the typical career path for this position?	
38. Have you moved on this career path satisfactory according to you?	
39. How are performance appraisals conducted in your organization?	
40. How are promotions handled? Have you ever been promoted since you joined?	
41. Did you get additional responsibilities on promotion?	
42. How enriched is your job?	
43. Do you feel job secure?	
44. How do you describe your working environment?	
45. Why do you enjoy working with NARO?	
46. What drives you to come and work?	

exposed to you?	
55. Let me know about your skills?	
56. Do you find them difficult to apply in some areas?	
57. Have you ever brought them up to your supervisor for redress? And what was his reaction?	
58. What are your short and long term goals?	
59. Do you meet them in NARO?	
60. Describe how?	
61. What do you gain from NARO?	
62. What more would you have wanted to gain?	
63. What is your biggest weakness?	
64. What makes you a good team member?	
65. How do you deal with an unhappy or frustrated employee?	
66. How do you identify him/her in the first place?	
67. How do you want your supervisor to handle you? What attributes do you think he has?	
68. What is she lacking?	
<p>Post Interview comments:</p> <p>Interviewer's interpretation of interviewee's gestures, feelings, other interpretations:</p>	

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Appendix 2 : QUESTIONNAIRE ON STUDY OF VALIDITY OF HERZBERG'S TWO FACTOR THEORY IN NARO

Dear Respondent,

I thank you for accepting to provide data by appropriately filling in the questionnaire. The purpose of this survey is to obtain your views on MOTIVATION within NARO. Your views and those of other staff in NARO who have been also requested to complete this questionnaire will provide a valuable input to the work currently undertaken to understand the underlying factors of motivation in an agricultural research setting of NARO. Please tick in the appropriate box the score for a given question according to your opinion. Scores range from 5-1 – Strongly agree to Strongly disagree. The information to be generated from this questionnaire will be useful as will be submitted in a written thesis with feasible proposals for imorivememt of motivation in NARO. You will also be given a feedback on the overall results.

Your answers to the questionnaire will be completely confidential. No individual will be identified and no one in NARO will see the filled individual questionnaires. These questionnaires will NOT be analyzed on individual basis.

Please complete and forward the questionnaire by 1st December 2014 to George Lukwago, EAAPP Offices, NAROSEC, ENTEBBE, or by e-mail: lukwagogeorge@gmail.com. You can also call me on 0772-424-891 for any clarification that you may require.

Thank you.

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Section 1: BIO-DATA

Questionnaire No. (leave blank)

Gender: M F (Tick appropriately)

Date of Birth:

NARO Institute.....

Department/Prog.....

Current Rank/Job in NARO.....

Date of first appointment in NARO.....

Level of Education (Tick appropriately)

- Diploma
- Degree
- Masters
- PhD

No	I believe that:	Strongly Agree	Inclined to	Neither Disagree nor	Inclined to Disagree	Strongly Disagree
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APPENDIX 1: QUESTIONNAIRE ON THE THEORY IN NARO

Dear Respondent;

I thank you for accepting to participate in this survey. The purpose of this survey is to obtain the views of those of all other staff of NARO on their motivation in an agricultural research. Your response is a valuable input to the work currently being done. Please tick appropriate score for a given questionnaire. I will be submitting the results to the relevant authorities. I will be submitting the results in a written thesis with the overall results.

Your answers to the questionnaire will be kept confidential and no one in NARO will be able to identify you. The results will be analyzed on individual basis.

Please complete and forward the questionnaire to the Offices, NAROSEC Entebbe or call on 0772-424-891 for any clarification.

Thank you

			Agree	Agree	e	e
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Section 2: Hygiene factors						
Company Policy						
Effective Senior Management**						
	Senior Management keeps employees informed					
	Senior Management effectively communicates the goals and strategies of NARO					
	Senior Management demonstrate leadership practices that are consistent with the stated values of NARO/Dept/Program/Inst.					
Employee* separation	Under terms of conditions of service, terms of termination by notice are fair to me					
	Terms of retirement are fair to me					
	Terms of dismissal are fair in the manual					
Guidelines to Intellectual Property rights	Is NARO's policy on intellectual property rights fair to you?					

	In the event of making you a new discovery, technology, invention or idea, NARO maintains your right as an originator entitled to benefits					
	NARO policy encourages you to discover, invent, create and/or develop					
	NARO policy allows you to seek financial support in your research work and utilize such funds as you plan					
	NARO provides sufficient funds to enable you undertake research					
Employee Leaves	NARO's compassionate leave is fair					
	Sabbatical leave if fair					
	Study leave under terms of service are fair					
Harassment	NARO's policy on harassment is fair					
Presence of Core values**						
	Ignoring core values of NARO will get you in trouble					
	There are clear and consistent set of values of					

	NARO that govern the way we do research					
	All units/depts./Institute share common values					
	I am proud to work with NARO because the company policy is favourable for its workers					
	The attitude of the administration is very accommodative in NARO					
	Leave roster is convenient to me					
Effective supervision**						
	My supervisor communicates well					
	My supervisor manages people effectively					
	My supervisor is an effective decision-maker					
	My supervisor is trustworthy					
	My supervisor is approachable and easy to talk with					
	My supervisor cares to me as a person					

	My supervisor is practically ethical					
	My supervisor gives me constructive feedback on my performance regularly					
	My supervisor handles me with respect					
	My supervisor regularly recognizes me for doing good work					
	My supervisor considers my ideas					
	My supervisor trusts me					
	My supervisor has a clear view where our department/unit /institute is going and how to get there					
	My supervisor reprimands me when I commit I make a mistake					
	Overall how would rate your supervisor?					
Interpersonal relationship						
Good relationships with co-workers						
	I trust my co-workers					
	I am consistently treated with respect by my co-					

	workers					
	I can count on my co-workers to help out when needed					
	My co-workers can count on me to help out when needed					
	People care about each other in my unit/dept/Prog/Institute					
	Someone in my unit/dept/prog/Institute cares about me as a person					
	I was made to feel welcome when I first joined NARO/dept/prog					
	My workgroup effectively collaborates with other workgroups in the institute/dept/unit					
Salary and fringe benefits						
Satisfaction with salary	My salary is competitive when compared to similar jobs in other organizations					
	My pay is commensurate with the work I do					
	Salary increases are appropriate					
	I understand how my					

	base salary is determined					
	My salary rate is a significant factor in my decision to stay in NARO					
Fringe benefits						
	NARO's fringe benefits meet my needs					
	My costs associated with the benefits (e.g., healthcare top-up, deductibles) are reasonable					
	The benefit package is a significant factor in my decision to stay in NARO					
	The NARO's benefit package has been adequately explained to me					
Working conditions						
	I feel safe working at my workplace					
	My workplace is located in area where I feel comfortable					
	I have sufficient working space					
	My working conditions are comfortable					
	Environmental bi-factors (mosquitoes, snakes, roaches, monkeys) are					

	kept out of office					
	My office is well serviced with utilities					
Job Security*						
	I feel my job is secure					
	I am not worried of losing my job					
	Conditions of job security are adequate					
	No. of years served you have served in NARO makes me feel job secure					
	My qualifications make me feel job secure					
	The job contract arrangement makes me feel job insecure					
Section 3: MOTIVATORS						
Recognition**						
	Expression of thanks and appreciation are common in my unit/dept/prog/inst.					
	I get appropriate recognition when I have done something extraordinary					
	My scientific work has been recognized by					

	NARO					
	My contribution is valued by unit/dept/prog/Inst/NARO					
	My contribution is valued outside NARO					
	My clients recognize my good work					
	In the last 6 months I have received recognition and praise for doing good work					
Work itself**						
	I enjoy the type of work I do					
	My job is interesting					
	My job gives me a sense of accomplishment					
	I make a difference in my unit/dept/prog/Inst					
Opportunities for Advancement*						
	Opportunities for advancement or promotion exist in NARO					

	I know what is required of me to advance in NARO					
	Internal candidates receive fair consideration for open positions					
	Information about job vacancies within NARO is readily available					
	Appraisal system is fair for staff					
Growth**						
	My unit/dept/Prog/Ins offers training or education that I need to grow in my job					
	I have received the necessary training to do my job well					
	I have had opportunities at work to grow in the past 2 years					
	There is someone at work who encourages my development					
	Someone has talked to me about my progress in the past year					
Responsibility*						
	I have control over how to do my work					

	My opinion counts at work					
	I have a say in decisions that affect my work					
	The physical environment allows me to do my work					
	I have the necessary tools and equipment to do my job effectively					
Section 4: EMPLOYEE MOTIVATION						
Intrinsic Motivation						
	Imagine your ideal job, does the current job position compare well with the ideal job?					
	You are well satisfied with your current job					
	Consider all the expectations you had when you started your current job, your current job falls short of those expectations					
	My job is challenging					
	I am given opportunity for self-direction during my work					
	I feel a sense of autonomy when doing					

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	my work					
	I promote feedback on my work assignments					
	I make self-reports of interest during my work					
	I am feeling competent on my job					
	My work is interesting					
	I am bogged down with deadlines					
	I receive threats arising out of my work					
	Overall, motivators (under section 3 above) are more important to you than hygiene factors (under section 2).					
Extrinsic factors						
	Salary comes first in the execution of my job					
	Rewards are very important to me					
	I am personally committed to my job					
	I have a lot of work pressure					
	NARO regulations at work enable me perform my job well					

	I feel controlled during my work execution					
	I cope up with your failures					
	I have the required competence for my job					
	NARO values encourage me to work					
	My behaviour often times puts me in conflict with my supervisors					
	I have a strong self-determination					

** Questions largely taken from Smerek and Peterson (2007). [Questions for intrinsic and extrinsic factors enriched from Ryan and Deci \(2000\)](#)

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APPENDIX 3: SAMPLING BASED ON PROPORTIONS

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Number of respondents for rural institutes:

$$\frac{138 \times 184}{340} = 75 \text{ respondents}$$

Number of respondents for urban institutes:

$$\frac{202 \times 184}{340} = 109 \text{ respondents}$$

The number of institutes to be sampled for rural and urban areas

1. Rural institutes

$$\frac{138 \times 8}{340} = 3 \text{ institutes}$$

2. Urban institutes

$$\frac{202 \times 8}{340} = 5 \text{ institutes}$$

The following are the names of the rural and urban institutes chosen using SPSS syntax random number generation:

Table 2: NARO Institutes

S/No	Institute	Category	Research Staff
1	NALIRRI/NARI-R	Rural	27
2	NAFORRI/NARI-R	Rural	25
3	Rwebitaba/ZARDI-R	Rural	11
4	Buginyanya/ZARDI-R	Rural	13
5	NAFIRRI/NARI-U	Urban	34
6	Mbarara/ZARDI-U	Urban	15
7	Mukono/ZARDI-U	Urban	18
8	Abi/ZARDI-U	Urban	16
9	NAROSEC-U	Urban	28

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U-Urban

R-Rural

Urban and Rural categorized by researcher.

NB. Because the 3 rural institutes could not raise the required 75 respondents, 4 institutes shall be sampled instead of 3.

Professor Benon Basheka - Supervisor..... Date.....

|

