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MOTIVATIONAL STRATEGIES TO IMPROVE PRODUCTIVITY IN THE CONSTRUCTION INDUSTRY IN GHANA

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DECLARATION

I hereby declare that this work is the result of my own original research and this thesis has neither in whole nor in part been prescribed by another degree elsewhere. References to other people's work have been duly cited.

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DEDICATION

This work is dedicated to God almighty and the Adjei family for their immerse support through this study.

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*** * GOD BLESS YOU ALL * ***

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ABSTRACT

The concept of construction productivity began in the early 20th century with a series of time and motion studies to improve bricklaying operations. However, it still remains an interesting and a dominant issue in the construction industry, promising cost-savings, timely delivery and efficient usage of resources. Productivity is directly linked to motivation, and motivation is, in turn dependent on productivity. Suitable motivation is, therefore, a contributor to maximising workers' productivity. The low motivation of construction workers has contributed significantly to the declining productivity that cannot be determined in the construction industry. The study seeks to unravel the factors that affect construction workers' motivation and the corresponding effect of the identified motivational factors on workers' performance and overall productivity. Forty factors which usually affect motivation and productivity were obtained from preliminary survey and review of literature.

Purposive sampling was employed to select the class of contractors due to the engagement of large number of workers as well as the volume of works undertaken. A survey was, therefore carried out on 32 D1 construction companies obtained from the implementation of Snowball sampling. This was, as a result of the difficulties encountered in accessing the population sample. A total of 183 questionnaires were administered to managers and workers by the adoption of accidental sampling and a response rate 73.22% was obtained. The survey revealed that, among the top ten critical factors (i.e. teamwork, late payment of interim certificate, work based on contract, supervision based on leadership by example and provision of equipment) had great effect on motivation as well as impact on productivity. More so communication, love and belongingness, opportunity to undertake challenging task,

identification with goal and overtime were among the critical factors. The following motivational recommendations were made to enhance productivity of workers:

i. Double targets should always be set on projects of which the higher target made known to workers and monitor progress with the threshold target. Subordinates should be given praise by supervisors whenever efforts are made to attain the set.

ii. Management and immediate supervisors should ensure that good teamwork is established through collaborations, both on and off site by assigning task to groups of workforces with qualified and competent supervisors.

iii. There should be timely payment of interim certificates to improve cash flow to facilitate smooth running of projects.

iv. There should be a clear line of communication between management and workers. Also regular interactions should be organised to recognised workers to motivate others to work harder to be recognised one day.

v. Workers should be given the opportunity to undertake challenging task under close supervision, not compromising quality, precision and timely delivery and be made to the consequence when these requirements are not met.

CHAPTER ONE

INTRODUCTION

1.1 Background

Productivity has been an essential contributor to corporate success. This is as a result of its direct translation into cost savings and profitability. Productivity has also been a key to long-term growth and sustainable improvement and when associated with economic growth and development generates non-inflationary increases in wages and salaries (Mojahed, 2005). The construction industry generally plays a vital role in a national economy due to the usage of its products such as roads, buildings and dams for the production of goods and services. An enhanced productivity has a positive effect on the gross domestic product (GDP) of every nation. In spite of the immense size and significance of the construction industry to the economies of most nations, its productivity is one of the controversial and least understood factors (Haskell, 2004). Productivity in the Ghanaian construction industry is largely unmeasured due to the unavailability of data for its determination.

In the construction industry, site workers account for 40% of direct capital cost of large construction projects and there is the need to maximise the productivity of human resources (Thomas et al, 2004). More so 30% to 50% of workers time is spent directly on the work and, hence, there is the need for proper utilisation. In Nigeria's construction industry for instance, companies are currently applying various non-financial incentive schemes aimed at improving operatives' productivity. This has significantly improved bricklayers' productive time and accounted for 6% to 26% of variations in output between block laying and concreting activities measured (Olabosipo et. al., 2004).

Considering the fact that the construction industry in Ghana is quite similar to that of Nigeria, it can be concluded that the introduction of a non-financial incentive will contribute to worker motivation in Ghanaian construction industry. This will, in effect, enhance workers output and the overall productivity within the construction industry and further contribute to the national economy.

1.2 Problem Statement

Lack of workers' motivation on construction sites has been identified and this has contributed the high employee turnover (Thomas et al, 2004). This has been a result of the difficulties in emphasising the positive side of worker motivation. These have generated numerous attempts over the years to enhance workers' motivation as it is essential to eliminate the negative side of motivation which may be more psychological. According to Shun (2004), management is often frustrated by lack of motivation generated by the end of the year bonuses. Foremen, who form part of worker strength, are often unable to motivate the average craftsman today (Business Roundtable, 1989). There is therefore the need for craftsmen and other subordinates to be motivated by providing them with the right conditions and opportunity. A correlation exists between worker motivation and performance therefore, there is the need for worker to always feel motivated in order to increase performance.

According to Thomas et al, 2004, an unsatisfactory work environment can have an adverse effect on worker motivation that tends to make minimal effort towards work thereby lowering performance. This has contributed dwindling productivity that has been

a major problem confronting the construction industry today which has led to the declining productivity every year for the past decades. Aggregate productivity measurements and studies have shown long-term decline with little improvement. Another major study revealed that productivity cannot be determined if it has increased, decreased or remained constant (Haskell, 2004). The labour cost component of direct capital cost of large construction projects gives the indication that, there is the need for its maximum utilisation so as to be productive.

Non empirical evidence shows that financial incentive is understood by the craftsmen to be a motivator to improve productivity in the Ghanaian construction industry. In a preliminary survey conducted on 10 organisations, 7 respondents indicated that management is not happy with the output, supervision and productivity on projects. Out of the 10 respondents, 6 found their current motivational levels to be low or fair while the remaining 4 found it high. However all respondents indicated that when the current motivational level is improved, it will go a long way to improve productivity. Workers resign from various establishments or lay down their tools for demand in improve working condition of service and this impacts on productivity. This might have contributed to Ghana's 44th position on the World Labour Productivity report out of forty-eight (48) countries (Source, 1987). It is in this light that the government of Ghana set up the National Action Committee on Productivity Development to initiate and address activities that will promote wide spread awareness on the need for high level commitment and efficiency at workplaces to improve productivity (DAILIES, 2002).

In the United States it was reported that 1.53 man-days is required to put up 1m² of structures whilst Nigeria requires 5.98 man-days (Ahadzie, 2001). Productivity levels in Ghana being similar to that of Nigeria, it could be concluded that similar man-days will be required to undertake the same task. The onus, therefore, lies on construction managers to improve productivity of workers on construction projects by making sure that, supervisors at all levels are sufficiently skilled in handling tasks (Business Roundtable, 1989).

1.3 Justification of Study

The construction industry generally plays a vital role in a national economy due to the usage of its end products such as roads, buildings, dams for the production of goods and service. This is because the industry is used as an economic regulator by government who is a major client of the industry by intervening to regulate performance through financing, legislation and provision such as:

- Intervention in the market through finance by grant, benefits, subsidies and taxation.
- Grant for construction of industrial or commercial premises in areas of high unemployment.
- Incentives for the construction of certain types of project such as private housing.
- Influence construction activity through the development, repair or maintenance of project (Ashworth, 1999).

The construction industry further contributes immensely to the gross domestic product (GDP). In Ghana, an overall GDP growth rate of 5.8% and 6.2% were realized compared to targeted figures of 5.8% and 6.0% in the year 2005 and 2006 respectively (2005 and 2006 Budget). This was largely attributed to the boom in construction activities in those years. An increase in an organisation's productivity in this sense leads to an increase in its annual turnover of construction companies which in turn promotes a country's overall GDP growth.

Generally, a company's productivity level is a reflection of its success and this depends on the motivation of workers. It has been discovered that labour accounts for up to a third of the total productive or non-productive time on construction site and its cost component has even risen in recent years as employers are always met with demands for higher base pay and increasing fringe benefits (Akindele, 2003). Lim and Alum (1995) productivity studies on issues encountered by Singaporean contractors revealed that, difficulties encountered in recruiting supervisors and workers lead to the low productivity in the country's construction industry. One could adduce from this finding that the high labour turnover and communication in the construction industry contributed to the decline in worker motivation and that further impacted negatively on productivity. There is, therefore, the need to retain workers in the construction industry elsewhere of which Ghana is part since it is expensive and time consuming in recruiting new workers.

Management of the construction industry is, therefore, faced with the task of ensuring that a congenial working environment is established so as to motivate workers to stay and deliver their best. This will eliminate time overrun which is usually accompanied by cost

escalation and, hence, the achievement of improved productivity. Furthermore non-empirical evidence indicates that productivity is difficult to measure in Ghana and other parts of the world since management of construction companies are unwilling to furnish researchers with data that enables the determination of productivity. This study is, therefore, to find strategies of motivating workers to improve performance which will, in effect, impact on productivity which contributes to national economic growth.

1.4 Aim And Objectives

The aim of this research is to develop ways of improving productivity through varied motivational strategies. This is as a result of the declining trend of productivity and difficulties in its measurement in the construction industry. In view of this, the research is to look into the problems relating to motivation in construction companies in Ghana.

The objectives of the above study include:

i. Identification of the factors that affect construction workers' motivation at the workplace.
ii. Establishment of the effect of the identified motivational factors have on productivity at site.
iii. Recommendation of strategies that will motivate workers and improve productivity at construction sites.

1.5 Research Methods And Design

The methods and design adopted for this work is summarised below

1.5.1 Literature review

A thorough review of literature (i.e. publications, trade and academic journals) to identify factors that causes behavioural change and also the factors that influence productivity in the construction industry elsewhere. Various theories of motivation were reviewed to see how they can be related to the structure of the construction industry.

1.5.2 Field survey

This stage of the research involved the design, development and administration of questionnaire. The sample size was determined through statistical methods. However, distribution of questionnaires was done through random distribution. The questions were developed from information gathered from the review of literature and preliminary survey. Respondents were asked to give their opinion on general level of motivation and productivity in their respective companies. Furthermore, the factors gleaned from the literature were rated in order of degree of effect on motivation and significance on productivity from the perspective of respondent. The questionnaires were distributed and retrieved personally. Respondents were given two weeks after distribution to complete them.

1.5.3 Analysis of Data

The administered questionnaire was gathered and all data received were summarised. A critical analysis of summarised data was conducted by determining influential indices such as frequency, importance and severity on the various reviewed factors rated which enabled the researcher to:

i. Establish factors that motivate workers.
ii. Establish the effect the factors have on productivity.
iii. Recommend workable and suitable strategies that will motivate and enhance productivity improvement.

Details of the research methods and design can be find in chapter 3.

1.6 Scope of the Study

The study focused on construction companies with classification D1 because such companies usually undertake large volumes of works and, hence, engage large number of workers. According to the classification guideline of Ministry of Water Resources Works and Housing, D1 contractors are companies that have demonstrated experience in building and civil engineering works. The minimum annual turnover of these companies over the past three years should not be less than GH₵ 475,000.00 (US$ 500,000.00). In addition, the minimum personnel and equipment requirement for this class of company indicated in the Ministry's Guidelines for Classification of Building and Civil Work Contractors is shown in Tables 1.1 and 1.2.

Table 1.1: Minimum personnel requirement for D1 construction company

Description	No Required	Qualification
Works Manager	2	10 Years experienced with Diploma in Building Technology / Architecture / Engineering / Surveying and / or City and Guilds Final in carpentry or masonry or equivalent, or 7 years experienced with Degree in Building Technology / Architecture / Engineering / Surveying or equivalent
Quantity Surveyor	1	BSc. Building Technology with 5 years experience or A.G.I.S or Diploma with 6 years experience
Site Agent	2	Building Technology / Architecture / Engineering / Surveying Degree and/or City and Guilds Final in carpentry or masonry or equivalent
Accounts Officer	1	ACA Part I or 15 years approved experience
Works Superintendent	3	10 years experienced in Building Construction with Intermediate Final City and Guilds Final in carpentry or masonry or O.T.D in building
Carpentry Foreman	8	8 years experience in Carpentry
Mason Foreman	8	8 years experience in masonry
Steel Bender Foreman	8	8 years experience in steel bending
Surveyor	2	10 years in practical experience
Painter Foreman	8	8 years experience in painting
Purchasing Officer	1	8 years experience in purchasing

Source: (M.W.R.W.H. Contactors Classification Guidelines in Ghana)

Table 1.2: Minimum equipment requirement for D1 construction company

Equipment	No. Required
Dozer	1
Hammer, Piling 1 Ton	1
Dumpy Levels	2
Mixer Concrete – 10CYH	2
Mixer Concrete – 0.5 HP	2
Water Pumps – 90,000 L/Hour	1
Water Pumps – 45,000 L/Hour	1
Tanker Water Towed 1500L	1
Theodolite	1
Tractor Farm	1
Truck Tipper – 5/m3	5
Truck Flat Bed	3
Truck Water Min 500L	1
Truck Pick-Up	5
Dumper	1
Bender Bar Cutter	5
Dragline / Pile Driving lead	1
Excavator	1
Vibrator (Poker)	3
Tower Crane / Hoist	1
Scaffold	2
Ripsawing Machine	1
Spindler Machine	1
Tenoning Machine	1
Chain and Chisel Mortiser	1

Source: (M.W.R.W.H. Contactors Classification Guidelines in Ghana)

A purposive sampling was used to select the class of contractors for the study. Due to the inability to ascertain the population size of D1 construction companies, the study was undertaken at five geographical locations with the implementation of both snowball sampling on available companies and accidental sampling on respondents. The study areas were; Kumasi, Accra, Obuasi, Sekondi and Koforidua. The survey was carried on management and workers made up of both professionals and tradesmen. This wide limitation became necessary as a result of the perceived uncertainties in meeting workers of a particular trade or profession.

1.7 Organisation Of Chapters

The study is organised in five chapters:

- Chapter one provides background information about the importance of productivity in the construction industry. This chapter elaborates on the problem statement and the justification of the study. It further highlights on the aims and objectives of the study as well as a brief on the research methods and the scope of the study.
- The second chapter provides an overview of the construction industry and its contribution to the national economy. It also details the concepts of motivation and productivity, and describes factors that influence motivation and productivity of construction projects, identified by other researchers.
- Chapter three provides information about the methods and procedure of the study used to achieve the objective. This chapter provides background information of

research methodologies and justification for the research method implemented for this research.

- Chapter four presents the analysis and interpretation of findings of the survey. It further discusses the findings obtained in the survey.
- Chapter five summarizes the procedure and findings of the research, its contribution, and offers recommendations for management action to ensure workers motivation and enhancement in productivity.

CHAPTER TWO

MOTIVATION AND PRODUCTIVTY IN THE CONSTRUCTION INDUSTRY

2.1 The Construction Industry

The construction industry is an important sector and plays a vital role in a national economy due to the usage of its end products such as roads, buildings and dam. It is also used as an economic regulator by government who is a major client of the industry by intervening to regulate performance through financing, legislation and provision such as:

- Intervention in the market through finance by grant, benefits, subsidies and taxation.
- Grant for construction of industrial or commercial premises in areas of high unemployment.
- Incentives for the construction of certain types of project such as private housing.

Influence construction activity through the development, repair or maintenance of project (Ashworth, 1999). Further to these, it contributes significantly to the nation's gross domestic product (GDP) which is a measure of the volume of national output and input. British construction industry in the late 1980s accounted for about 6% of GDP when it experienced a rapid growth with a total value of output reaching almost £50bn by 1990 (Ashworth, 1999).

In addition, the industry generates a high percentage of gross fixed capital formation (G.F.C.F.) which are manufactured aids to productions such as hospitals, flats and

machines. In financial terms, the industry converts financial investment into physical assets which enable other economic activities to take place. Bhalla et al (1983) revealed that in both developed and developing nations, the construction industry usually accounts for over 50% of fixed capital formation.

In Ghana, an overall GDP growth rate of 5.8% and 6.2% were realized compared to the targeted 5.8% and 6.0% in the year 2005 and 2006 respectively. Figures produced by the statistical service indicate that the industry grew from 7.0% in 2006 and a target of 8.2% is expected at the end of 2007 and this is as a result of the increased in road construction and other infrastructural developments undertaken throughout the country (2006 and 2007 Budget Statement). The construction industry also contributes to the level of imports in three ways; (i) by its need for plant to process raw materials and physically execute construction projects; (ii) by the direct importation of buildings and components to supplement domestic production and (iii) by the use of design and implementation expertise provided by foreign consultants and contractors. On the other hand, it contributes to exports by the sale of building products and other raw materials which constitute the basis of these products (Bhalla et. al, 1983).

A United Nations Environment Programme (UNEP) report has noted that about one-tenth of the global economy is dedicated to constructing and operating homes and office. It further reported that the industry consumes 16.67% to 50% of the world's wood, minerals, water and energy. The industry generates employment and income for about 7%, 8% and 5.5% of Europe, United States and Turkey's the workforce respectively

(Kazaz et al, 2008). According to the 2000 Population and Housing census, out of 9,039,318 of Ghana economically active population of age 15years and above, 2.3% were engaged in the construction industry placing the industry 9th to offer employment among the 17 industries of the Ghanaian economy (Population and Housing Cencus Report, 2001). It has been projected further that 3.08% of the economically active population of 13,468,288 are engaged in construction in 2007 (Ghana Statistical Service). According to Bhalla et al, 1983, Strassmann made some interesting comparisons between construction and manufacturing industries in terms of changes in the overall level of output. This Strassmann suggested that an early stage of development, construction activity outstrips manufacturing and as the economy develops, construction activity slows down relative to manufacturing and then latter overtakes construction (Bhalla et. al, 1983).

More so, in the developed countries, the constructions of high rise buildings are undertaken by the use of available equipments and management techniques which tend to improve the quality of the output. Contrary to this, the developing countries have very little modernization and, therefore, still continue with the traditional labour-intensive style of construction which is time-consuming and does not match quality requirements demanded in construction. It is, therefore, appropriate to introduce complete mechanization in the construction industry to ensure good quality of the products (Sengupta and Guha, 1999).

2.2 Motivation

Every organisation is concerned with what should be done to achieve sustained high levels of performance through its workforce. This means giving close attention to how individuals can best be motivated through means such as incentives, rewards, leadership etc. and the organisation context within which they carry out the work (Armstrong, 2006). The study of motivation is concerned basically with why people behave in a certain way. In general it can be described as the direction and persistence of action. It is concerned with why people choose a particular course of action in preference to others, and why they continue with chosen action, often over a long period, and in the face of difficulties and problems (Mullins, 2005). Motivation can therefore be said to be at the heart of how innovative and productive things get done within an organisation (Bloisi et. al., 2003). It has been established that motivation is concerned with the factors that influence people to behave in certain ways. Arnold et al (1991) established three components of motivation namely:

- Direction: what the person is trying to do
- Effort: how hard a person is trying
- Persistence: how long a person keeps on trying (Armstrong, 2006).

2.2.1 Characteristics of Motivation

Mitchell (1982) quoted by Mullins (2005) identified four common characteristics which underlie the definition of motivation namely:

- **Motivation is typified as an individual phenomenon**: - Every person is unique and all the major theories of motivation allow for this uniqueness to be demonstrated in one way or the other.

- **Motivation is usually intentional**: - Motivation is assumed to be under the control of the worker, and behaviours that are influenced by motivation, such as effort expended, are seen as choices of action.

- **Motivation is multifaceted**: - The two factors of greatest importance are:

    i. What get people activated

    ii. The force of an individual to engage in desired behaviour

- **The purpose of motivational theories is to predict behaviour**: - Motivation is not the behaviour itself, and it is not performance. Motivation concerns action, and the internal and external forces which influence a person's choice of action

2.2.2 Concept of Motivation

The underlying concept of motivation is some driving force within individuals by which they attempt to achieve some goal in order to fulfil some need or expectation. This gives rise to the basic motivational model shown in Figure 2.1 below. In this model, people's

behaviour is determined by what motivates them. The ideas of Taylor, his rational-economic concept of motivation and subsequent approaches to motivation at work has fuelled the continuing debate about financial rewards as a motivator and their influence on productivity. In a job where there is little pleasure in the work itself or it offers little opportunity for advancement in career, personal challenge or growth, many people may be motivated primarily if not exclusively, by money. The performance is a product of both ability and level of motivation.

i.e. **Performance = f (ability x motivation).**

Organisational success is dependent upon members being motivated to use their full talents and abilities, and directed to perform well in the right areas. According to Mullins (2005), a major international study by Proudfoot Consulting revealed that, the most important reason for productivity loss was poor working morale. This includes absence of positive team spirit, low motivation, poor sense of belonging, people feeling undervalued and poorly rewarded. It is in view of these that Allen and Helms (2001) suggested that different types of reward practice may more closely complement different generic strategies and are significantly related to higher levels of perceived organisational performance (Mullins, 2005). With a positive motivation philosophy and practice in place, productivity, quality and service should improve because motivation helps people towards achieving goals, gaining positive perspective, creating the power for change, building self-esteem and capability, and managing their development and helping others.

Mullins cited Kreitner et al's. (1999) suggestion which states that, although motivation is a necessary contributor for job performance, it is not the only one. Along with ability is

also a combination of level of skill; knowledge about how to complete the task; feelings and emotions; facilitating and inhibiting conditions not under the individual's control.

Farren (2000) reminded stated the 12 basic human needs that have been around since the beginning of recorded history namely:

- Family
- Health and well-being
- Work / career
- Economic
- Learning
- Home / shelter
- Social relationships
- Spirituality
- Community
- Leisure
- Mobility
- Environment / safety.

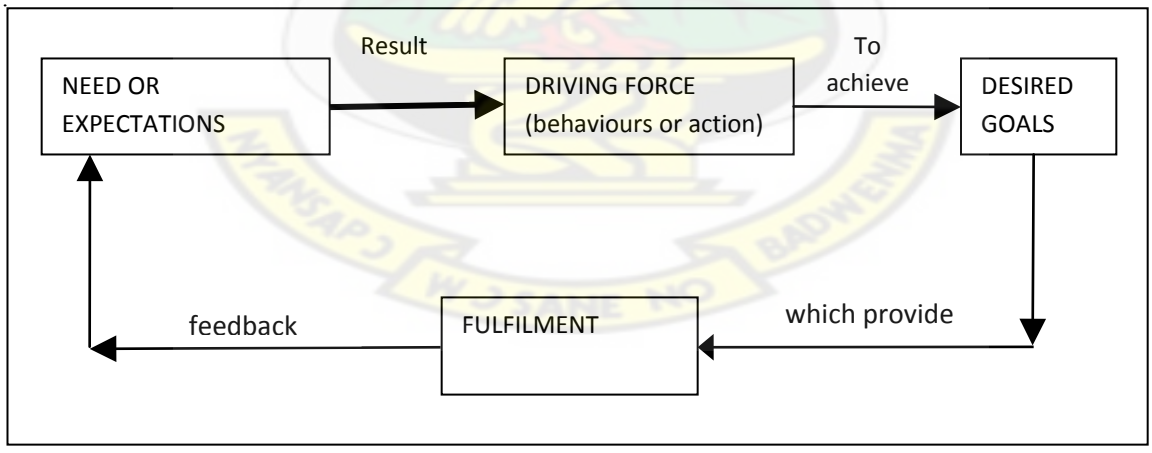

Figure 2.1: Illustration of basic motivational model (Mullins, 2005)

According to Cartwright (1999), “A culture has the power and authority not only to determine lifestyle but also to form individual personality traits, behaviours and attitudes”. A nine key motivational factors was revealed by Cartwright from the study into the psychology of Total Quality Management namely:

- **Identification:** - Motivation through influencing others by what we say and do and influence by others in what we think and how we feel.

- **Equity**: - It is about what is fair. It is a balance between expectation and rewards, inputs and outputs, perception and reality.

- **Equality**: - Everyone should be treated with equal respect irrespective of status, and the concept of equal pay for equal people should be well established.

- **Consensus:** - The arrival of a mutual understanding that is much deeper and more inclusive than compromise and is dependent on shared values and social harmony.

- **Instrumentality:** - A tool or device by which something is effected, the agency or means by which to achieve an objective.

- **Rationality:** - Introduce the idea of scientific approach to management and problem-solving which is highly motivating.

- **Development:** - The motivation for self improvement. Development of the individual and organisation through training and education.

- **Group Dynamics:** - Positive group motivations are created through individual loyalty to the group, consensus and a mutual understanding of and commitment towards achieving group goals.

- **Internalisation:** - It determines our attitudes, convictions and behaviours and is the most powerful and permanent of the nine motivational factors (Mullins, 2005).

2.2.2.1 Frustration – Induced Behaviour

There are two possible sets of outcomes namely:

- **Constructive behaviour**: - It is a positive reaction to the blockage of a desired goal and can take two main forms: Problem-solving or Restructuring.

    - **Problem-solving** is the removal of the barrier- for example, repairing a damaged machine, or bypassing an unco-operative superior.

    - **Restructuring** or uncompromising is the substitution of an alternative goal, although such a goal may be of lower order. Example of this is taking additional part-time job because of failure to be promoted to a higher grade or position.

- **Frustration**: - It is a negative response to a blockage of a desired goal and results in a defensive form of behaviour. Frustration has many possible reactions and these can be summarised under four broad headings namely: aggression; regression; fixation; and withdrawal. These forms of reactions are not mutually exclusive as frustration-induced behaviour on job is a combination of aggression, regression and fixation.

- **Aggression**: It is an attack on some person physically or verbally. It may be directed against the person or object which is perceived as the source of frustration and the actual barrier or blockage. Some examples of aggression are striking a supervisor, destruction of equipment or document, malicious gossip about the supervisor. A displaced aggression set in when the direct attack is not made because the source of frustration is not clear or specific; the source is feared such as powerful superior. The frustrated person finds an easier, safer person to direct the aggression towards and some of the reactions usually experienced are picking arguments with colleagues, being short-tempered and shouting at subordinates and kicking waste bins.

- **Regression**: - It is reverting to childish or more primitive form of behaviour. Examples of regression are sulking, crying, tantrums, or kicking a broken machine or piece of equipment.

- **Fixation**: - This is a persisting in a form of behaviour which has no adapting value and continuing to repeat actions which have no positive result. The inability to accept change or new ideas, repeatedly trying equipment which will clearly not work and insisting on application for promotion even though not qualified are examples of fixation.

- **Withdrawal**: - It is apathy, given up or resigning. Arriving at work late and leaving earlier, sickness and absenteeism, refusal to accept responsibility, avoiding decision-making, passing work over to colleagues or leaving the job altogether (Mullins, 2005).

Factors influencing frustration

Among the factors that determine a person's reaction to frustration are:

- The level and potency of need
- The degree of attachment to the desired goal
- The strength of motivation
- The perceived nature of the barrier or blocking agent and
- The personality characteristics of the individual.

It is important that managers attempt to reduce potential frustration through ways such as:

- Effective recruitment, selection and socialisation
- Training and development
- Job design and work organisation
- Equitable personnel policies
- Effective communication
- Participative style of management
- Attempting to understand individual's perception of the situation (Mullins, 2005).

2.2.3 Classification of Needs and Expectation

The various needs and expectations at work can be categorised in two ways namely: **Extrinsic** and **Intrinsic** Motivation. According to Kets de Vries (2001) quoted by Mullins, the best performing companies possess a set of values that create the right conditions for high performance. It is, therefore, important to put emphasis on the need for widening choice that enables one to choose more freely instead of being directed by forces of which they are unaware and stated that it is a motivational needs system on which such choice is based. Earlier writers such as Taylor (1947) believed in economic needs motivation. He stressed on worker being motivated by obtaining the highest possible wages through working in the most efficient and productive way (Mullins, 2005).

2.2.3.1 Extrinsic Motivation

It is related to tangible rewards such as salary and fringe benefits, security, promotion, contract of service, the work environment and conditions of service. These are what need to be done to or for people to motivate them. They are often determined at the organisational level and may be largely outside the control of the individual managers. Extrinsic motivators can have an immediate and powerful effect but will not necessary last long (Mullins, 2005; Armstrong, 2006)

2.2.3.2 Intrinsic Motivation

This is related to psychological rewards such as the opportunity to use one's ability. A sense of challenge and achievement, receiving appreciation, positive recognition, and being treated in a

caring and considerate manner. Psychological rewards are those that can usually be determined by the actions and behaviour of the individual managers(Mullins, 2005). Intrinsic motivators are concerned with the quality of work life, are likely to have a deeper and longer-term effect because they are inherent in individuals and not imposed from outside (Armstrong, 2006).

2.2.4 Classification of Motivation

The complex and variable nature of needs and expectations give rise to the following simplistic but useful, broad three-fold classification of motivation to work namely:

- **Economic reward**- It is an instrumental orientation to work and includes items such as pay, fringe benefits, pension right, material goods and security.
- **Intrinsic satisfaction**- This is a personal orientation to work and concern with 'oneself'. It is dependent on the individual attitude and varies from person and circumstances. It also varies from jobs and different part within the same the job. It is derived from the nature of the job itself, interest in the job, and personal growth and development.
- **Social relationship**- It is the relational orientation to work and concerned with the other people. It is an important feature in all set ups. It improves the supportive working relationships and teamwork and comprises friendships, group working and the desire for affiliation, status and dependency.

A person's motivational, job satisfaction and work performance is determined by the strength of these sets of needs and expectation and the extent to which they are fulfilled.

Some people for example may choose to forgo intrinsic satisfaction and social relationships for a short term in return for high economic rewards and others vice versa. This goes to confirm Horlick (nd) assertion that the vast majority of people regard money as an important and a motivator at work but the extent of motivation depends upon the personal circumstances and the other satisfactions they derived from work (Mullins, 2005).

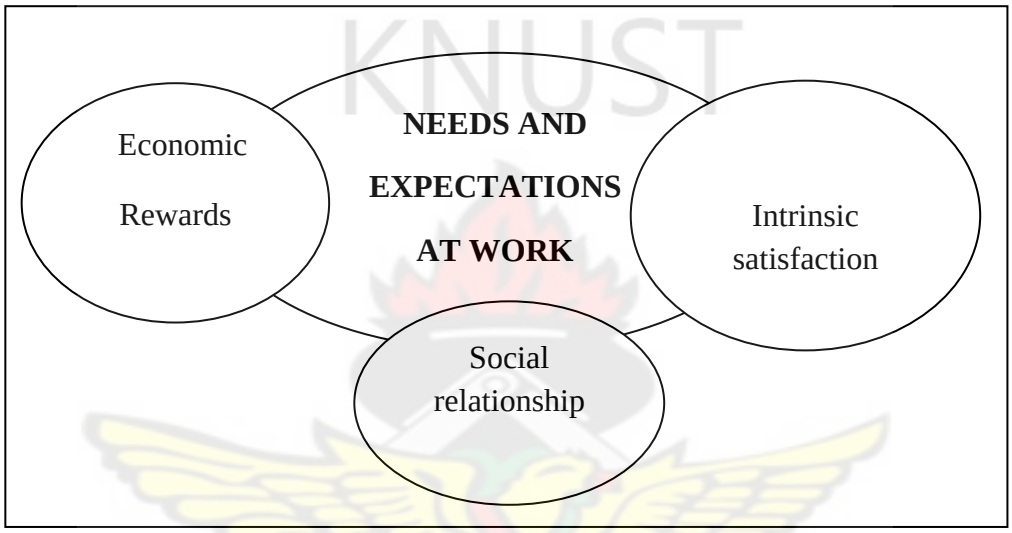

Figure 2.2: Needs and Expectations of people at work (Mullins, 2005)

2.2.5 Theories of Motivation

The various strategies of motivations are dictated by established theories of motivation. Motivation is said to vary over time and according to circumstances. The following are the theories of motivation:

- Content Theories
- Process Theories

2.2.5.1 Content Theories

These theories attempt to explain the specific things which actually motivate the individual at work. These theories are concerned with identifying people's needs and their relative strengths and the goal they pursue in order to satisfy these needs. These theories place emphasis on the nature of the needs and what motivates individuals. The basis of these theories is the belief that the content of motivation consists of needs (Mullin, 2005). It is essentially about taking action to satisfy needs, and identifies the main needs that influence behaviour. An unsatisfied need therefore, creates tension and a state of disequilibrium and in order to restore balance, a goal that will satisfy the need should be identified, and a behaviour pathway that will lead to the achievement of the gaol is selected. Not all needs are important to an individual at a time; some may provide a much more powerful drive towards a goal than others. This is dependent on the background and the present situation of the individual. The complexity of needs is further increased because there is no simple relation between needs and goals. The same need can be satisfied by a number different goals and the stronger the need and the longer its duration, the broader the range of possible goals (Armstrong, 2006). The various postulated content theories are:

- Maslow's hierarchy of need theory
- Alderfer's need modified theory
- Herzberg's two-factor theory
- McClelland's achievement motivation theory

2.2.5.1.1 Maslow's Hierarchy of Needs Theory

Maslow (1943) made a basic proposition that people are wanting beings. This proposition was based on the way people are always looking for more wants, and their wants are dependent on what they already have. With this he suggested that human needs are arranged in a series of levels, a hierarchy of importance. He identified eight innate needs of man, including the need to know and understand, aesthetic needs, and the need for transcendence. However the hierarchy is usually shown as ranging through five main levels from the lowest need being physiological, through safety needs, love needs and esteem needs to the highest level of needs being self actualisation (Mullins, 2005). This theory states that when a lower need is satisfied, it is no longer a strong motivator and hence the demand for the next higher need becomes dominant and the individual's attention is turned towards satisfying this higher need. It states that only unsatisfied needs motivate an individual (Mullins, 2005; Armstrong, 2006). Irrespective of the demand for satisfaction of higher needs, it has been established that self-actualisation being the highest level can never be satisfied (Armstrong, 2006).

Physiological needs: - It is the basic need of life. It comprises the need for relief from thirst, hunger, physical drive, oxygen, sexual desire

Safety needs: - This includes safety and security, freedom from pain or threat of physical attack, protection from danger or deprivation, the need for predictability and orderliness.

Love: - It is sometimes referred to as social needs and includes affection, sense of belonging, social activities, friendship, and both the giving and receiving of love.

Esteem: - It is also often referred to as **ego** and includes self respect which involves the desire for confidence, strength, independence and freedom. In addition is esteem of others which involves reputation or prestige, status, recognition, attention and appreciation.

Self-actualisation:- This is the development and realisation of one's full potential. Maslow saw this level as what humans can be, they must be, or becoming everything that one is capable of becoming. It is the need for develop potentialities and skills, to become what one is believes one is capable of becoming (Mullins, 2005; Armstrong, 2006; Bloisi et. al., 2003)

Maslow (1943) claimed that the hierarchy is relatively universal among different cultures, but recognises that there are differences in an individual's motivational content in a particular culture. He further pointed out that a need not be fully satisfied before the arisen on subsequent need and cited about 85% satisfaction in physiological needs, 70% in safety, 50% in love, 40% in esteem needs, and 10% in self-actualisation (Mullins, 2005). He suggested that most people have these basic needs in the hierarchical manner and also stated that the hierarchy is not a fixed order as some individuals will have theirs in the reverse way. This he cited examples as:

- Self- esteem may seem to be more important than love to some people and is the most common reversal of the hierarchy. This is because the most loved person is strong, confident or inspires respect.

- For some creative individual, the drive for creativity and self-actualisation may arise despite lack of satisfaction of more basic needs.

- People who have experienced chronic unemployment may have higher level needs lost in them since they will continue to be satisfied at lower levels only.

- People deprived of love from childhood may experience the permanent lost of love needs.

- A need which has continued to be satisfied over a long period of time may be undervalued. People who have never suffer chronic hunger underestimate its effect and regard food as unimportant. Therefore people who are dominated by higher-level need, this may assume greater importance than more basic need.

- People with high ideals or values may become martyrs and give up everything else for the sake of their belief (Mullins,2005)

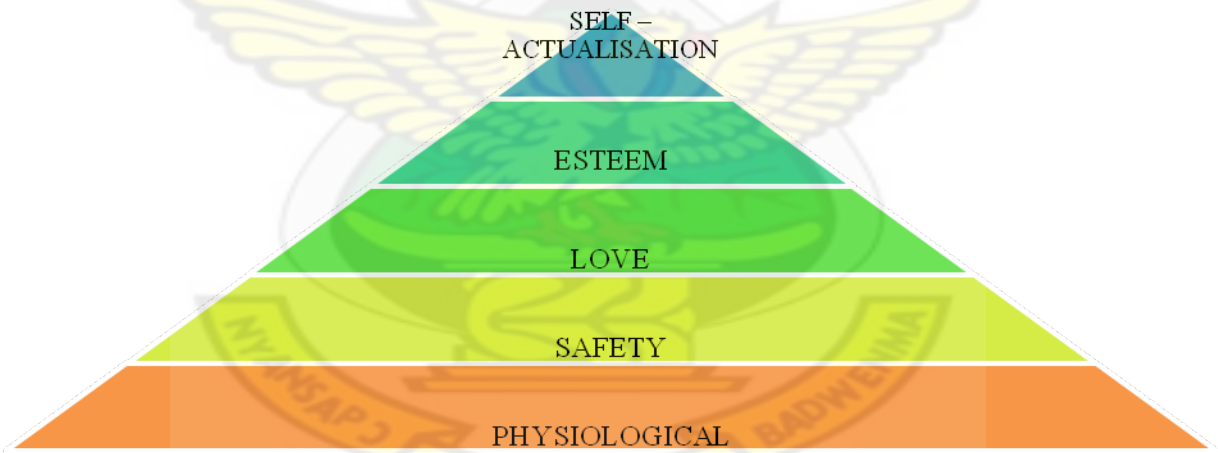

Fig 2.3 Maslow's hierarchy of need model (Mullins, 2005, Bloisi et al, 2003)

Stum (2001) as quoted by Mullins (2005) studied the dynamics between an individual and the organisation, and proposed a new worker / employer social contract that enables organisations

to improve worker commitment and retention. The five levels of workforce needs hierarchy are shown in performance pyramid:

- Safety / security: - The need to feel physically and psychologically safe in the work environment for commitment to be possible.
- Rewards: - The need for extrinsic rewards in compensation and benefits.
- Affiliation: - The intrinsic need for a sense of belonging to the work team or organisation.
- Growth: - Addressing the need for positive individual and organisational change to drive commitment.
- Work / life harmony: - The drive to achieve a sense of fulfilment in balancing work and life responsibilities.

Fig 2.4 Stum Performance Pyramid (Mullins, 2005)

2.2.5.1.2 Alderfer's Need Modified Theory

Alderfer's (1969) modified need hierarchy theory was developed from Maslow's hierarchy need theory. It condensed the five levels of need in the hierarchy need into three levels: existence; relatedness; and growth which emerged the other name as ERG theory.

- **Existence needs**: - They are concerned with sustaining human existence and survival, and it covers physiological and safety needs.
- **Relatedness needs**: - This focused on the relationships with the social environment and it encompasses love, affiliation and a meaningful interpersonal relationships safety and esteem needs.
- **Growth needs**: - It is concerned with the development of potential, and cover self-esteem and self-actualisation.

Alderfer (1969) suggested that the individual progresses through the hierarchy from existence needs, to relatedness and to growth needs as the lower needs become satisfied. The activated need in his view is more than one and therefore, suggested that individual need is more of continuum than hierarchical. Alderfer postulated a two-way progression and cited a frustration-regression process as the downward trend. He said the lower level needs become the focus of the individual's effort when continuous frustration is experienced in the quest for higher level needs. He further suggested that lower level needs need not to be completely satisfied before the emergence of a higher level. The ERG theory states that an individual is motivated by one or more set of needs. In this sense if a person's quest for a need is blocked, then attention should be focused on the satisfaction of needs at other levels (Mullins, 2005).

Table 2.1 Relation between Maslow's and Alderfer's theories of motivation

Maslow's hierarchy of needs	**Alderfer's ERG theory**
PHYSIOLOGICAL	EXISTENCE
SAFETY	
LOVE	RELATEDNESS
ESTEEM	
SELF-ACTUALISATION	GROWTH

2.2.5.1.3 Herzberg' Two Factor Theory

Herzberg (1959) researched into job-related satisfaction and dissatisfaction and came out with a need-based model intended to provide direct managerial application. He in this study, carried out interviews with accountants and engineers using the critical incident technique. The technique is used to gather facts (incidents) from domain experts or less experienced users of the existing system to gain knowledge of how to improve it. the and the interviews were focus on two questions:

i. What made them feel good about their job?

ii. What made them feel bad?

The responses to the above questions reveal two different factors affecting motivation and work and concluded that:

- Job satisfaction and job dissatisfaction derive from different sources.
- Removing the source of dissatisfaction will not cause a person to be motivated to produce better results.

He in this sense of view blended the two premises into the dual-factor explanation of motivation and referred to them as:

- **Hygiene factors**: - These are the basic factors surrounding the job and can trigger dissatisfaction when not adequate. The factors include job security, working condition, quality of supervision, interpersonal relationships, adequacy of pay and fringe benefits. These factors are extrinsic or external and when present produces a neutral feeling with realisation that the basic maintenance needs are taken care of and trigger dissatisfaction when lacking.
- **Motivators: -** According to Herzberg, an individual feels the potential for satisfaction if he or she is able to marshal momentous work motivation. These are intrinsic and unique to every individual. It includes then concluded that, job challenge; responsibility, opportunity growth, and recognition provide feelings of satisfaction (Mullins, 2005; Bloisi et al, 2003).

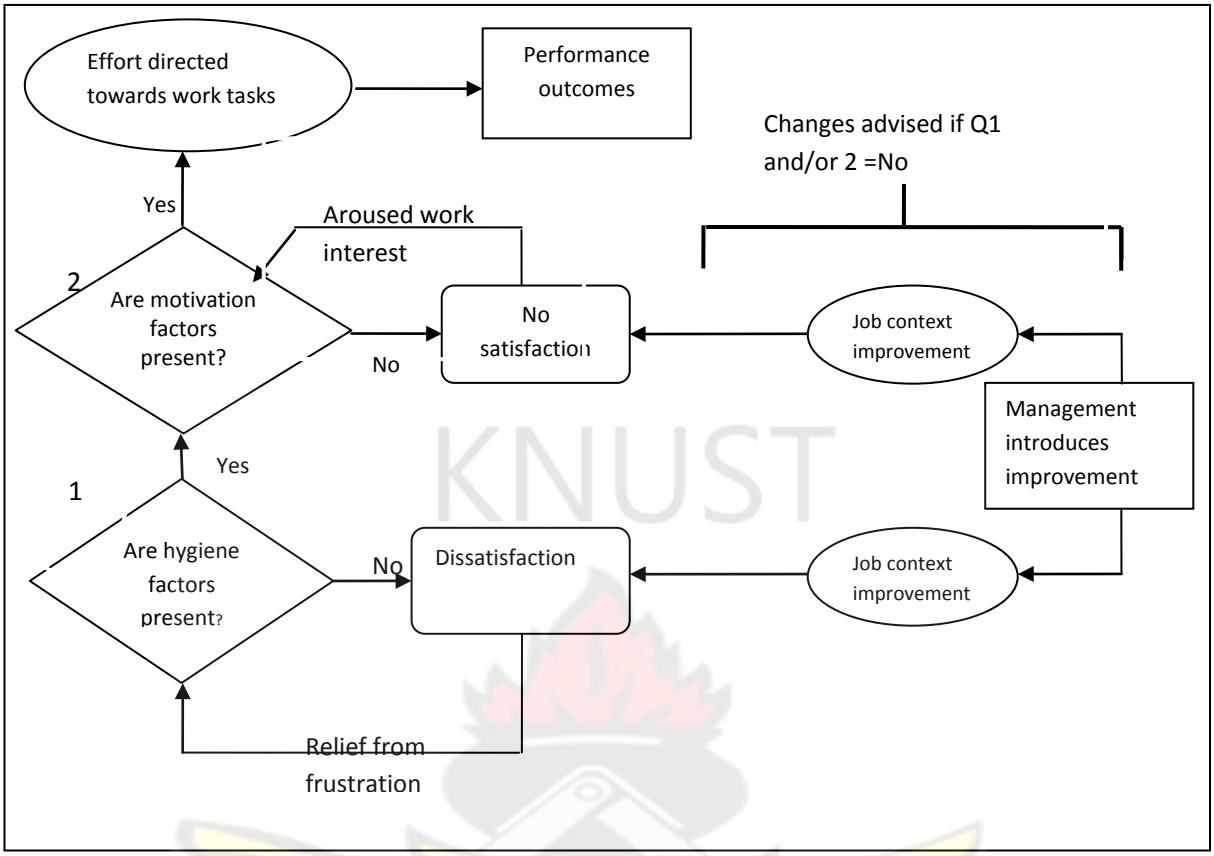

Fig. 2.5 Herzberg Dual Factor Theory of Motivation (Bloisi et al, 2003)

2.2.5.1.4 McGregor Theory X And Theory

McGregor (1960) constructed a philosophy based on differing managerial practice and presented a sharp contrast between two different sets of managerial assumptions about people and identified them as theory **X** and theory **Y** which represents two extreme ends of a continuum of beliefs.

Theory X set of assumptions about human behaviour suggest that people act to realise basic needs and, hence, do not voluntarily contribute to organisational aims (Bloisi et al, 2003).

McGregor made an assumption that individuals are indolent, self-centred, resistant to change, lack ambition, dislike responsibility and are naive (McCaffer et al, 2005). Managers are, therefore, to direct and modify worker behaviour to meet organisational needs by persuading; rewarding, punishing and controlling those who do not naturally strive to learn and grow.

On the contrary, **Theory Y** view of worker behaviour sees people as motivated by higher order growth needs. It is, therefore, the task of management to facilitate individuals to act on these needs and grow in their job. Management's essential task is to structure the job environment to allow people achieve their higher-order individual goals and accomplishing the organisational objective. McGregor saw theory Y as a way to align workers' goals with that of the organisation (Bloisi et al, 2003).

2.2.5.1.5 McClelland's Achievement Motivation Theory

McClelland (1988) achievement theory focused on the relationship between hunger needs and the extent to which imagery of food dominated thought processes and identified four main arousal-based, and socially developed, motives:

- The Achievement motive;
- The Power motive;
- The Affiliative motive; and
- The Avoidance motive.

The initial three motives correspond to Maslow's self-actualisation, esteem and love needs. The relative intensity of these is dependent on the individual and it also varies between different occupations. With the perception that managers are higher in achievement than affiliation, McClelland saw the achievement need (n-Arch) as the most significant for the success and growth of any nation. He used **Thematic Apperception Test** (TAT) and subjective judgement and identified four achievement needs:

- **A preference for moderate task difficulty: -** Individual prefers moderate task difficulty as an incentive and this serves as the best chance to do better. Tasks which are too difficult and risky reduce the chance of success and of gaining need satisfaction. Contrary to this, when the tasks are too easy and safe, there is little challenge in task accomplishment and little satisfaction.
- **Personal responsibility for performance: -** Individuals prefer to attain success through their own efforts rather than teamwork or factors outside their control. Satisfaction is derived from the accomplishment of the task and not from recognition from others.
- **The need for feedback: -** Individuals have a clear and unambiguous feedback on how they perform. Feedback should be within reasonable time to enable individual to assess them to determine success or failure in their accomplishment of goals from which they derive satisfaction from.
- **Innovativeness: -** They always seek moderately challenging tasks and tend to be moving on always to more challenging things. There is a constant search for variety and for information to find new ways of doing things. These make them restless and avoid routine, and also tend to travel more.

The extent of achievement motivation varies between individual. Two categories of achievers were identified namely:

- **People with high achievement motivation: -** This category of people are normally challenged by opportunities and work hard towards a goal. Money is not an incentive to high achievement motivated people but rather as a feedback on their performance. With this motive they tend not to stay for longer period in organisations that do not pay them well for good performance. Money in this context may seem to be important to them but value it as a symbol of successful task performance and goal achievement.
- **People with low achievement motivation: -** This category of people do not care much and have little urge for achievement. These people value money more as an incentive for performance (Mullins, 2005).

McClelland (1988) further suggested that effective managers need to be successful leaders and to influence other people. More so, they should possess a high need for power and score high on inhibition. The power in this context is directed to the organisation and concern for group goals and is being exercised on behalf of other people. The theory suggested that n-Ach is not hereditary but as result from environmental influence and has the possibility of training people to develop a greater motivation to achieve. Four steps in attempting to develop achievement drive:

- Striving to attain feedback on performance.
- Developing models of achievement by seeking to emulate people who have performed well.

- Attempting to modify their self-image and to see themselves as needing challenges and success.
- Controlling day dreaming and thinking about themselves in more positive terms (Mullin, 2005).

2.2.5.2 Process Theories

These theories are extrinsic theories and they attempt to identify the relationships among the dynamic variables which make up motivation and the actions required to influence behaviour and action. They provide a further contribution to our understanding of the complex nature of work motivation (Mullins, 2005). Process theory on the other hand is also known as cognitive theory because it is concern with people's perceptions of their working environment, the ways in which they interpret and understand. According to Guest, process theory provides a much more relevant approach to motivation than Maslow and Herzberg which he suggests, have been shown by extensive research to be wrong. Cognitive theory can certainly be more useful to managers than need theory because it provides more realistic guidance on motivation techniques (Armstrong, 2006). The process theories are:

- Expectancy theory
- Goal theory
- Equity theory

2.2.5.2.1 Expectancy Theory

Expectancy Theory is a generic theory of motivation and cannot be linked to a single writer. Motivation based on expectancy theory focuses on a person's beliefs about the relationships among effort, performance and rewards for doing a job. There have been different versions of which some are complex. Recent approaches to expectancy theory have been associated with works of Vroom (Mullins, 2005).

2.2.5.2.1.1 Vroom's Expectancy Theory

Vroom (1964) criticised Herzberg's two-factor theory as being too dependent on the content and context of the work roles of workers and offered an expectancy approach to the study of motivation (Bloisi et al, 2003). This theory therefore aimed at work motivation and based on three variables namely **valence; instrumentality and expectancy**. This theory was centred on the idea that people prefer certain outcomes from their behaviour over other (Mullins, 2005). He proposed that individuals will be motivated to achieve a desired goal as long as they expect that their actions will achieve the goal (Bloisi et al, 2003).

Valence as a variable of this expectancy theory is the feelings about a specific outcomes or an anticipated satisfaction from on outcome. It can further be explained as the attractiveness of, or preference for a particular outcome to an individual. This is derived from their own right but usually derived from the other outcomes to which they are expected to lead of which accumulation of wealth from money is an example (Mullins, 2005).

Instrumentality is another variable from which the valence of outcome is obtained and it gives distinction between first-level and second-level outcomes. **The first-level** outcomes are performance-related and it refers to quantity of output or the comparative level of performance. In this level of performance, individual perform well without thought to expected consequences of their actions. Contrary the **second-level** outcomes are need related and it is attained through achievement of first-level outcomes (achievement of high performance), (Mullins, 2005).

Expectancy is defined as a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome (Armstrong, 2006). It is a relationship between a chosen course of action and the associated predicted outcome. Individuals with this develop perception of the degree of probability that the choice of a particular action will really lead to a desired outcome (Mullins, 2005).

Vroom, therefore, developed a motivational force equation and said it is the combination of valence and expectancy. The action force is unaffected by the outcomes which have no valence, or by outcomes that are regarded as unlikely to result from a course of action.

$$M = \sum_{1}^{n} (E.V)$$

2.2.5.2.2 Goal Theory

Goal theory plays a key part in performance management process and was evolved from the largely discredited management-by-objective (MBO) approach. It was postulated by Locke and Latham (1979) and they stated that motivation and performance are higher when individuals set specific goal, when accepted goals are difficult, and when there is feedback on performance. The basic premise of this theory is that people's goals or intentions play an important part in determining behaviour. Goals guide people's response and action by directing work behaviour and performance, and lead to certain feedback. Locke stressed that goal setting is viewed as a motivational technique rather than a formal theory of motivation. Erez and Zidon (1984) emphasised the need for acceptance of and commitment to goal. This emphasis was based on findings that, as long as they agree, demanding goals lead to a better performance than easy ones. Erez (1977) also stressed on the importance of feedback as Robertson et.al. (1992) pointed out: "Goals inform individuals to achieve particular levels of performance, in order for them to direct and evaluate their actions; whiles performance feedback allows the individual to track how well an individual has been doing in relation to the goal, so that, if necessary adjustment in effort, direction or possibly task strategies can be made" (Armstrong, 2006). Individuals with specific and difficult goals perform better than those with vague and easier goals. This goes to confirm Gratton (2000) stretch goals which are ambitious, highly targeted opportunities for breakthrough improvement in performance. Hannagan has suggested that "at present goal-setting is one of the most influential theories of work motivation applicable to all cultures" (Mullins, 2005).

Goal theory has a number of practical implications:

- Specific performance goals should be identified and set in order to direct behaviour and maintain motivation
- The set goals should be challenging but at a realistic level
- Complete, accurate and timely feedback and knowledge of results is usually associated with high performance.
- Goals can be determined either by superior or individuals themselves.

On the next page is an illustration of goal-setting theory

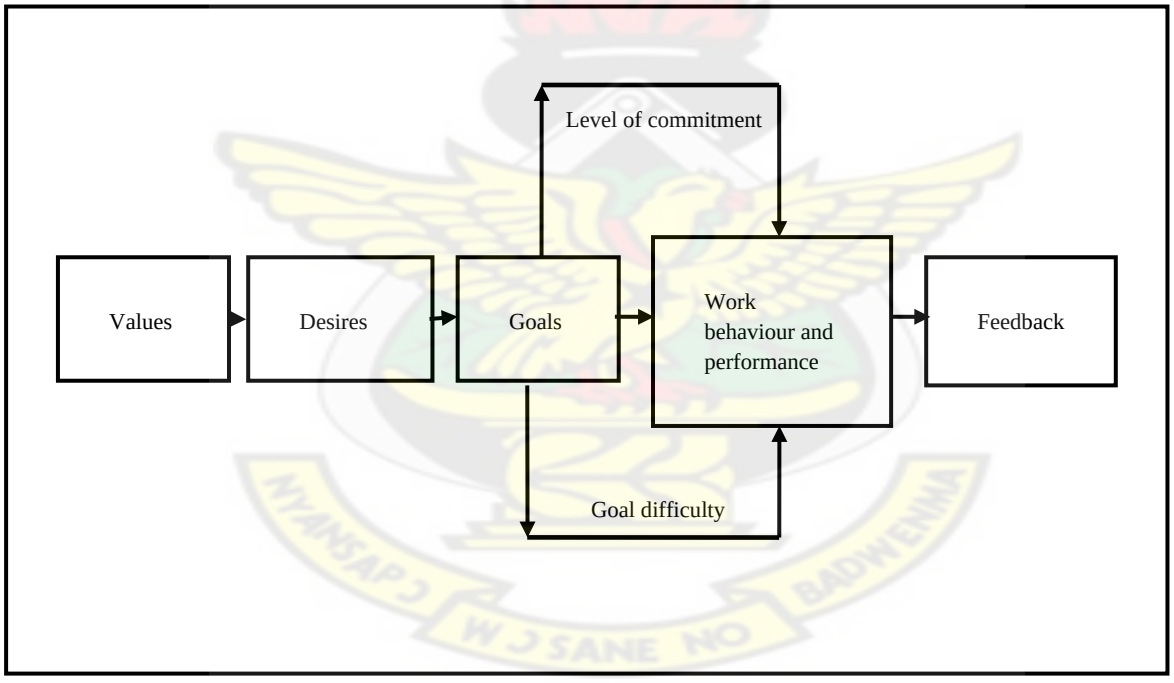

Fig 2.6 Illustration of goal-setting theory (Mullins, 2005)

2.2.5.2.3 Equity Theory

A Adams (1963) considered this theory from perceived equitable rewards which are variations in satisfactions in Porter and Lawler (1968) expectancy model. This theory looked at the perception people have about the treatment being given them in relation with others. Equity deals with fairness compared to others and it involves feelings, perceptions and comparative process. The theory states that people will be better motivated if they are treated equitably and demotivated if treated inequitably (Armstrong, 2006). There exists equity when the ratio of an individual's total outcomes to total inputs equal the perceived ratio of other people's total outcome to total input. An inequity feeling causes unpleasant tension which motivates the person to remove or reduce the level of tension and perceived inequity. Adams identified six feedbacks to inequity:

i. **Changes to input: -** An individual may increase or decrease the level of inputs through quantity, quality, absenteeism, or working extra without pay.
ii. **Changes to outcome: -** An attempt by an individual to change outcome such as pay, working conditions, status and recognition without change in input.
iii. **Cognitive distortion of input and outcomes:** - People may distort cognitively, their inputs or outcomes to achieve the same results. He further suggested that although it is difficult for individuals to distort facts about themselves, it is possible to within limits to distort the utility of those facts.
iv. **Leaving the field**: - It is the situation where an individual finds a more favourable balance by absenteeism, request for transfer, or resigning altogether from the job or organisation.

v. **Acting on others**: - A person may try to bring changes in others by lowering inputs or accepting greater outcomes or force others to leave the job.

vi. **Changing the object of comparison**: - This is the change in reference group with whom comparison is made (Mullins, 2005).

Figure 2.8 depicts Adam's equity theory of motivation. Adam further postulated two forms of equity:

- **Distributive equity: -** this is concerned with the fairness with which people feel they are rewarded in accordance with their contribution and comparison with others.
- **Procedural equity: -** this is also known as procedural justice and it refers to the perception workers have about the fairness with events such as performance appraisal, promotion and discipline are being operated. Tyler and Bies (1990) identified five factors which contribute to perceptions of procedural fairness:
    i. Adequate consideration of an worker's viewpoint
    ii. Suppression of personal bias towards the worker
    iii. Applying criteria consistently across workers
    iv. Providing early feedback to workers concerning the outcome of decision
    v. Providing workers with an adequate explanation of the decision made (Armstrong, 2006).

Kreitner et al (1999) as quoted in Mullin (2005) suggested at least seven practical implications of equity theory:

i. It provides managers with another explanation of how beliefs and attitudes affect job performance

ii. It emphasises the need for managers to pay attention to worker's perception of what is fair and equitable.

iii. Managers benefit by allowing workers to participate in making decisions about important work outcomes

iv. Workers should be given the opportunity to appeal against decisions that affect their welfare.

v. Workers are more likely to accept and support organisational change when they believe it is implemented fairly.

vi. Managers can promote co-operation and teamwork among group members by treating them equally

vii. Workers denied justice at work are turning increasingly to arbitration and the courts (Mullins, 2005).

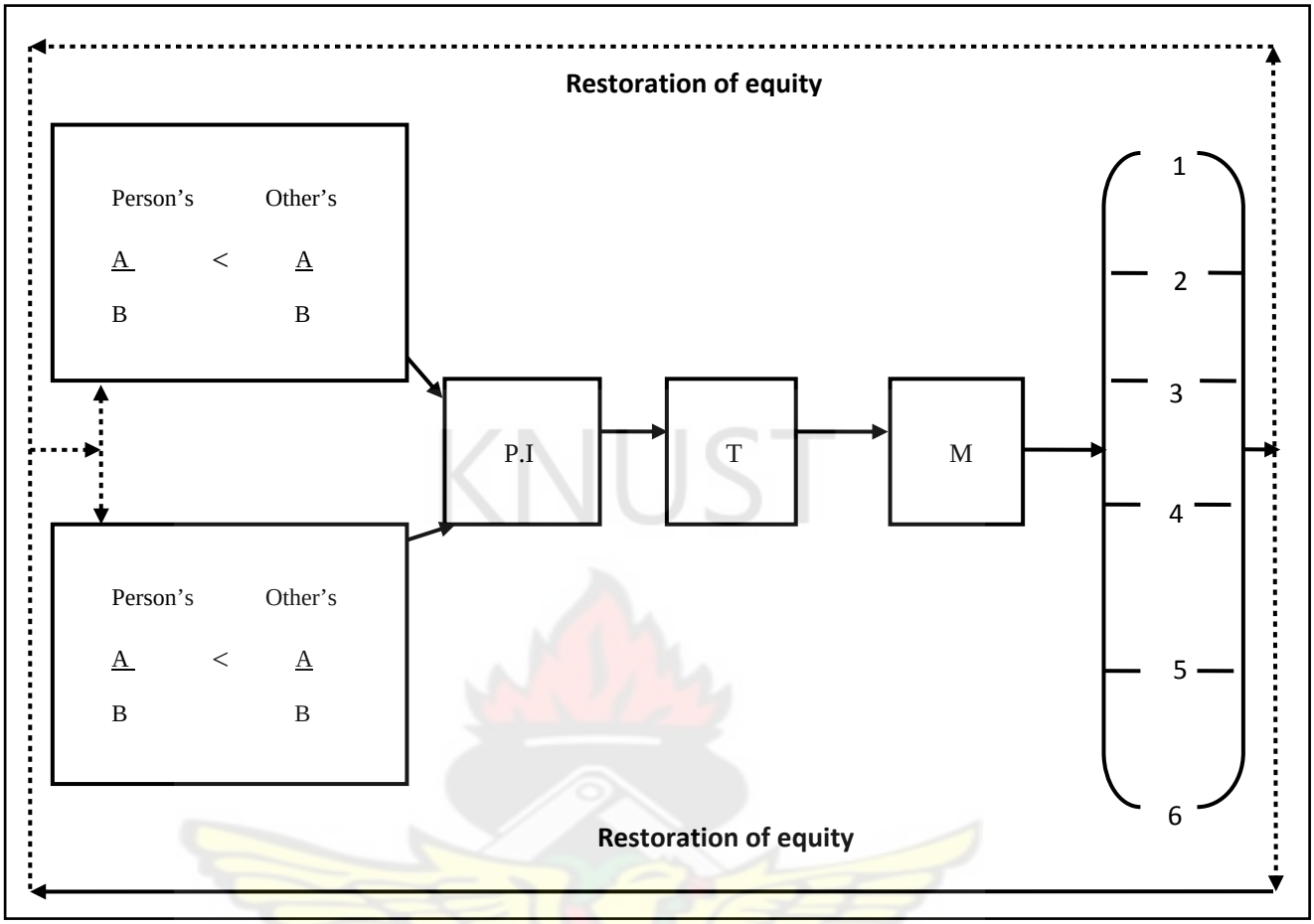

Fig 2.7 Illustration of equity theory of motivation

A - Outcomes

B - Inputs

P.I – Perceived inequity

T - Tension

M - Motivation

1 – Changes to inputs

2 – Changes to outcomes

3 – Cognitive distortion

4 – Leaving the field

5 – Acting on others

6 – Changing the object of Comparison

2.2.5.2.4 Reinforcement Theory

Skinner (1953) developed the reinforcement theory aimed at shaping behaviour by controlling the consequences of the behaviour. The theory was based on the idea that individuals are not driven by motivation, but by their environment. In reinforcement theory a combination of rewards and/or punishments is used to reinforce desired behaviour or extinguish unwanted behaviour. Any behaviour that gives rise to a consequence is called operant behaviour, because the individual operates on his or her environment. Reinforcement theory concentrates on the relationship between the operant behaviour and the associated consequences, and is sometimes referred to as operant conditioning. This theory focuses on modifying individual's on-the-job behaviour through the appropriate use of one of the following four techniques:

- **Positive reinforcement:** Positive reinforcement strengthens behaviour. This is the process of getting goodies as a consequence of behaviour, such as a pay raise or promotion provided as a reward for positive behaviour with the intention of increasing the probability that the desired behaviour will be repeated.

- **Negative reinforcement:** It is an attempt to show an individual what the consequences of improper behaviour will be. This is the process of having a stressor taken away as a consequence of behaviour. If an individual does not engage in improper behaviour, he or she will not experience the consequence.

- **Extinction:** It is basically ignoring the behaviour of a subordinate and not providing either positive or negative reinforcement. Classroom teachers often use this technique when they ignore students who are "acting out" to get attention. This

technique should only be used when the supervisor perceives the behaviour as temporary, not typical, and not serious.

- **Punishment** (threats, docking pay, and suspension) is an attempt to decrease the likelihood of a behavior recurring by applying negative consequences.

The reinforcement theory has the following implications for management:

- Learning what is acceptable to the organization influences motivated behaviour.
- Managers who are trying to motivate their workers should be sure to tell individuals what they are doing wrong and be careful not to reward all individuals at the same time.
- Managers must tell individuals what they can do to receive positive reinforcement.
- Managers must be sure to administer the reinforcement as closely as possible to the occurrence of the behaviour (Encyclopedia of Management).

2.2.6 Productivity

Productivity in general has been defined in the Cambridge International and Oxford Advance Learner's dictionaries as the rate at which goods are produced with reference to number of people and amount of materials necessary to produced it. On the other hand, productivity has been defined as the utilization of resources in producing a product or services (Gaissey, 1993). It has further been defined as the ratio of the output (good and services) and input (Labour,

capital or management). The definition of productivity is utilized by economists at the industrial level to determine the economy's health, trends and growth rate whiles at the project level, it applies to areas of planning, cost estimating, accounting and cost control (Mojahed, 2005). This has been given a mathematical expression as follows:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$ (Heizer and Render, 1999)

Clearly, it can be seen from the mathematical expression that productivity will increase when output increase with input being constant or decreasing input with output constant. The United States for almost 100years, was able to increase productivity at an average rate of 2.5% per annum and that doubled their wealth every 30years (Heizer and Render, 1999). Productivity improvement can be realised if the following factors can be accomplished.

(i) Faster set-up of machine tools

(ii) Better quality control

(iii) More flexible in changing product specification.

(iv) Proper material handling

Surely, there exist a positive correlation between productivity and some variables namely: Labour; Material; Capital; and Management. Total factor productivity gives a more general definition of productivity and it takes into consideration the combination of various input factors and is measured as follows:

$$\text{Total Factor Productivity} = \frac{\text{Total Output}}{\text{Labour + material + equipment + energy + capital+ management}}.$$

Construction productivity carry immense consequences for the national economy as a whole, however it remains one of the least understood subjects in. The Bureau of Labour Statistics maintains productivity indices for all industries of the national economy except for the construction industry due to inadequate data (Haas et al, 1998).

2.2.6.1 Labour

Labour which otherwise known as human resources has widely been recognised as being vital in every organization yet industry have a momentous task in forecasting and planning its manpower requirements which enables the full utilization of this resource. In view of its importance, there is the need to improve it. Labour has been found to account for a third of the total direct capital cost of construction projects (MacTague et al, 2002; Thomas et al, 2003; Akindele, 2004). However, only a third to one a half of workers' time is spent directly on work activities productively (Thomas et al, 2003). The cost of construction labour has risen in recent years since workers always make demands for higher pay and fringed benefits. Improvement in the contribution of labour to productivity is the result of a healthier, better –education, better-nourished labour force and at times shorter work week (Heizer and Render, 1999).

2.2.6.2 Material

Material plays a critical role in the achievement of productivity. According to McCaffer and Harris (2001), material forms over 50% of the cost profile of the construction industry. They further state that a reduction of a small percentage in the cost of the material will go to increase profit significantly. This by inference indicates an improvement in productivity. For example 2% reduction in material wastage could increase profits by much more than had it been on

overheads. It is obvious that any appreciable waste is a significant item of cost and represent a great loss to the company in question and the nation's resources as a whole thereby decreasing the its productivity (McCaffer and Harris, 2001).

2.2.6.3 Capital

Capital investment provides tools, plant and machinery which human beings utilise in production. Inflation, interest rates, taxes increases the cost of capital making capital investment increasingly expensive. When the capital investment per worker decreases, there will be a corresponding decrease in productivity. In using labour rather than capital may reduce unemployment in the short run; this continually brings in a continuous change in the balance between capital and labour (Heizer and Render, 1999). In the 1930's Work Progress Administration (WPA) constructed swimming pool in the parks of New York City. Much of the excavation for each pool was executed by men with shovels and pick axes, the concrete was hand mixed and carried; the tiles were laboriously set .The project was scantily criticised as were many WPA projects as wasteful and inefficient. Articles were written showing the use of labour – saving equipment could have reduced the cost per pool; how the same funds could have produced more pools and so forth (Wiredu, 1989).

2.2.6.4 Management

Management is a variable of production that ensures that labour and capital are effectively used to increase productivity. Its other function is to foresee problems well in advance and determine solutions before they arise. Irrespective of the influence labour has on productivity,

ineffective management has also been cited as the primary cause of poor productivity more than an unmotivated and unskilled workforce. Managers are responsible for productivity improvement and this can be achieved through planning, proper selection, control and utilisation of resource, supply of information and feedback, motivation of operatives and must remain committed to productivity. A pilot study conducted in the Canadian construction industry among experts with an average of 27 years revealed that management is the top rated driver of productivity three categories of management, human, and external factors (Mojahed, 2005).

Effective operations managers build workforces and organizations that recognize the continuing need for education and knowledge. They ensure that technology, education, and knowledge are used effectively. More effective utilization of capital, as opposed to the investment of additional capital, is also important. The manager as a productivity catalyst is charged with the task of making improvement in capital productivity within existing constraints. Productivity gains in knowledge advanced societies require managers who are comfortable with technology and management science (Heizer and Render, 1999).

2.2.7 Factors Affecting Labour Productivity

Several factors affect labour productivity and prominent among them is the basic education for any effective labour force. In addition to the above is the diet of the labour force and social overhead such as transportation and sanitation (Heizer and Render, 1999). Furthermore, motivation, team building, training and job security have a significant bearing on the labour productivity. Coupled with the afore-stated factors, labour productivity cannot be achieved without maintaining and enhancing the skills of labour and human resource strategies. Better

utilized labour with stronger commitment and working on safe jobs also contribute to affect labour productivity (Wiredu, 1989).

2.2.8 RESEARCH FINDINGS IN THE LITERATURE ON MOTIVATION IN THE CONSTRUCTION INDUSTRY AND ITS EFFECT ON PRODUCTIVITY

2.2.8.1 The Role of Management

Mojahed (2005) and Oglesby et al. (1989) defined motivation as inciting unconscious and subconscious forces in people to achieve particular behaviours by them. It is, therefore, important that a motivational climate be developed for workers to perform more efficiently, thereby causing an increase in the construction productivity (Mojahed, 2005). In the classical theory by Taylor, (one of the widely recognised theorists on leadership and management), it is believed that the basis of increasing productivity was more of technology and, therefore, demanded that leaders should enforce pre-established productivity criteria to meet fixed goals. Mayo, on the other hand, postulated the humanist theory and stated that the role of a leader is to attain goals by the provision of opportunities for growth and development for the workers. Productivity improvement would be possible if workers are allowed to contribute their quota in all operations of a company. Leadership, therefore, remains the most single important aspect of enhancing productivity on construction projects. Everyone therefore on a construction project is, therefore, a leader as a result of the role played in different ways at different times whilst working towards the fulfilment of concept of a leader. They, therefore, demonstrate the willingness to react to worker environmental needs which in effect will motivate them to work at their highest level. Democracy, therefore, needs to be practised to allow for broader

participation of team members (Berg and Magnus, 1999; Olabosipo et al 2004). Business Roundtable (1989) edition of motivation in the construction industry reported that foremen are often unable to motivate the average craftsman today but suggested that craftsmen will motivate themselves given the right conditions and opportunity. Management of construction on site is in this instant said to start from the foremen and can have an impact on the performance of the workforce hence the productivity as a whole. A study conducted on 703 construction workers revealed that foremen have a strong impact on worker motivation, performance and satisfaction (Halligan et al, 1994). The onus, therefore, lies on management to assign qualified foremen from whom subordinates will derive inspiration from their qualities. This will persuade workers to always work productively.

2.2.8.2 Work Environment

According to Russell (2001) as cited by Mojahed, the elimination of negative attitudes on a job that requires management of perception such as asking questions and getting feedback will foster a motivational and productive environment. Couple with these, Chase (1993) stated that combining training, orientation for new workers, provision of safe environment, encouragement of two-way communication, worker participation in planning and decision making, and individual / team recognition may be utilised to achieve worker satisfaction goal. Oglesby (1989) in Mojahed (2005) studied individual work situation and pointed out that pay ranked top in importance. It has been generally believed by builders that workers wages become an important motivational factor and incentive compensation has a direct and beneficial effect on productivity; more pay results in more productive work (Mojahed, 2005).

Since workers are directly responsible for carrying out construction works, suitable motivation is necessary for maximising their productivity.

2.2.8.3 Workers Expectation

Olomolaiye et al (1989) also quoted by Olabosipo et. al (2004) stated that, pay is a lower level motivator and should not be treated as a prime motivator. Mojahed (2005) in his study into project improvement system for effective management of construction projects cited Lui (2002) research which revealed that workers with more experience and education expect higher pay than those with less experience and education. The findings also elaborated that when workers are underpaid relative to their expectation or to other workers with comparable skills and demographic characteristics, they tend to reduce their effort which in effect impact on productivity negatively. These confirm Adams' equity and Vroom's expectancy theory respectively. In a study of the impact of non-financial incentives on bricklayers' productivity in Nigeria, it was ascertained that non-financial incentive schemes are the preferred methods of motivating operatives and these goes to improve significantly the productive time of operatives between 6% to 26%. Small firms in the above mentioned study were seen to have absolute preference for non-financial incentive schemes that do not have capital outlay due to reasons of affordability (Olabosipo et al, 2004). According to Borcherding (1978) five peculiar motivational problems encountered on large construction projects are: minimal knowledge about the project; lack of participation in decision-making; inadequate communication and coordination between crews and supervisors, detrimental changes in the work, as well as supervision and manpower that reduce learning curve efficiency improvement.

2.2.8.4 The Role of Foremen

Clarke and Morris (1980) study on of U.S. workers to determine attitudes towards productivity as quoted by Mojahed (2005), it was established that involvement in decision-making, recognition through financial rewards, and job security are important motivational factors for workers to work harder to give out their best. However in the study of impact of non-financial incentives on bricklayers' productivity in Nigeria, job security was assigned the least importance by both management and the bricklayers. The issue of low priority placed on job security might be due to the transient and ad-hoc nature of labour (Olabosipo et al, 2004). Zakeri et al. (1997) in a survey of construction operatives in Iran also revealed that, fairness of pay, incentives or financial rewards, on-time wage payment, good working facilities, and safety were the most important motivational factors.

Kaming et al (1997) on the other hand researched into Indonesian construction operatives and revealed that, fairness of pay, good relation with workmates, overtime payments, bonuses, and good safety programs were the motivational factors that exist on Indonesia projects. Furthermore, disrespect from supervisors, little accomplishment, lack of cooperation among workmates, and unsafe working conditions were seen to be demotivators (Mojahed, 2005).). Further to the above, research into demotivating factors influencing the productivity of civil engineering projects in Hong Kong showed that foremen changes and incompetence were rated low. These was because workers took considerable pride in the work they accomplish and having work to be redone can be extremely dissatisfying (Thomas et al, 2003). However, it has been established in the study of relationship between project leadership, team composition that, with the exception of the profession or background of a project leader, qualification,

leadership style and team composition were found to correlate positively with the overall project performance (Odunsami et al, 2003).

It is estimated that 6.5% excess of cost is observed through poor safety practices in construction (Haliigan et. al., 1994). It can be inferred that record more than 6.5% of cost through accidents if safety is not adhered to. Occupational injuries can harm the reputation of firms, decrease productivity and in effect results in huge cost. According to Kazaz and Ulubeyi (2006), the cost of all accidents and work-related illness in the United Kingdom amount to 2-3% of total gross domestic product of the country. In the research into drivers of productivity among construction workers in Turkey, Kazaz and Ulubeyi (2006) revealed that the construction sector has the highest total accidents on the job with 10.48%. According to Worker Health and Worker Safety Charter of Turkey, a doctor needs to be engaged on site if workers strength of the organisation is at least 50 but the principle is generally followed when the number is much greater than 50. Managers, therefore, agree that employing a doctor on site do not only have the legal implication but rather economics as well as workers spend only 10-15 minutes in on-site consultation than a full day (Kazaz and Ulubeyi, 2006). Workers working in an environment where accidents or injuries frequently occur will always be extremely cautious at work and this will affect individual performance. There is, therefore, the need for adequate safety plans for workers that will change attitudes on work, enhance performance and this will affect overall productivity.

2.2.8.5 Conflict at Workplace

In a study aimed at eliminating workplace conflict and instantly improving productivity conducted by the University of North Carolina as reported by Zimmerman (2006), it was observed that 78% of the respondents thought rudeness and incivility have increased in the last decade. In addition, 53% of the respondents lost work time worrying about a past or future confrontation with a co-worker whiles 37% cited that hostile confrontation caused them to reduce their commitment to the organisation. Furthermore 28% of the respondent also said they avoid confrontational co-workers, thereby, loosing work time while 22% put less effort into their work because of confrontation (Zimmerman, 2006). Five general motivational techniques mostly used in the industry were reported and these were goal setting, incentives, work facilitation, proper recognition and worker participation in decision-making (Business Roundtable, 1989).

Further to these, research into demotivating factors influencing the productivity of civil engineering projects in Hong Kong showed that foremen changes and incompetence were rated low. These was because workers took considerable pride in the work they accomplish and having work to be redone can be extremely dissatisfying (Thomas et al, 2003). However, it has been established in the study of relationship between project leadership, team composition that, with the exception of the profession or background of a project leader, qualification, leadership style and team composition were found to correlate positively with the overall project performance (Odunsami et al, 2003). In a 48 hour working duration per week, a total estimated lost time ranging from 5.1 to 13.6 hours per worker per week representing 10.6% to 28.3 % was caused by the major demotivating factors (Thomas et al, 2003). Allan and Sienko

(1997) stated that management should recruit workers with high growth and development needs. When this category of workers is encouraged to achieve the said need, it will bring motivation which will further enhance performance.

2.2.8.6 Demotivational Factors

The existence of demotivational factors could result in decline of workers productivity, since workers feel they have no control over their work and what they produce. Some of the demotivation factors that reduce workforce productivity are:

- Lack of adequate planning and materials
- Improper scheduling
- Project confusion
- Frequent delays
- Constant disruption of job assignment
- Communication breakdown
- Unavailability of tools and equipment
- Overcrowded work areas and rework
- Unsafe working conditions
- Lack of recognition and training
- Disrespectful treatment
- Little feeling of accomplishment
- Little participation in decision making
- Lack of quality assurance
- Poorly trained foremen
- Poor supervision
- Restrictive procedure

Makulsawatudom and Emsley (2001) observed that, there were 8 factors which according to the craftsmen, affected productivity in Thailand construction industry. These factors were as follows:

- Lack of materials
- Lack of tools and equipment
- Incomplete drawings
- Overcrowding
- Poor site conditions
- Incompetent supervisor
- Rework and poor communication

Several researchers have carried out investigation into various productivity problems in various countries and all revealed different factors. Makulsawatudom and Emsley compared the observations made in Thailand to that of other researchers in different countries and revealed six factors which are most prevalent and have significant impact on construction productivity. The various counties and their respective ranking of factors are as shown in Table 2.1.

Table 2.2.: Comparison of productivity factors in Thailand with other countries

Factors affecting productivity	**Thailand**	**Indonesia**	**Iran**	**Nigeri**	**U.K.**	**U.S.**
	Rank	Rank	Rank	Rank	Ran	Rank
Lack of material	1st	1st	1st	1st	1st	1st
Lack of tools and equipment	2nd	5th	2nd	3rd	5th	2nd
Rework	3rd	2nd	4th	2nd	3rd	3rd
Absenteeism	4th	4th	3rd	5th	6th	6th
Interference	5th	3rd	5th	6th	2nd	5th
Supervision delays (Instruction time)	6th	6th	N/A	4th	4th	4th

(Makulsawatudom and Emsley, 2001)

This research therefore seeks to identify productivity factors that are prevalent and at the same time motivates construction workers at work in Ghana. The study will further ascertain the

effect of these factors have on productivity. It will also recommend strategies that will facilitate construction workers motivation and further improvement in productivity.

CHAPTER THREE

RESEARCH METHODS AND DESIGN

3.1 Introduction

This chapter gives details of the methods and procedure of this study. A list of motivational factors were identified from the review of literature, internet search and preliminary survey and developed into a questionnaire for the main survey. The review of literature also indicated the significance of the motivational factors on productivity and, hence, the survey sought the perceptions of respondents about the relative importance of the selected motivational factors and their significance on productivity.

The methodology used in this study is survey questionnaire which can be categorised as quantitative research. Quantitative approaches are more specific and result oriented and it involves the collection of numerical data in order to explain, predict, and/or control phenomena of interest (Mojaheed, 2005).

3.2 Survey

A thorough literature research was undertaken to extract all the available factors that motivate an individual at work and also impact on his / her output when they are present. The source of the research was published professional journals, academic works, internet search and other relevant literature. A survey was then conducted in which construction practitioners made up of management, tradesmen and professionals were asked to rank the factors according to their relative importance. In addition, the perceptions of the extent to which the identified motivational factors influence productivity were sought.

From the outcome, deduction on how to improve productivity without depriving anyone from the factors that will enhance motivation was made.

3.3 Design of Questionnaire

Structured questionnaires which were self-administered (shown in Appendices A, B and C) were utilized for both preliminary and main surveys. Both questionnaires consisted of closed and open-ended questions. The latter required the respondents to indicate their responses in writing. Questions, response format and instructions were designed to facilitate the administration of the survey. The preliminary survey was to find the motivational and productivity level within some selected construction companies and mechanisms that can be put in place to enhance motivation and productivity as well.

Two sets of questionnaires were designed for the main study and were administered to the construction workers and management or employers. Construction workers' questionnaires were divided into three sections whereas that of management had two sections.

The first set of questions was intended to seek information on the construction companies in which the various construction practitioners are employed. The second set of questions dealt with the demography of the construction workers or respondent (i.e., sex, age, educational level, trade / position, terms of employment, years of experience and years working with the company). The third set of questions was related to motivation and productivity. Construction workers were requested to give their opinion on the

motivational level within environment and the general individual productivity within the company. In addition to these, 3-point and 5-point likert scales were employed respectively in the questions to indicate the degree of effect on motivation and the degree of significance of the selected factors on productivity.

In relation to motivation, "1" represented low, "2" represented medium and "3" represented high. In the case of productivity, "1" represented strongly not significant, "2" represented not significant, "3" represented average, "4" represented significant and "5" represented strongly significant in the case of productivity. Workers were therefore requested, based on opinion or perceptions to tick where appropriate the degree of effect on individual motivation and their significance on individual productivity where the factors existed.

The questionnaire for management was divided into two sections. The first section also sought information on the company, ranging from classification, years in existence and worker strength (i.e. permanent, contract and casual). The second section dealt with the motivation and productivity of the construction workers in the company. Management were requested to indicate the motivational and productivity level of the construction workers. Furthermore, 3-point and 5-point likert scales were used respectively in the questions on the degree of effect regarding motivation and the degree of significance of the selected factors on productivity. In relation to motivation, "1" represented low, "2" represented medium and "3" represented high. With reference to productivity, "1" represented strongly not significant, "2" represented not significant, "3" represented

average, “4” represented significant and “5” represented strongly significant. Management were, therefore, requested to tick where appropriate based on opinions, the degree of effect on construction workers’ motivation and the significance on productivity of construction workers where the factors existed.

3.3.1 Sampling Technique and Sample Sizing

A purposive sampling method was used to select the class of construction companies for the questionnaires administration. The targeted group was contractors with classification D1. This class of companies was chosen for the study because of the large projects they undertake and the great number of workers they employ. In addition, non empirical evidence shows that D1 companies have good organisational set up that lend themselves to refined academic research work than the lower class of companies.

More so snowball sampling was utilised attaining the sample size as a result of the difficulties encountered in assessing the population size of the class. Snowball sampling is a technique for finding research subject (Atkinson and Flint, 2001). On subject in this sampling technique gives the researcher the name of another subject, who in turn provides the name of a third, and so on. This strategy can is viewed as a response to overcome the problems associated with concealed or hard-to-reach populations. According to Berg (1988) cited in Atkinson and Flint (2001), the process is based on the assumption that a ‘bond’ or ‘link’ exists between the initial sample and others in the same target population, allowing a series of referrals to be made within a circle of acquaintance. This was therefore implemented by acquiring initial list of contractors

within the classification and contact telephone numbers from Architectural Engineering and Service Limited as well as the office of the Association of Building and Civil Engineering Contractors in Kumasi. These leads were used to locate the offices of the first line of contractors from where the locations of subsequent contractors were obtained. Additional list of companies were obtained from the initial contacted companies which brought the total number of companies on which the study was undertaken to thirty-two (32). Permission was sought from various site agents for access to the construction sites for questionnaires to be administered. A total of 40 sites were thereby visited.

Due to the mobility of construction activities, the study was carried out in five places namely; Accra, Kumasi, Sekondi, Obuasi and Koforidua. Targeted respondents comprised individuals at managerial level and construction professionals and tradesmen. Managers were asked to provide opinion on the effect various motivational factors have on workers and how these factors influence productivity of the workers engaged in the respective establishments when they exist. Tradesmen were on the other hand were asked to give their opinion of the effect of the selected factors on motivation and the significance these factors have on productivity or output.

3.3.2 ADMINISTERING OF QUESTIONNAIRES

The questionnaires were administered to employers and workers and a maximum of two week duration was agreed to respond to the questions in the questionnaires. Furthermore, in the event where the respondents' educational level was not adequate, assistance was

given to answer the questions. A total of 183 questionnaires were administered to 40 sites out of which 134 responses were obtained representing 73.22% response rate. A total of 36 questionnaires were sent out to management and 147 to workers respectively. A response rate of 28 and 106 representing 77.78% and 72.11% were received from management and workers respectively. In view of different work schedules and progress of work at the visited sites, accidental sampling was used in selecting various workers and managers for the questionnaires. The figures 3.1 and 3.2 show the distribution of questionnaires and the response rate respectively.

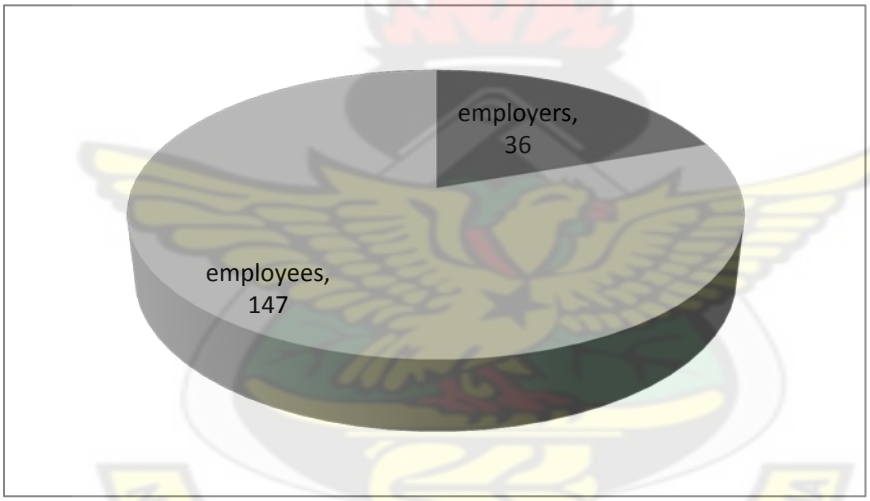

Figure 3.1: Number of questionnaires distributed

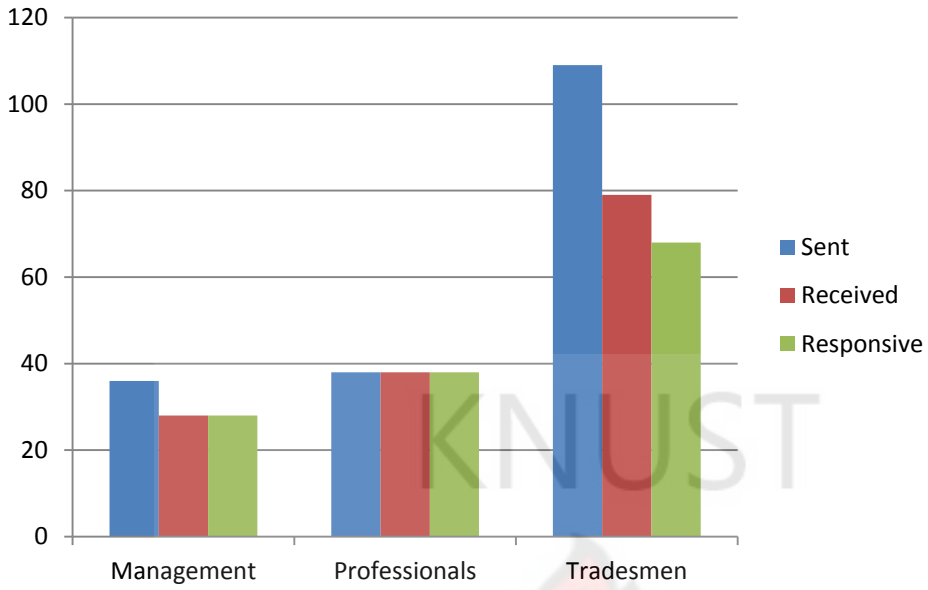

Figure 3.2: Number of sent, received and responsive questionnaires

3.3.3 Data analysis tools

Three different analytical tools were used in analysing the responses from the survey. These are index, Kappa statistic for multiple raters and correlational analysis.

3.3.3.1 Index

FFrequency index explains the usual occurrence or exhibiting of the characteristics of the factors. The nearer the value of frequency index of the identified motivational factor is to unity (1), the higher the effect on worker motivation. A ranking of frequency indices were done to ascertain the most frequent factors. Kadir et al. (2005) used this method to establish the factors affecting construction labour productivity in Malaysian residential projects hence its adoption

$$\text{Frequency index (F.I.)} = \frac{3n_1 + 2n_2 + n_3}{3(n_1 + n_2 + n_3)}$$

Where: n_1 –number of respondent answered 'high'

n_2 –number of respondent answered 'medium'

n_3 –number of respondent answered 'low' (Kadir et al, 2005)

Important index facilitate the identification of tactical approaches to increasing productivity. The nearer the value of importance index of the identified factor is to unity (1), the more significant it is to worker motivation and hence, a greater impact on worker productivity. A ranking of importance indices were undertaken to ascertain the most frequent factors. The important index determination was also adopted from Lim and Alum (1995) study construction productivity: issues encountered by contractors in Singapore.

$$\text{Important index (I.I.)} = \frac{5n_1 + 4n_2 + 3n_3 + 2n_4 + n_5}{5(n_1 + n_2 + n_3 + n_4 + n_5)}$$

Where: n_1 –number of respondent answered 'strongly significant'

n_2 –number of respondent answered 'significant'

n_3 –number of respondent answered 'average'

n_4 –number of respondent answered 'not significant'

n_5 –number of respondent answered 'strongly not significant'

Severity index gives the analytical explanation of the critical effect on motivation and significance to productivity. It further gives the aggregate effect and significance to motivation. When a severity index approaches unity (1), it gives the explanation of how severe the factors are to motivation and productivity. Ranking of severity indices were

done to ascertain the most critical or severe factors from which a discussion of the first ten factors were made.

Finally the severity index was calculated using the formula below.

Severity index (S.I.) = Importance index × Frequency Index (Kadir et. al, 2005)

3.3.3.2 Kappa statistic for multiple raters

Kappa $\hat{k}$ statistics for multiple raters using categorical classifications was employed to test the level of agreement for respondents. This analytical tool is used to test the consistency of values and is employed when there are more than two raters and or subjects. The determination of $\hat{k}$ is demonstrated as follows.

$$m = \sum_{j=1}^{k} x_{ij} \quad (1)$$

$$\bar{m} = \frac{\sum_{i=1}^{n} m_i}{n} \quad (2)$$

$$\Rightarrow \sum_{i=1}^{n} m_i = n \times \bar{m}$$

$$\bar{P}_j = \frac{\sum_{i=1}^{n} x_i}{n \times \bar{m}} \quad (3)$$

$$\hat{k}_j = 1 - \frac{\sum_{i=1}^{n} x_{ij} (m - x_{ij})}{nm(m-1)\,\bar{p}_j \bar{q}_j} \quad (4)$$

Where $\bar{q}_j = 1 - \bar{p}_j$

Hence the overall kappa value for occurrence = $\hat{k} = \frac{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j \hat{k}_j}{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j}$ (5)

Where: m = number of different raters

x_{ij} = number of ratings on a subject

i = subject

n = number of subjects

j = category of rating

k = number of category

$\bar{m}$ = mean number of ratings per subject

$\bar{p}_j$ = overall proportion of ratings

$\bar{q}_j$ = overall proportion of non-ratings

$\hat{k}_j$ = kappa value per category

$\hat{k}$ = overall kappa value

Green (1996) explained that a perfect agreement will exist when $\hat{k}$=1.00. Also, a high degree of agreement beyond chance is said to occur when kappa value is $0.75 \leq \hat{k} \leq 1.00$. This means that there is no divergence in response from respondents. In addition when $0.40 \leq \hat{k} < 0.75$, a fair or good agreement is said to exist which gives the indication that there could be the possibility of divergence in opinions but not much. Finally when $\hat{k} < 0.40$, there is said to be the existence of low agreement beyond chance.

3.3.3.3 Correlation analysis

A Pearson-Moment rank correlation was employed to determine the effect of motivation on productivity. Hence the frequency and importance indices were used to establish the relationship between motivation and productivity. Below is the mathematical determination of Pearson rank coefficient R.

$$R = \frac{S_{xy}}{\sqrt{(S_{xx}S_{yy})}}$$

$$= \frac{\sum (\bar{x} - x)(y - \bar{y})}{\sqrt{(\sum(x - \bar{x})^2 \sum(y - \bar{y})^2)}} \quad \text{(Walpole et. al., 2007)}$$

Where S_{xy} = standard deviation of x and y

S_{xx} = standard deviation of x

S_{yy} = standard deviation of y

$\bar{x}$ = mean of x

$\bar{y}$ = mean of y

R ranges between -1 and 1 i.e. $-1 \leq R \leq 1$. The nearer and positive the value of R, the stronger the influence the independent variables (frequency index) have on the dependent variable (important index) positively. On the other hand, the opposite of the above explanation occurs when R is negative. A scatter diagram with a line of best fit was used to illustrate this relation appropriately.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.0 Introduction

The purpose of this study was to find strategies of motivation to improve productivity in the construction industry. In order to achieve this, a methodology consisting of a review of literature and a survey of construction practitioners was employed. This chapter presents the findings of the study.

4.1 Survey Findings

Thirty-two (32) D1 construction companies were involved in the survey. The companies were engaged on 40 construction sites. A total of 183 questionnaires were sent out to 36 managers and 147 workers respectively. The responses of 28 employers, 7 project managers, 14 engineers, 18 quantity surveyors, 22 foremen, 21 masons, 11 carpenters and 13 steel benders were obtained. These represented 73.22% of the 183 questionnaires sent out for the survey and this is shown in figure 4.1. The responses were further analysed to determine the demography of respondents and the profile of the companies. In addition the motivational and productivity level of workers were analysed. Respondents to this effect were asked to give their perceptions on the effect and significance of the selected factors that affect motivation and productivity.

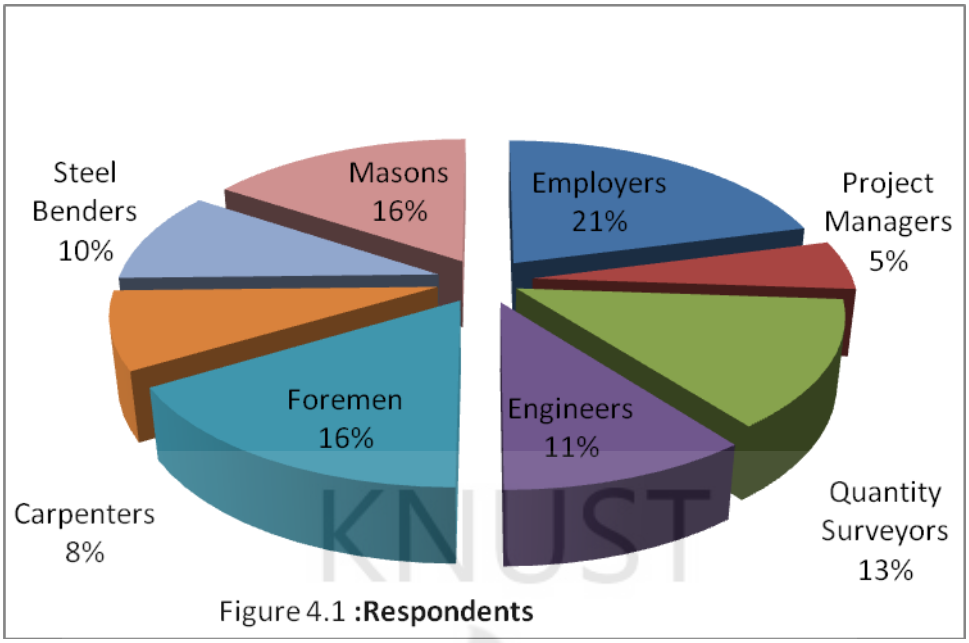

Figure 4.1 **:Respondents**

4.2 Demographic Variables

The respondents of the survey represented construction companies undertaking works in 5 geographical locations namely Accra, Kumasi, Sekondi, Koforidua and Obuasi. The years of operation of the various companies range between 5-60years. A total of 19 out of 28 companies representing 67.86% have been in operation for less than 20 years. An average of 18.95 years of operation was observed and therefore, these companies were perceived to have a good setup. This is as a result of Ministry of Water Resources, Works and Housing's requirements needed in upgrading a company's class.

A total of 106 responses were received from 101 male and 5 female worker respondents (see Table 4.2). The educational level of the worker respondents which included tradesmen and professionals ranged from primary to university education. Figure 4.2 and table 4.1 shows the educational level distribution of the respondents.

Table 4.1: **Characteristics of Companies**

	No of respondents
Years of existence:	
• 1 – 10	7
• 11 -20	11
• 21 -30	5
• 31 -40	3
• 41 -50	1
• 51 -60	1
Worker strength (permanent):	
• 1 – 100	23
• 101 -200	1
• 201 -300	3
• 301 -400	0
• 401 -500	1
Worker strength (contract):	
• 1 - 50	12
• 51 - 100	1
• 101 - 150	1
• 151 – 200	2
• 201 -250	0
• 251 - 300	1
Worker strength (casual):	
• 1 – 100	22
• 101 -200	3
• 201 -300	1
• 301 -400	2
• 401 -500	0
• 501 – 600	1
• 601 – 700	0
• 701 - 800	0
• 801 – 900	0
• 900 - 1000	1

Table 4.2: **Demographic responses of workers**

	Carpenters	Masons	Steel Benders	Foremen	Engineers	Quantity Surveyors	Project Managers
Sex:							
• Male	11	21	13	22	14	13	7
• Female	0	0	0	0	0	5	0
Age:							
• 20-29	1	4	3	11	4	9	2
• 30-39	4	10	4	8	8	6	4
• 40-49	4	5	3	3	1	2	1
• 50-59	2	2	2	0	1	1	0
• 60-69	0	0	1	0	0	0	0
Education:							
• Primary Sch.	1	1	3	0	0	0	0
• Middle Sch.	5	5	5	1	0	0	0
• Junior Sec.	3	3	4	0	0	0	0
• Senior Sec.	1	4	0	2	0	0	0
• N.V.T.I.	1	6	0	0	0	0	0
• C.T.C.	0	2	1	11	1	0	0
• H.N.D.	0	0	0	8	7	7	2
• BSc.	0	0	0	0	6	11	5
Terms of employment:							
• Permanent	8	3	2	14	12	16	6
• Contract	3	5	8	8	2	2	1
• Casual	0	13	3	0	0	0	0
	-	-	-	-	-	-	-
Years of experience:							
• 1-5	1	2	3	10	6	10	3
• 6-10	4	4	5	9	7	6	2
• 11-15	3	3	2	3	0	1	1
• 16-20	0	2	1	0	1	1	0
• 21-25	2	10	0	0	0	0	0
• 26-30	0	0	2	0	0	0	1
• 31-35	1	0	0	0	0	0	0
	-	-	-	-	-	-	-
Years with company:							
• 1-5	9	16	10	20	10	14	5
• 6-10	1	3	3	1	3	1	1
• 11-15	1	2	0	1	0	3	0
• 16-20	0	0	0	0	1	0	0
• 21-25	0	0	0	0	0	0	0
• 26-30	0	0	0	0	0	0	1
• 31-35	0	0	0	0	0	0	0

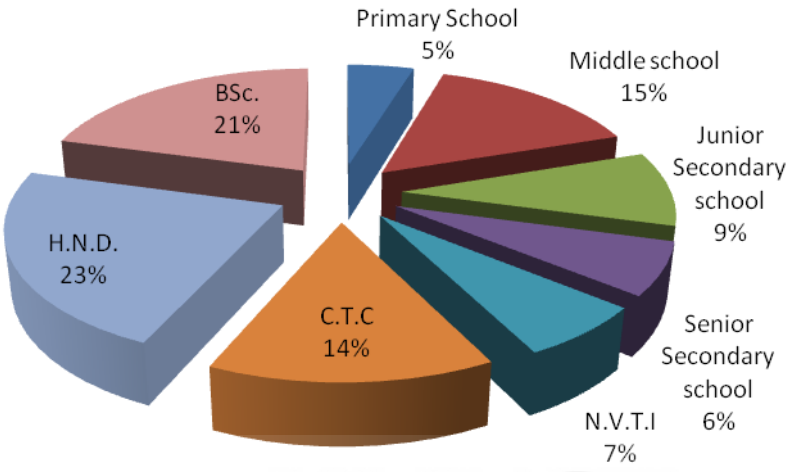

Figure 4.2: Educational Level of repondents

In addition, the survey in the area of worker strength of the various companies revealed that an average of 90 workers were permanent, 67 on contract and 134 were casuals. Although casual workers were reported by managers to be dominating in respective companies, 61 out of 106 permanent workers representing 57.55% were interviewed and this resulted in the survey sample size being dominated with permanent workers (see figure 4.3). The worker turnover and volume of work that was undertaken during the survey might have contributed to dominance of permanent workers in this survey. Keeping all workers on site would result in some workers becoming redundant and unproductive. This will, therefore, necessitate the usage of permanent worker hence, outcome of the research.

Although 67.92% of the respondents have at most 10years of experience in the construction industry, 79.25% of respondents have been with the present employers for less than 5 years. It can, therefore, be deduced that, workers always changed companies after a short period.

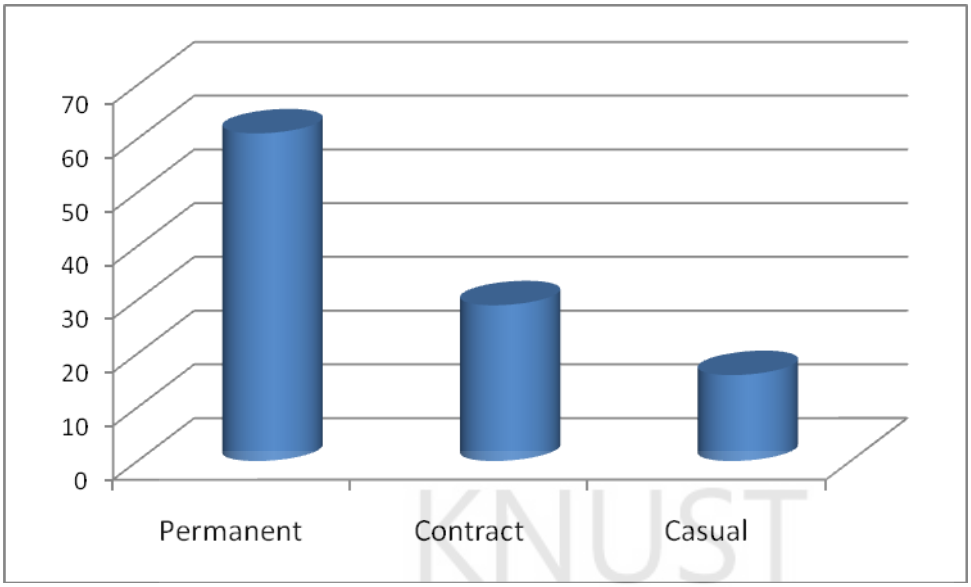

Figure 4.3: Term of employment of respondents

4.3 Discussion of Findings

4.3.1 Target setting

Construction companies are business entities that have the objective of creating a customer and thus maximising profit. Management of the respective companies under investigation therefore reported of setting objectives to achieve such aims. Whereas the 28 managers of companies stated that targets are always set for workers to follow, 93 of the 106 worker responded that targets are always set for them (See Table 4.3 and 4.4). This suggests that targets should always be set in order to be productive and maximise profit. Although it would have been best to meet these targets all the time, the survey showed that 16 out of the 28 managers, representing 57.14% responded that they always met set targets. Furthermore, 67 of the 93 workers representing 72.04% of workers also indicated that, the set targets were not met. Managers might have been setting targets beyond the threshold of workers since they always want easy way of accomplishing daily tasks. It can be deduced at this point that managers always set two targets; one for

managers' monitoring of progress and the other for workers achievement. It, therefore, follows that supervisors are to ensure that the threshold targets are achieved. This might have resulted in the variance in responses by respondents and this goes to confirm to some extent the response from managers.

Table 4.3: Response on target settings by employers

	No of respondents
Setting of targets:	
• Yes	28
• No	0
Meeting of targets:	
• Yes	16
• No	12

Table 4.4: Response on target settings by workers

	Carpenters	Masons	Steel Benders	Foremen	Engineers	Quantity Surveyors	Project Managers
Setting of targets:							
• Yes	8	21	13	21	13	14	3
• No	3	0	0	1	1	4	4
Meeting of targets:							
• Yes	6	17	9	14	8	11	2
• No	5	4	4	8	6	7	5

Various researches have been undertaken to investigate reasons that usually contributes to the inability of meeting set target and below are some of the findings:

i. Late delivery of materials,
ii. Unforeseen occurrence,
iii. Unprofessionalism on the task assigned,
iv. Inadequate planning,

v. Lack of special tools for specific task,
vi. Late payment of interim certificate,
vii. Diversion of funds,
viii. Late payment of wages and salary,
ix. Low teamwork,
x. Late inspection by consultants,
xi. Late instruction from consultants,
xii. Late delivery of drawings,
xiii. Frequent variations in design,
xiv. Absenteeism of personnel and
xv. Delay in task completion by other crew.

4.3.2 Motivation and Productivity Level

Motivating workers is just as important as attracting and retaining the workers. Without the ability to motivate workers, they may become mediocre workers. A 2.39 weighted motivation level of workers was deduced from responses by managers whereas that from the workers' responses was 2.44. This meant that majority of the workers (i.e. 79.67%) are **s**tet happy at work. This further gives an indication that there exists a high level of motivation among workers. Workers cited lack of employment in the country, hence, had to be content with whatever environment in which they were engaged in. Workers always deliver their best whenever tasks they were assigned within the stipulated time. Demotivation sets in whenever the already mentioned reasons under section 4.4.1 occur.

More so, strike actions affect progress of works, hence, impact negatively on productivity and therefore, should be discouraged. It was revealed that 32.14% and 10.38% of managers and workers respectively have had experience of strike action. These actions were said to have arisen as a result of the following reasons:

- Non-increment in salaries
- Delay in salary payment
- Poor condition of service

Tables 4.5 and 4.6 give detail response distribution from management and workers.

Table 4.5 **Motivational and productivity levels of management respondents**

	No of respondents
Productivity level (Giving out of best)	
• *Always happy*	
➢ Yes	8
➢ No	2
• *Not always happy*	
➢ Yes	13
➢ No	5
• *Not happy at all*	0
➢ Yes	0
➢ No	
Experience of strike action :	
• Yes	9
• No	19

Table 4.6 Motivational and productivity levels of worker respondents

	Carpenters	Masons	Steel Benders	Foremen	Engineers	Quantity Surveyors	Project Managers
Motivational level:							
• Always happy **(3)**	7	6	6	9	7	10	2
• Not always happy **(2)**	4	15	7	13	7	8	5
• Not happy at all **(1)**	0	0	0	0	0	0	0
Productivity level (Giving out of best)							
• *Always happy*							
➢ Yes	7	6	6	9	7	10	2
➢ No	0	0	0	0	0	0	0
• *Not always happy*	4	15	7	11	7	8	5
➢ Yes	0	0	0	2	0	0	0
➢ No							
• *Not happy at all*	0	0	0	0	0	0	0
➢ Yes	0	0	0	0	0	0	0
➢ No							
Experience of strike action :							
• Yes	1	4	0	0	3	2	1
• No	10	17	13	22	11	16	6

4.4 Concordance of response

Kappa statistics for multiple raters using categorical classifications was employed to test the level of agreement among respondents.

The agreement among responses on motivation can be tested by reference to section 3.3.3.2 and Table 4.7, as follows:

$m = \sum_{j=1}^{k} x_{ij} = 5180$ (1)

$$\bar{m} = \frac{\sum_{i=1}^{n} m_i}{n} \quad (2)$$

$\Rightarrow \quad \sum_{i=1}^{n} m_i = n \times \bar{m} = 5180$

$$\bar{P}_j = \frac{\sum_{i=1}^{n} x_I}{n \times \bar{m}} \quad (3)$$

$$\hat{k}_j = 1 - \frac{\sum_{i=1}^{n} x_{ij}(m - x_{ij})}{nm(m-1)\bar{p}_j\bar{q}_j} \quad (4)$$

where $\bar{q}_j = 1 - \bar{p}_j$

Hence the overall kappa value for occurrence $= \hat{k} = \frac{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j \hat{k}_j}{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j}$ (5)

From table 4.7,

$\sum_{j=1}^{k} \bar{p}_j \bar{q}_j \hat{k}_j = 0.622$ and

$\sum_{j=1}^{k} \bar{p}_j \bar{q}_j = 0.953$

$$\hat{k} = \frac{0.622}{0.953} = \mathbf{0.653}$$

From the results obtained, it can clearly be seen that there exist fair or good level of agreement beyond chance alone in responses related to motivation gathered from the various respondents. This means that there existed a possibility of slight divergence in opinions on individual motivation which can be attributed to the demographic variables such as age, sex, trade or profession, experience, years engaged with the company and terms of engagement.

Also from Table 4.8, the significance of motivation to productivity can be tested as follows:

$$m = \sum_{j=1}^{k} x_{ij} = 5177 \quad (1)$$

$$\bar{m} = \frac{\sum_{i=1}^{n} m_i}{n} \quad (2)$$

$$\Rightarrow \quad \sum_{i=1}^{n} m_i = n \times \bar{m} = 5177$$

$$\bar{P}_j = \frac{\sum_{i=1}^{n} x_I}{n \times \bar{m}} \quad (3)$$

$$\hat{k}_j = 1 - \frac{\sum_{i=1}^{n} x_{ij} (m - x_{ij})}{nm(m-1)\, \bar{p}_j \bar{q}_j} \quad (4)$$

where $\bar{q}_j = 1 - \bar{p}_j$

Hence the overall kappa value for occurrence $\hat{k} = \frac{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j \hat{k}_j}{\sum_{j=1}^{k} \bar{p}_j \bar{q}_j}$ (5)

From table 4.8,

$\sum_{j=1}^{k} \bar{p}_j \bar{q}_j \hat{k}_j = 0.776$ and

$\sum_{j=1}^{k} \bar{p}_j \bar{q}_j = 0.975$

$\hat{k} = \frac{0.776}{0.975} = \mathbf{0.796}$

From the results obtained, it can be interpreted that there exist a high degree of agreement beyond chance. This means that there is a high probability of agreement in responses by respondents irrespective of trade or profession. It can therefore be inferred that responses on motivation depicted variation across individuals, trades and profession. On the other hand, the responses on the significance of motivation on productivity was found to be the same among respondents hence, a strong agreement exists.

4.5 Factors affecting motivation and productivity

The ten most severe factors that affect worker motivation and productivity were summarised from responses from management, professionals and tradesmen in Table 4.10 and shown in the Table 4.9 below.

Table 4.9: **Ten most important factors that affect motivation and Productivity**

Frequent factor	**F.I**	**Important factor**	**I.I**	**Severe factor**	**S.I**
Teamwork	0.798	Teamwork	0.785	Teamwork	0.626
Late payment of interim certificate	0.796	Late payment of interim certificate	0.772	Late payment of interim certificate	0.614
Communication	0.761	Material shortage	0.758	Work based on contract	0.546
Opportunity to undertake challenging task	0.746	Canteen	0.753	Supervision based on leadership by example	0.545
Work based on contract	0.745	Overtime	0.750	Provision of equipment	0.545
Love and belongingness	0.737	Accommodation	0.748	Communication	0.537
Provision of equipment	0.732	Supervision based on leadership by example	0.747	Love and belongingness	0.536
Supervision based on leadership by example	0.730	Provision of equipment	0.744	Opportunity to undertake challenging task	0.525
Equity	0.727	Salary	0.741	Identification with goal	0.516
Identification with goal	0.707	Job security	0.738	Overtime	0.510

4.5.1 Teamwork

Teamwork was ranked first with frequency and severity indices of 0.798 and 0.626 respectively. This is because a sense of team spirit is more conducive, motivational and productive for workers than fragmented atmosphere. Reasons for teamwork being the most severe factor could be attributed to the number of permanent and contract workers which forms 76.12% of the worker respondents. Teamwork generates friendship among workmates outside working hours. It enables workmates to share ideas and find solutions to problems encountered on a task assigned should it recur. Construction works are interdependent in the sense that the various activities depends on the successful completion of the others. The absence of teamwork may lead to the sabotaging of works of other gangs especially contract workers who wish to complete on time. In addition, teamwork increases competitiveness by:

- Improving worker motivation and commitment,
- Improving productivity,
- Improving quality and encouraging innovation and
- Taking advantage of the opportunities provided by technological advances (Mullins, 2005).

A research on Turkey society which is a developing country like Ghana, and has many languages, religions, and ethnic groupings revealed that, well established teamwork was seen as having even greater significance to productivity (Aynur and Serdar, 2006). Due to the mobility of workers in the construction industry which can be similar in Ghana, different sets of construction workforce are engaged and, hence, a good teamwork will enhance motivation and productivity. Construction workers are attached to a crew or a

project for a definite period and have a responsibility to work together in a shared environment and this can be achieved when workers are comfortable in their relationships with workmates and management (Aynur and Serdar, 2006).

Workers are motivated with the benefits of well established teamwork. The flow of communication, improvement in worker confidence and trust and clarity in expressing ideas in discussions are some of the benefits of good teamwork. In addition less skilled workers will always be motivated to learn from the skilled workers in a team within which they find themselves. Strong teamwork, in addition, contributes to the formation of unionised bodies. This goes to affirm project managers' perception in a study of drivers of productivity among construction workers that it is an unwise strategy to attempt to establish very strong relationships among workers since such relationships strengthen the collective bargaining power when negotiating pay deals (Aynur and Serdar, 2006).

4.5.2 Late payment of interim certificate

Late payment of interim certificate was ranked as the second most severe factor with frequency and severity indices of 0.796 and 0.614 respectively. This can be associated with the hindrances associated with the progress of work. Late payment of interim certificate affects cash flow of contractors which in effect influences payment to workers and suppliers of goods and services. Vendors will therefore retain any service to be provided until a full payment is received which will result in shortage of materials on site, inability to repair breakdown equipment, hence, workers will have less resources to work with compared with projected resources to be used. This reduces productivity. Workers will not be motivated to work assiduously due to the unavailability of resources to work

with and also delay in wages and salaries. The late payment of interim certificate will also cause detrimental effects on workers' motivation and suppliers' creditability and, hence, reduce productivity. Construction works are known to be capital intensive and therefore when capital lock-up is experienced all financial related activities cannot be undertaken which will cause distortion in progress thereby impacting on overall performance.

4.5.3 Work based on contract

Work based on contract was ranked sixth on occurrence of motivation with a frequency index of 0.745. In addition it was observed to be the third most severe factor with a severity index of 0.5467. This is because it encourages one or group of workers to work faster so as to make some profit. In addition, if there are works to be executed, whoever completes early and is not exhausted, is at liberty to be assigned extra work thereby earning more without compromising quality.

More so, work based on contract introduces competition among workers; however steps must be taken so as to prevent undue rivalry and conflict which might damage the project. Work based on contract further gives the liberty for workers to close early provided the assigned task is accomplished and to attend to other engagement elsewhere. Work on contract will always motivate workforce as any task assigned after the accomplishment of a task will be treated as overtime. These in effect enhance performance of individuals or gangs, hence, it impacts positively on motivation and productivity.

4.5.4 Supervision based on leadership by example

Supervision based on leadership by example was ranked forth severe factor with frequency and severity indices of 0.730 and 0.545 respectively. Leadership has been shown to be an important factor in successful project execution in a number of studies (Odusami et al, 2003). It is not necessarily getting the requisite tool with which to work which motivates but being with subordinates to partake in solving work problems and ensure that the right thing is accomplished without always issuing instructions. This motivates supervisors or superiors and subordinates. In a research into bricklayer's motivation and productivity, good supervision was found to be the most significant variable influencing rate of bricklayings (Olomolaiye, 1990). This indicates that whenever a leader sets good example or workers feel supervisors are part of them based on the supervisor's involvement in some of the daily work schedule, they will have the motivation to work harder and this will boost their performance and hence increase productivity.

Odusami et al (2003) stated that the best leadership style in terms of overall performance was found to be consultative autocracy. This type of leadership absorbs information input or contribution from team-mates but takes the ultimate decision. Workers in this instance will be excited when the ultimate decision taken by the leader happens to be their input or contribution. Furthermore in the study of demotivating factors influencing the productivity of civil engineering projects, it was found that inexperienced supervisors had little authority and even minor questions had to be answered by engineers in the respective offices (Thomas et al, 2004). Supervisors should therefore be knowledgeable in the roles assigned them and be involved in solving problems by which subordinates will have confidence in them and, hence, be motivated.

4.5.5 Provision of equipment

Lack of proper equipment could have a crucial effect on motivation and productivity. The introduction of equipment has come to relieve workers of some problems encountered when working manually. Equipment availability further enables specified quality and precision to be achieved by workers in less time hence increasing productivity. The class of construction companies under this survey usually secure big construction projects which demand equipments to ease production and thus contribute to productivity. The Ministry of Water Resource Works and Housing (M.W.R.W.H) classification require a minimum of about 25 plant and different equipments to be acquired with respective numbers ranging between 1 and 5 (M.W.R.W.H. Classification Guidelines). The classification requirement of M.W.R.W.H guidelines has manager of companies interviewed acquired equipment either through hiring or purchase to undertake tasks. Provision of equipment was ranked fifth with severity index of 0.545 and this might have been as a result of the workers using plant and equipment in the execution of tasks.

Although plant and equipment provision contributes immensely to productivity and eases workers of some of their mundane, it causes less demotivation when it is absent. Technology is dynamic and, therefore, workers might not have worked with some plant and equipment in their working life. This results in change in behaviour whenever new plant and equipment are introduced. Equipment need to be handled with care as some can be dangerous. As a result there is the need for proper training before any new plant and equipment are used. Since plant and equipment contributes to workers' efficiency, adequate and regular maintenance and replacement of obsolete plant and equipment should be embarked on. This will enhance working conditions and thereby motivate the workforce.

4.5.6 Communication

With a severity index of 0.537, communication was analysed to be the most severe factor of motivation and productivity. This might have resulted from the influence communication has on factors such as teamwork, participation in decision-making and recognition. The inclusion of this factor among the first ten can be supported by the above mentioned factors of which teamwork and recognition or identification with goal happen to be part of the most essential factors.

4.5.7 Love and belongingness

Love and belongingness is essential in any working environment. It was ranked sixth frequent and seventh severe factor with F.I=0.737 and S.I=0.536 respectively. Workers always feel motivated when superiors, colleagues and subordinates show concern and care to one another. The organisation of regular meetings to interact and identify problems of workers makes them feel that they belong to the setup. According to Aynur and Serdar (2006), workers always rely on the company to provide opportunities for social activities after work. The most popular activities are sports and entertainment but sports is the most affordable to all construction companies. This affirms Aynur and Serder's findings that physical activities are the most preferable among workers. This will, therefore, motivate workers and further enhance their performance which will in effect increase productivity.

4.5.8 Opportunity to undertake challenging task

Workers feel motivated when they are provided with opportunity to use their own initiative to undertake challenging tasks. When workers are given the opportunity to undertake challenging tasks and take responsibility for any decisions made, this motivates them due to the trust management have in them. This contributes to improvement in performance. It changes the behaviour and also encourages workers to explore and exhibit their personal skills and abilities. Some respondents stated that management acknowledges the accomplishment of challenging tasks by assuring them of work regularly and this leads to job security. Job security affirms McClelland (1988) theory which states that high achievers value money as a symbol of successful task performance since salary is not a priority to them.

Opportunity to undertake challenging tasks which was ranked the eight most severe factor of index 0.525 was also ranked the fourth motivating factor of F.I.-= 0.746 among the 40 factors. Aynur and Serdar (2006) study in drivers of productivity among construction workers in developing countries, found that undertaking challenging tasks can be encouraged by providing workers with greater access to key information on the structure and system of the project being undertaken and has the potential to produce rapid increase in productivity in a range of trades. In construction labour motivation for cost effective projects, it was stated that craftsmen will be motivated given the right conditions and opportunity (Business Roundtable, 1989). Workers are therefore sure of increasing productivity significantly when given responsibilities. Frequent interference in the activities of individual workers and gangs have negative effect on productivity and it is as a result of mismanagement of work sequence, unbalanced gang sizes, and improper work scheduling (Aynur and Serdar, 2006).

4.5.9 Identification with goal

Identifying with an achieved goal makes one get feed-back on performance on an assigned tasks. One will always feel motivated whenever recognition is directed toward him or her on the attainment of a goal. These might contribute to the choosing of identification with goal as one of the severe factors that motivate and impact on productivity positively. On the average, craftsmen receive little or no recognition for their efforts but studies and extensive interviews indicate that it is essential for workers to know that management formally recognise their work and particularly that management appreciates extraordinary efforts (Business Rountable, 1989).

Non-financial recognition appears to be more effective than financial incentive for construction given the difficulties associated with financial incentives among which union objection is predominant. Among the recognitions are:

- Craftsman of the month award,
- Outstanding crew on quality and productivity and
- Recognition of the entire project by calendars, posters, or newsletters.

Workers having the notion that identification with a goal is part of the company's policies will be motivated to achieve such goals and the recognition which goes with it. This will encourage extra efforts to achieve subsequent productive goals and recognition.

4.5.10 Overtime

Overtime was evaluated to be the tenth most severe factor on motivation and productivity with a severity index of 0.510. Workers' stated that, salaries are inadequate but they have to be content with whatever is given them. This might have contributed to overtime being one of the ten most severe factors among the indentified factors. This implies workers will always feel motivated whenever there is the element of overtime in a day's task. Overtime will normally set in if the day's target is not met at the normal closing hours of the day or a programme needs to be completed. Overtime task usually are less stressful than working period tasks. This enable workforce to exert less force but can achieve a reasonable target.

Workers will always be happy and motivated when working on overtime tasks. This is as a result of overtime allowance that will be accrued to daily or monthly wages or salaries. Workforce will, therefore, work assiduously to increase output and in effect increase productivity. Continuous introduction of reasonable overtime tasks will go a long way to motivate workforce at work places and contribute to productivity enhancement.

4.6 Effect of motivation on productivity

Figure 4.4 below shows the effect of motivational responses on productivity. It can be deduced that there exist a positive correlation between motivation and productivity as the line of best fit has a positive gradient. A Pearson product-moment correlation coefficient (R) of 1.00 was obtained from the figure below using microsoft excel indicating that 100% of the total variation of productivity is accounted for by a linear relationship with

motivation. This means that a variation in motivation will lead to an equal variation on productivity.

i.e. $r^2 = \frac{S^2_{xy}}{S_{xx}S_{yy}} = 1.00$

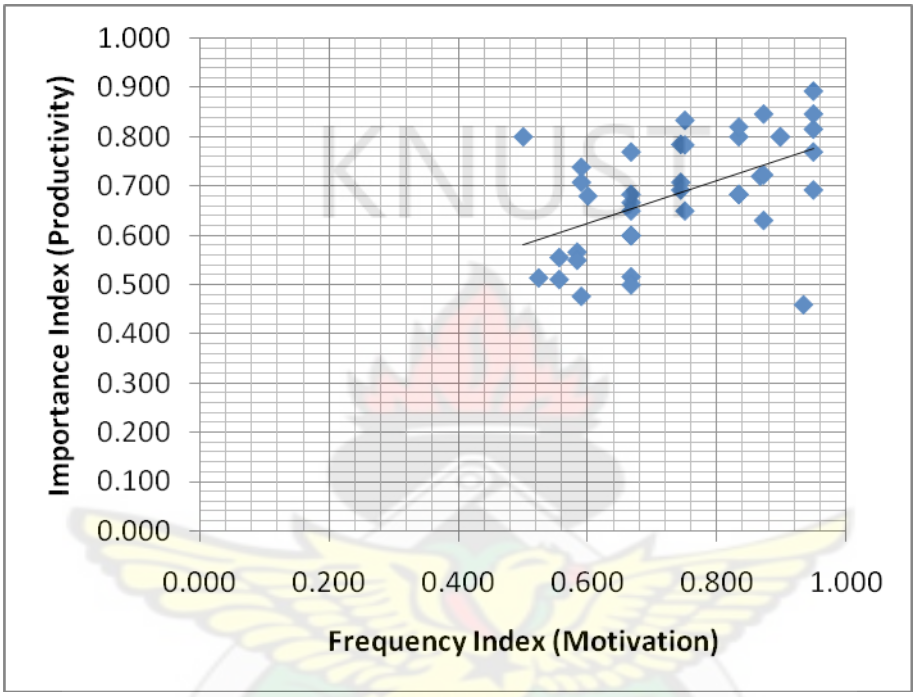

Figure 4.4: Graphical representation of productivity against motivation

4.7 Motivational strategy

The potential benefit of motivation is basically to enhance individual behaviour towards works by which it impact on the overall performance. The success of any organisational set up is dependent on the workers engaged on various task of the organisation. This study has revealed the ten most severe factors that usually affect behavioural change of workforce at workplaces in the construction industry. The established factors are teamwork; late payment of interim certificate; work based on contract; supervision based

leadership by example; provision of equipment; communication; love and belongingness; opportunity to undertake challenging task; identification with goal; and overtime. These ten factors conform with Herzberg's Two Factor and Alderfer's Need Modified theories. Table 4.11 and 4.12 show the classification of the factors under the respective theories.

Table 4.11: Classification of established factors under Herzberg's Dual factor Theory

HYGIENE FACTORS	MOTIVATORS
• Teamwork • Late payment of interim certificate • Supervision based on leadership by example • Provision of equipment • Love and belongingness • Communication • Overtime	• Work based on contract • Opportunity to undertake challenging task • Identification with goal • Worker participation in decision-making

Table 4.12: Classification of established factors under Alderfer's Need modified Theory

EXISTENCE	RELATEDNESS	GROWTH
• Late payment of interim certificate • Supervision based on leadership by example • Provision of equipment • Communication • Overtime	• Teamwork • Love and belongingness	• Work based on contract • Opportunity to undertake challenging task • Identification with goal

4.7.1 Herzberg's Dual Factor Theory

Herzberg dual factor theory provided managerial applications as to what makes workers feel good and bad about their job. One of the factors in the theory has to do with the basic factors surrounding the job that triggers dissatisfaction when not adequate. This has been termed hygiene factors. These are extrinsic and include working condition; quality of supervision; interpersonal relationships and adequacy of pay and fringe benefits. The other factor which according to Herzberg make an individual feel the potential for satisfaction if he or she is able to marshal momentous work motivation which he also termed motivators. This is intrinsic and unique to every individual and includes job challenge; responsibility; opportunity growth; and recognition (Mullins, 2005). It is essential for management to maximise the effect of factors that have positive influence and also control or minimise those which negatively impact on motivation and productivity.

4.7.1.1 Hygiene Factors

Teamwork which was evaluated as the most severe factor among the selected factors in this study is substantiated in the fact that it usually create an affable atmosphere within the organisation for ideas sharing and problem solving in achieving corporate goals. Workers who always feel part of a team will usually exhibit the willingness to execute any task assigned very well. Late payment of interim certificate which affect casflow conditions on its part should be controlled as construction works are capital intensive. The emergence of usual late honouring of certificates introduces capital lock up and halts most activities that are financially related. Some of the related activities that are impacted by the late payment of interim certificates include salary and benefits payment; payment

of utilities; maintenance of equipment and general office running. This will contribute to workers feeling dissatisfied working in such an environment. With this effect, client or representatives of clients should abide by the stipulated time of honouring certificates to maintain the contractor's expected cash flow.

Furthermore, an organisation with good management is presumed to have a good supervision. Supervision by example by superior will provide quality leadership by which subordinates will feel motivated to work harder and contribute to productivity enhancement. Equipment facilitates tasks to be undertaken and contribute to productivity. Individuals always working with the aid of equipment will have a congenial working environment which brings satisfaction all the time. The absence, breakdown and non-performing equipment introduce dissatisfaction on the part of workers and in effect results in demotivation as a non-affable environment will be created that will also reduce productivity. The provision of plant and equipment will motivate workers in the construction industry and reduce the exhaustion. Management should, therefore, provide adequate plant and equipment, maintain broken-down equipment and also replace non-performing equipment to produce good working environment.

In addition, regular interaction of management and colleagues will give workers the realisation that they belong to a society. A harmonious atmosphere is generated through love and sense of belongingness exhibited in any set up, hence, should be encouraged. This can be achieved through organisation of sports and entertainment which allows communication and sharing of ideas. This will foster better relationships at the workplace which will improve productivity. Lastly, since the minimum wage is normally

inadequate, the intermittent introduction of overtime will help cushion workers of some of the hardships they might be going through and bring smiles on the faces of workers.

4.7.1.2 Motivators

The factors that were revealed under the study had the under listed conforming to the characteristics of Herzberg's Motivators and they are:

- Work based on contract
- Opportunity to undertake challenging task
- Identification with goal

Work based on contract is seen to be the most essential motivator to respondents. This is a result of the flexibility it gives workers to finish on time and early. It is therefore appropriate to introduce this when management foresees that overtime can not help meet set target. Beside the benefits of work done on contract, workers will feel motivated as the successful completion of tasks serve as a motivating factor all the time. This workers will feel satisfied whenever subsequent tasks are given on contract. In addition to this, being given opportunity to undertake challenging tasks motivates individuals on accomplishing it. This is because challenging tasks brings out self-innovations. This enhances efforts on subsequent challenging tasks that will be assigned thereby improving performance relative to previously accomplished task. The foregoing factors will result contribute to the enhancement in motivation and total productivity improvement.

It will be prudent to recognise worker's contribution towards the achievement of a goal. Whenever an individual within the organisational setup is identified with the attainment

of a targeted goal, it motivates colleague workers to work harder towards the accomplishment of goals assigned them. Although teams can also be recognised, individuals within the team will give out their best to achieve a goal with the intention that recognition will be given on accomplishing the task. This can be done by creating the culture of naming the worker or team of the week; outstanding crew on quality and productivity; printing of news letters, posters and calendar. Irrespective of an worker being named worker of a period, a monthly and most appropriately annual recognition should be made during entertainment and end of year social events. This will motivate workers to work towards the ultimate recognition and that contributes to enhancement of performance and productivity.

According to Herzberg, the absence of hygiene factors and motivators introduce dissatisfaction and no satisfaction respectively. This negatively affects effort by workers towards work. It is, therefore, the responsibility of management to ensure that hygiene factors namely; teamwork; quality supervision; adequate provision of equipment; love and belongingness; communication and overtime are present to bring satisfaction to workers. Clients and representatives of clients should honour interim certificates timely to avoid distortion in contractors' cash flow as it negatively affects activities on and off site which results in dissatisfaction and should be controlled. Management should also encourage the award of task on contract to workforce; create opportunity to undertake challenging tasks and recognise workers with the identification of goals. This will contribute to satisfaction and impact positively on performance and productivity as a whole.

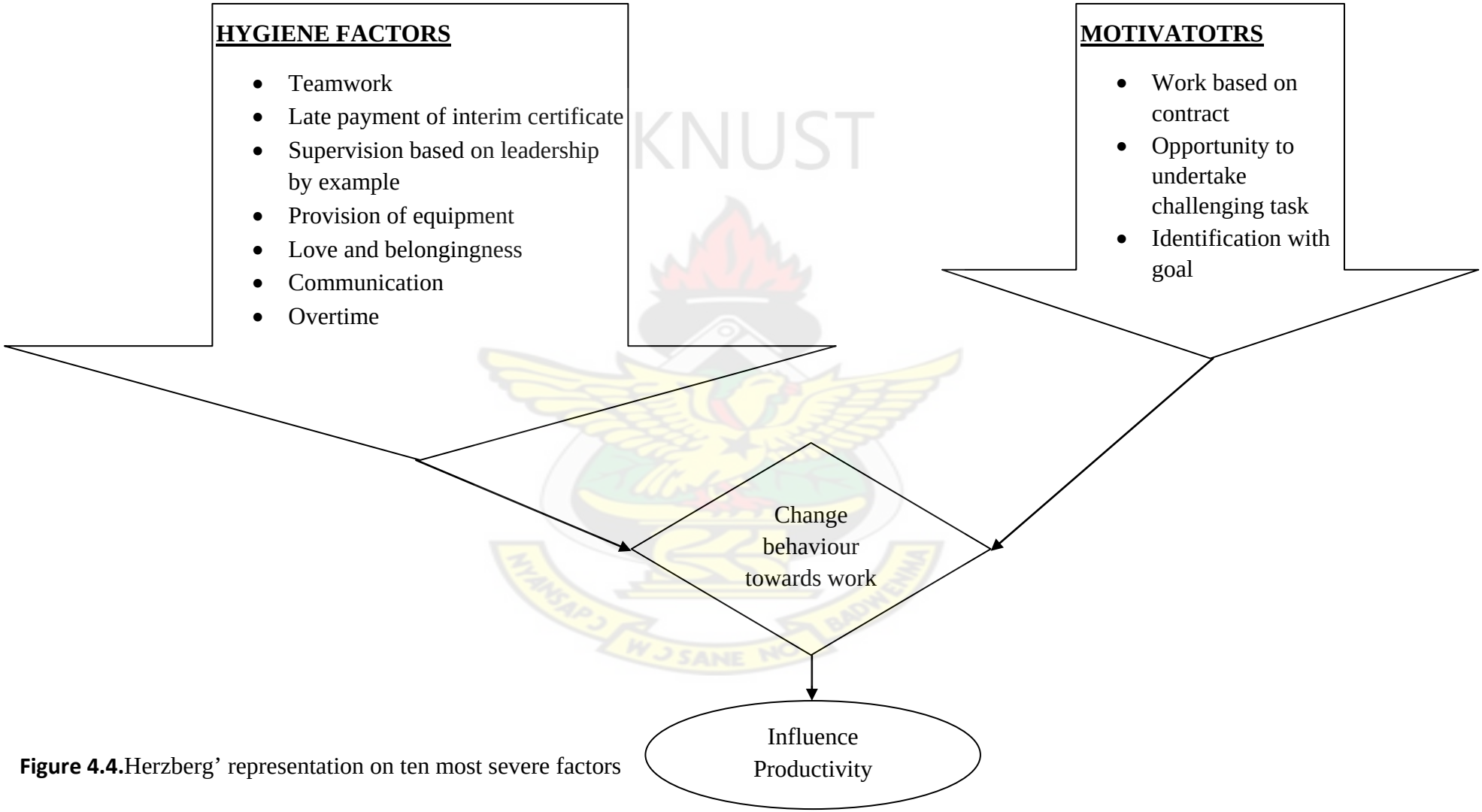

Figure 4.4. Herzberg' representation on ten most severe factors

4.8 Alderfer Need Modified Theory

Alderfer (1969) modification theory condensed Maslow's need hierarchy theory into three levels of need namely; existence, relatedness and growth needs (ERG). Five factors among the ten most severe factors will impact on motivation and productivity under existence needs and these are:

- Late payment of interim certificate
- Supervision based on leadership by example
- Provision of equipment
- Communication
- Overtime

Furthermore, teamwork and love and belongingness can also be categorised under relatedness needs whiles work based on contract; opportunity to undertake challenging task; and identification with goal will be under growth needs. It can be deduced that responses of the study revealed that more that one factor needs to be present to cause behavioural change and also affect productivity. This conforms to Alderfer's suggestion that individual need is more of continuum than hierarchical. Client, representatives of clients and management at this instant have to contribute their quota to ensure the provision of existence needs. The positive effect of these factors should be enhanced and control measures should be taken on the negative effect on both motivation and productivity.

In addition relatedness needs to be encouraged with the formation of teams at working places. A strong teamwork will create a healthy environment and facilitate sharing of ideas, problem solving and skills learning. This will enhance the opportunity for workers

to undertake challenging task. These motivate workers and improve performance as well. More so, jobs should be given to workers on contract with conditions. Some of the conditions should be quality of work, precision and timely delivery. In the situation where the quality ok work and precision is not achieved, the cost of rework should be borne by workers. Also workers who delay in delivery of tasks should sacrifice a percentage of the sum to be collected. Appreciation should also be shown to workers who will be able to deliver to quality, precision and timely by identifying and rewarding or recognising them. Finally workers should be given responsibility or opportunity to undertake challenging tasks and achievements should be recognised. These enable workers to be innovative and motivated to seek more innovations to undertake tasks. Workforce will generally be motivated when existence, relatedness and growth needs are present in their respective setup and further contribute to performance enhancement and productivity s a whole.

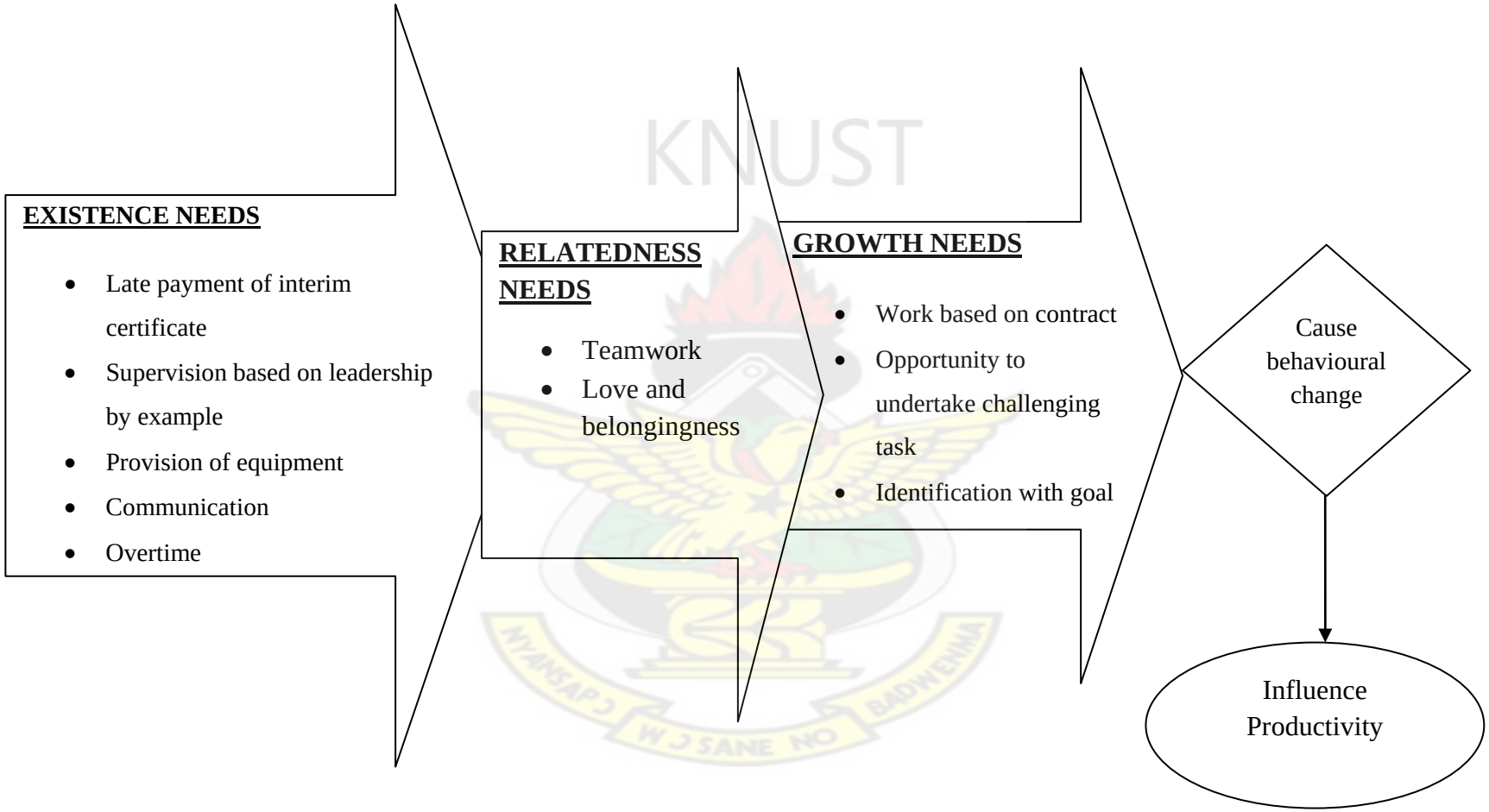

Figure 4.5: Alderfer's representation on ten most severe factor

CHAPTER FIVE

RESEARCH CONCLUSION AND RECOMMENDATION

5.1 Introduction

Productivity is considered the main value-adding function within the construction industry. Success in construction project, therefore, means the completion of projects within budget, on or ahead of time and meeting certain standards and quality safely. This study focussed on strategies of motivation to improve productivity in the construction industry. Whatever the resources utilised by the industry, the focus is on human resource as they are the users of other resources to achieve a given goal. It has, therefore, been the prime concern of any profit-oriented organisation to improve productivity by effective and efficient conversion of resources into marketable products and determining business profitability (Enshassi, 2007). This chapter highlights on summary of findings and conclusion of the study. The chapter further gives recommendation on to how workers can be motivated to improve performance which in effect contributes to productivity enhancement in the construction industry.

5.2 Summary of findings

The objectives of the study were to identify factors that motivate workers and the effect of these factors on productivity at construction sites. Questionnaire survey was therefore used to undertake this study on 32 D1 construction firms on 40 construction sites. A total of 183 questionnaires were administered of which 36 were representatives of management and 147 workers. A total of 28 management representatives and 106 workers respectively responded to the questionnaires. In view of the works being undertaken at the time of the study, 7 project managers, 14 engineers and 18 quantity

surveyors responded to the questionnaires on the part of professionals. In addition 22 foremen, 21 masons, 11 carpenters and 13 steel benders responded for tradesmen.

A list of 40 factors that affect motivation and productivity was gathered from literature and preliminary survey. Perceptions were then sought on the degree of effect on motivation when they exist and the correspondent significance on productivity. It was observed that a fair to good agreement beyond chance existed between responses given by respondents on motivation. This gave the indication that motivation vary from individuals. Furthermore, it can confirm that individual differences contributed to the fair agreement to good agreement. It was revealed from the survey that, the ten most severe factors that affect motivation are:

- Teamwork
- Late payment of interim certificate
- Work based on contract
- Supervision based on leadership by example
- Provision of equipment
- Communication
- Love and belongingness
- Opportunity to undertake challenging task
- Identification with goal
- Overtime.

In relation to responses on significance to productivity, a high degree of agreement was revealed. This further gave the indication that motivation always influences productivity (see Section 4.4). It was further observed from Figure 4.4 that the performance of a well

motivated will be affected positively which in effect will impact positively on productivity of projects.

5.3 Conclusion

From this study, it may be concluded that the motivation varies from one individual to the other. This can be attributed to the age, trade or profession, qualification, years of experience and years with which the individual has been with the establishment. It can infer from varying research findings on productivity conducted in other part of the world that, a corresponding variation in motivation will also prevail. In the study of factors affecting the productivity on the Thailand construction industry, comparisons were made with five other countries (Makulsawatudom and Emsley, 2001). Among the ten most critical factors established in this study, only the factor concerning the issue of equipment was among the six most prevalent factors in the six other countries (see Table 2.2). It can, therefore, be concluded that when attention is directed towards the revealed ten most severe factors, it will enhance motivating workers at their respective establishment. This will in effect impact positively on performance, hence it corresponding productivity improvement.

It was revealed that the established factors conform to Herzberg and Alderfer's theories. Hezberg postulated the dual-factor theory which established two factor namely hygiene and motivators. Hygiene factors focused on needs of individuals that triggers dissatisfaction when inadequate. These factors are external include working conditions, quality of supervision, interpersonal relation, adequacy of fringe benefits. The revealed factors that fall under hygiene factors include:

- Teamwork
- Late payment of interim certificate
- Supervision based on leadership by example
- Provision of equipment
- Love and belongingness
- Communication
- Overtime

On the other hand the motivator propounded by Herzberg are intrinsic and makes the individual feels the potential for satisfaction. A no-satisfaction reaction will be experienced by an worker if these factors are not available. The following factors were among the ten most critical factors established and can be classified under motivators:

- Work based on contract
- Opportunity to undertake challenging task
- Identification with goal

In addition, Alderfer's modified theory suggested that an individual progress through a hierarchy from existence needs, through relatedness and to growth needs. With this, a need of an individual need not be satisfied completely and this can be affirmed with the ten most critical factors. It can be cited that without good teamwork there can not be good communication hence impact negatively on motivation and productivity. In the construction industry, more than one factor is to be active for the attainment of individual motivation and company's goal.

5.4 Recommendation

The goal of this study was to find strategies to motivate workers to achieve a higher level of productivity, cost savings, and profit enhancement at construction projects. Productivity improvement is readily initiated with identification of productivity factors. Although many previous studies suggested factors that affect productivity, some investigated the individual effect of one productivity factor, while others reviewed factors which were productivity drivers for a particular trade or for a specific world region. However, this study introduced a more comprehensive view by combining all previous productivity factors that influence motivation. The efficiency of these strategies may be utilized by management to motivate workforce and control productivity of construction projects and thereby redeem the value of the construction project in measurable terms. These proposed strategies of motivation and productivity improvement may be applied to construction projects of various type and size. Based on the findings of this study and a review of previous research, the following recommendations are suggested for future projects in the Ghanaian construction industry:

- **Targets**: Double targets should always be set on projects. One of these should be on the threshold and the other above the threshold. Management should therefore make the higher target known to workers and monitor progress with the threshold target. Subordinates should be given praise by supervisors whenever efforts are made to attain the set.
- **Strategy**
    i. Management and immediate supervisors should ensure that good teamwork is established through collaborations, both on and off site by assigning task to groups of workforces with qualified and competent supervisors.

ii. There timely payment of interim certificates so as to improve cash flow to facilitate smooth running of projects.

iii. There should be a clear line of communication between management and workers. Also regular interactions should be organised to recognised workers so as to motivate others to work harder to be recognised one day.

- Workers should be given the opportunity to undertake challenging task under close supervision, not compromising quality, precision and timely delivery and be made to the consequence when these requirements are not met.
- It is also recommended that that, at least two of the factors should be present at any point in time which will
- It is further recommended that, the revealed factors be researched into how

Table 4.8: Testing of response agrement on productivity

Factors that affect motivation and productivity at work	**Response on productivity**															
	1	**2**	**3**	**4**	**5**	Σx_i	$\bar{P}$	$x_{1j}(m-x_{1j})$	$x_{2j}(m-x_{2j})$	$x_{3j}(m-x_{3j})$	$x_{4j}(m-x_{3j})$	$x_{5j}(m-x_{3j})$	$\Sigma x_{ij}(m-x_{ij})$	$nm(m-1)\ \bar{P}_j\ \bar{q}_j$	$\hat{k}_j$	$\bar{P}_j\bar{q}_j\hat{k}_j$	$\bar{P}_j\bar{q}_j$
Material shortage on site	15	3	33	25	56	132	0.025	77430	15522	169752	128800	286776	678280	3329056.83	0.796	0.020	0.025
Late issuance of construction drawings by consultant	12	11	30	37	40	130	0.025	61980	56826	154410	190180	205480	668876	3279916.32	0.796	0.019	0.024
Inadequate site planning	24	14	46	27	19	130	0.025	123672	72282	236026	139050	98002	669032	3279916.32	0.796	0.019	0.024
Late payment of interim	3	21	16	40	49	129	0.025	15522	108276	82576	205480	251272	663126	3255331.07	0.796	0.019	0.024
Rework due to construction error	15	33	32	25	27	132	0.025	77430	169752	164640	128800	139050	679672	3329056.83	0.796	0.020	0.025
Workers strike due to unpaid work	17	23	20	34	27	121	0.023	87720	118542	103140	174862	139050	623314	3058289.14	0.796	0.018	0.023
Unrealistic deadline for project set by client	19	20	35	29	26	129	0.025	98002	103140	179970	149292	133926	664330	3255331.07	0.796	0.019	0.024
Slow response of consultant's site staff attending to inspection work	18	9	31	42	26	126	0.024	92862	46512	159526	215670	133926	648496	3181515.33	0.796	0.019	0.024
Inadequate site staff	7	23	33	40	28	131	0.025	36190	118542	169752	205480	144172	674136	3304491.57	0.796	0.020	0.025
Waiting for other crew	10	24	31	39	28	132	0.025	51670	123672	159526	200382	144172	679422	3329056.83	0.796	0.020	0.025
Poor weather condition	11	20	35	43	18	127	0.025	56826	103140	179970	220762	92862	653560	3206130.58	0.796	0.019	0.024
Poor buildability of design	18	26	36	28	22	130	0.025	92862	133926	185076	144172	113410	669446	3279916.32	0.796	0.019	0.024
Contractor staff absenteeism	13	35	31	32	21	132	0.025	67132	179970	159526	164640	108276	679544	3329056.83	0.796	0.020	0.025
Job security	8	16	34	20	50	128	0.025	41352	82576	174862	103140	256350	658280	3230735.82	0.796	0.019	0.024
Safety plans	8	15	31	39	37	130	0.025	41352	77430	159526	200382	190180	668870	3279916.32	0.796	0.019	0.024
Provision of equipment for work	6	12	33	44	38	133	0.026	31026	61980	169752	225852	195282	683892	3353612.08	0.796	0.020	0.025
Transportation	8	20	32	37	35	132	0.025	41352	103140	164640	190180	179970	679282	3329056.83	0.796	0.020	0.025
Salary	18	10	17	31	53	129	0.025	92862	51670	87720	159526	271572	663350	3255331.07	0.796	0.019	0.024
Bonus at the end of project or year	14	10	31	32	42	129	0.025	72282	51670	159526	164640	215670	663788	3255331.07	0.796	0.019	0.024
Overtime	6	12	32	35	42	127	0.025	31026	61980	164640	179970	215670	653286	3206130.58	0.796	0.019	0.024
Teamwork	7	6	20	56	43	132	0.025	36190	31026	103140	286776	220762	677894	3329056.83	0.796	0.020	0.025
Worker participation in decision making	9	22	34	31	37	133	0.026	46512	113410	174862	159526	190180	684490	3353612.08	0.796	0.020	0.025
Work based on contract	11	8	32	44	37	132	0.025	56826	41352	164640	225852	190180	678850	3329056.83	0.796	0.020	0.025

Table 4.8: Testing of response agrement on productivity

Factors that affect motivation and productivity at work	**Response on productivity**															
	1	**2**	**3**	**4**	**5**	Σx_i	$\overline{P}$	$x_{1j}(m-x_{1j})$	$x_{2j}(m-x_{2j})$	$x_{3j}(m-x_{3j})$	$x_{4j}(m-x_{3j})$	$x_{5j}(m-x_{3j})$	$\Sigma x_{ij}(m-x_{ij})$	$nm(m-1)_j \overline{P}\,\overline{q}$	$\hat{k}_j$	$\overline{P}_j\overline{q}_j\hat{k}_j$	$\overline{P}_j\overline{q}_j$
Supervision based on leadership by example	5	12	30	51	34	132	0.025	25860	61980	154410	261426	174862	678538	3329056.83	0.796	0.020	0.025
Love and belongingness	9	14	32	39	39	133	0.026	46512	72282	164640	200382	200382	684198	3353612.08	0.796	0.020	0.025
Employee training	5	14	40	34	32	125	0.024	25860	72282	205480	174862	164640	643124	3156890.09	0.796	0.019	0.024
Orientation for new employee	11	6	51	37	21	126	0.024	56826	31026	261426	190180	108276	647734	3181515.33	0.796	0.019	0.024
Constant disruption of work	11	33	24	38	23	129	0.025	56826	169752	123672	195282	118542	664074	3255331.07	0.796	0.019	0.024
Project confusion	19	20	36	32	16	123	0.024	98002	103140	185076	164640	82576	633434	3107609.61	0.796	0.018	0.023
Working with unqualified	24	10	39	29	28	130	0.025	123672	51670	200382	149292	144172	669188	3279916.32	0.796	0.019	0.024
Promotion	13	19	34	39	23	128	0.025	67132	98002	174862	200382	118542	658920	3230735.82	0.796	0.019	0.024
Disrespect from co-workers	19	19	48	29	14	129	0.025	98002	98002	246192	149292	72282	663770	3255331.07	0.796	0.019	0.024
Equity	8	14	43	41	21	127	0.025	41352	72282	220762	210576	108276	653248	3206130.58	0.796	0.019	0.024
Communication	5	20	38	37	31	131	0.025	25860	103140	195282	190180	159526	673988	3304491.57	0.796	0.020	0.025
Opportunity to undertake challenging task	7	22	30	40	32	131	0.025	36190	113410	154410	205480	164640	674130	3304491.57	0.796	0.020	0.025
Identification with goal	11	15	27	34	44	131	0.025	56826	77430	139050	174862	225852	674020	3304491.57	0.796	0.020	0.025
Congestion	19	21	36	25	27	128	0.025	98002	108276	185076	128800	139050	659204	3230735.82	0.796	0.019	0.024
Canteen for employee	9	12	23	41	44	129	0.025	46512	61980	118542	210576	225852	663462	3255331.07	0.796	0.019	0.024
Medical care	9	16	34	35	35	129	0.025	46512	82576	174862	179970	179970	663890	3255331.07	0.796	0.019	0.024
Accommodation	9	10	32	34	45	130	0.025	46512	51670	164640	174862	230940	668624	3279916.32	0.796	0.019	0.024
TOTALS	470	670	1302	1425	1310	**5177**										**0.776**	**0.975**

Table 4.8: Testing of response agrement on productivity

Table 4.8: Testing of response agrement on productivity

REFERENCE

- Armstrong M., *Human Resource Management Practice*, Kogan Page, Pp 251-269
- Ashworth A. (1999), *Cost Studies of Buildings,* Third Edition, Longman, Pp 31-33
- Akindele O.A. (2003*), Craftsmen and Labour Productivity In The Swaziland Construction Industry*, CIBD 1st Postgraduate Conferenec.
- Ahadzie D.K. (1995), *Factors Affecting Labour Productivity In The Construction Industry In Ghana: The Perception Of Consultants And Contractors*, Journal Of Building And Road Research Institute. Pp 22-32)
- Aynur and Serdar (2006), *Drivers Of Productivity Among Construction Workers: A Study In Developing Countries*, International Journal Of Project Managers, Vol. 42 Issue 5, Pp 2132-2140
- Borcherding J.D. (1978), *Factors Which Influence Productivity On Large Projects*, Journal of American Association of Cost Engineers.
- Bhalla A.S. and Edmonds G.A. (1983), *Construction Growth and Employment In Developing Countries*, Journal for the Study of Human Settlements, Vol. 7 No. 5/6., Pp 195-206.
- Berg G. and Magnus R. (1999), *How Leadership Affect Productivity,* Seattle Daily Journal.
- Bloisi W. et. al. (2003), *Management and Organisational Behaviour*, McGraw-Hill, Pp 169-208
- Cartwright J. (1999), *Cultural Transformation,* Financial Times, Prentice Hall
- Chase G.W. (1993), *Effective total quality management (TQM) process for construction:* Journal of Management in Engineering. Vol. 9 No. 4 Pp 433-443.
- Clarke R.H. and Morris J.R.(1980), *Workers' Attitude Towards Productivity. A Survey By The Chamber Of Commerce In The United States.*

- Daily Graphic: 20th August 2002, 1, 3
- Enshassi A. et al. (2007), *Factors Affecting Labour Productivity In Building Projects In The Gaza Strip*, Journal of Civil Engineering and Management, Vol. XIII, No. 4 Pp 245-254 .
- Gaissey R.G. (1993), *Effective Management: A Tool For Higher Productivity In Public Corporation*, MBA Thesis, (Unpublished)
- Heizer J and Render B. (1999), *Operations Management*, Fifth Edition Printice Hall. Pp 16-23, 392-403.
- Haskell P.H. (2004), *Construction Productivity: Its History and Future Direction*, America's Design-Build Leader White Paper.
- Halligan D. W. et al (1994), *Action-Response Model and Loss of Productivity in Construction*, Journal of Construction Engineering and management, Vol. 120 No.1
- Krietner R. et. al.(1999), *Organisational behaviour*, First European edition, McGraw-Hill
- Kadir M.R.A. et al. (2005), *Factors Affecting Construction Labour Productivity For Malaysian Residential Projects*, Structural Survey Vol. 1, Pp 42-54
- Kazaz A. and Ulubeyli S.(2007), *Drivers Of Productivity Among Construction Workers: A Study In A Developing Country*, International Journal Of Project Managers, Vol. 22 Issue 2, Pp 2132-2140
- Kazaz A. et al (2008), *Effect Of Basic Motivational Factors On Construction Workforce Productivity In Turkey*, International Journal Of Civil Engineering and Management, Vol. 14 Issue 2, Pp 95-106
- Kaming P.F. et al. (1997), *What motivates construction craftsmen in developing countries? A case study of Indonesia*, Building and Environment, Vol. 33 No. 3 Pp 131-141

- Lim E.C. and Alum J. (1995), *Construction Productivity: Issues Encountered By Contractors In Singapore*, International Journal Of Project Managers, Vol. 22 No.1, Pp 51-58
- Mullins L.J.(2005), *Management and Organisational Behaviour*, Prentice Hall, Pp 471-514
- McCaffer R. and Harris F., *Modern Construction Management*, Blackwell Publishing, Pp. 118, 138
- Makulsawtudon A. and Emsley M. (2001), *Factors Affecting The Productivity Of The Construction Industry In Thailand: The Craftsmen 'S Perception*, COBRA conference papers.
- Mitullah W. V. and Wachira I. N. (2003),*Informal Labour In The Construction Industry In Kenya: A Case Study Of Nairobi*, International Labour Office Working Paper Pp 1
- Mojahed Shahriyar (2005), *A Project Improvement System For Effective Management Of Construction Projects*, PHD Dissertation, (Unpublished)
- Management Encyclopedia (Internet)
- Sengupta B. and Guha H. (1999), *Construction Management and Planning*, Tata McGraw-Hill, Pp 1-2,7, 79-80, 229-230
- Olabosipo I.F. et. al (2004), *The Impact Of Non-Financial Incentives On Bricklayers Productivity in Nigeria*, Construction Management and Economics, Pp 899-911
- Odusami et al. (2003), *The Relationship Between Leadership, Team Composition and Construction Project Performance In Nigeria*, International Journal Of Project Managers, Vol. 21 Issue 7, Pp 519-527
- Source B. (1987), *Estimating Labour Productivity*, Journal of American Association of Cost Engineers.

- Thomas et al. (2004), *Demotivating Factors Influencing The Productivity In The Construction Industry*, International Journal Of Project Managers, Vol. 22 Issue 2, Pp 139-146
- The Business Roundtable (1989), *Construction Labour Motivation: A Construction Industry Cost Effectiveness Project Report*
- Walpole R.E. et al.(2007), *Probability and Statistics For Engineers and Sciencist*, Pearson Prentice Hall, Pp 432-435
- Wiredu G.K. (1989), *Productivity in the Ghanaian Civil Service*, MBA Thesis, (Unpublished)
- www.mofep.gov.gh, *2006 and 2007 Budgets*.
- Zakari M. et al. (1997), *Factors Affecting Motivation of Iranian Construction Operatieves.* Building and Environment, Vol. 32 No. 2 Pp 161-166

APPENDIX A

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY

DEPARTMENT OF BUILDING TECHNOLOGY

PRELIMINARY SURVEY QUESTIONNAIRE

The research is being undertaken by Mr. Emmanuel Akoi-Gyebi Adjei, a second year student in MSc. Construction Management. It is aim at finding strategies of motivation to improve productivity in the Construction industry. This is a part of the preliminary survey to provide enough information for the problem statement.

I. Is management happy with the productivity on a project?
   Yes / No

II. Is management happy with the supervision of the superintendent on a project?
   Yes / No

III. Is management happy with the output of the workforce on a project?
   Yes / No

IV. How can the motivational level of your firm be ranked?
   i. Very high
   ii. High
   iii. Fair
   iv. Low
   v. Bad

V. Do you agree that when the current motivation is improved, productivity will improve? Yes / No

VI. What are some of the motivations do you think should be put in place?

a) …….....
b) ……...
c) ……...
d) ……
e) ……
f) ……
g) ……
h) ……...
i) ……...
j) ……...
k) ……
l) ……
m) ……
n) ……...
o) …….....
p) ……...
q) …….....
r) ……...
s) ……...
t) ……...
u) ……...
v) ……
w) ……
x) ……
y) ……
z) ……

APPENDIX B

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY

DEPARTMENT OF BUILDING TECHNOLOGY

QUESTIONNAIRE

The research is being undertaken by **Mr. Emmanuel Akoi-Gyebi Adjei**, a second year post-graduate student in Construction Management. It is aimed at finding the factors that have lead to the decline in productivity facing the construction industry for the past decade and recommend strategies of motivation that will facilitate the improvement of productivity.

SECTION A (*TO BE COMPLETED BY RESEARCHER*)

i. Name of Firm: ……..
ii. Classification of Firm: ……
iii. Location of site

SECTION B *(TO BE COMPLETED BY **EMPOLYER***)

1. How long has the firm been in existence
2. What is the approximate number of employee you have?
    i. Permanent ……
    ii. Contract…….
    iii. Casuals…….
    iv. Others (state) ……..
3. Do you set targets daily for your employees?

    ☐ Yes ☐ No
4. If yes, do they always meet your set target at the end of every day? Yes / No
    i. If No why? .....
    ……..
5. Do you have any idea whether your employees always feel happy to work?

    ☐ Yes they are always happy

☐ Not always happy

☐ They are not happy all.

6. If Yes, do they always give out their best?

   ☐ Yes ☐ No

7. If Not always happy, do they always give out their best?

   ☐ Yes ☐ No

8. If they are not happy at all, do they always give out their best?

   ☐ Yes ☐ No

9. Have you ever experienced a strike action by your employees?

   ☐ Yes ☐ No

10. If Yes, what was the cause?

    .....
    .....
    .....
    .....

11. On the next page are factors that normally affect motivation and productivity at work in the construction industry. From your experience please of degree of effect in occurrence as well as the degree of significance to productivity on your employees.

    Tick once (√) as appropriate the following:

    i. In order of effect in occurrence.
    ii. In order of degree of significance on productivity

- **Effect : 1 = low; 2 = medium; 3 = high**
- **Significance: 1 = strongly not significant; 2 = not significant 3 = average; 4 = Significant; 5 = Strongly significant**

Item	Factors that affect motivation and productivity at work	Effect			Significance				
		1	2	3	1	2	3	4	5
1	Material shortage on site (materials getting finish while working)								
2	Late issuance of construction drawings by consultant (detail set of drawings not deliver in bulk leading to the work done in bits or small sections)								
3	Inadequate site planning(site layout which leads to difficulty in movement)								
4	Late payment of interim certificate								
5	Rework due to construction error (Making corrections on wrong work done)								
6	Workers strike due to unpaid work								
7	Unrealistic deadline for project set by client (deadline that is not easy to attain)								
8	Slow response of consultant's site staff attending to inspection work								
9	Inadequate site staff. (less labour for a task leading to excessive work load)								
10	Waiting for other crew (waiting for gang of different trade to finish before another can continue)								
11	Poor weather condition								
12	Poor buildability design (design which is difficult to construct)								
13	Contractor staff absenteeism (Crew members not being present for work)								
14	Job security (Permanent job, Job all the time, payment of SSNIT etc)								
15	Safety plans (Availability of first aid, provision of safety kits etc)								
16	Provision of equipment for work (Adequate equipment to work with, quick replacement and repairs of broken down and old equipment)								
17	Transportation (Vehicle at your disposal, allowance for transportation, transportation from a location to site and back)								
18	Salary (Pay, wage, etc)								
19	Bonus at the end of project or year (showing appreciation at the end of the project and year)								
20	Overtime (Provision of extra money after normal working time)								
21	Teamwork (Everyone contributing in the work, all hands on deck)								
22	Worker participation in decision making (Making suggestions)								
23	Work based on contract (Finish and go)								

Item	Factors that affect motivation and productivity at work	Effect			Significance				
		1	2	3	1	2	3	4	5
24	Supervision based on leadership by example								
25	Love and belongingness								
26	Employee training (Introduction into new ideas, further studies, workshops etc)								
27	Orientation for new employee (Introduction to old staff, introduction into the policies of the company)								
28	Constant disruption of work (Frequent changes in design and specifications)								
29	Project confusion (identification of source of instruction)								
30	Working with unqualified persons(working with incompetent and non-confidence workers)								
31	Promotion (elevation, example from mason to mason foreman)								
32	Disrespect from co-workers (use of abusive language from colleagues, impolite speeches etc)								
33	Equity (Fair treatment)								
34	Communication (Easy flow of information, being well communicated)								
35	Opportunity to undertake challenging task (Being given goal to work towards it through your own directives)								
36	Identification with goal (Being honoured for a particular attained target)								
37	Congestion (overcrowding in a work area, improper site planning)								
38	Canteen for employee (having a place within the premise where food are given at break for free or at a reduced price)								
39	Medical care (Having a particular hospital to attend in case of illness or subsidising the cost of hospital bills)								
40	Accommodation (Provision of physical accommodation, package as subsidy to rent apartment)								
41									
42									
43									
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46									

APPENDIX C

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY

DEPARTMENT OF BUILDING TECHNOLOGY

QUESTIONNAIRE

The research is being undertaken by **Mr. Emmanuel Akoi-Gyebi Adjei**, a second year post-graduate student in Construction Management. It is aimed at finding the factors that have lead to the decline in productivity facing the construction industry for the past decade and recommend strategies of motivation that will facilitate the improvement of productivity.

SECTION A (*TO BE COMPLETED BY RESEARCHER*)

i. Name of Firm: ……..
ii. Classification of Firm: ……
iii. Location of site

SECTION B *(TO BE COMPLETED BY **EMPOLYEE***)

1. Sex: Male / Female
2. Age: …….
3. Education level:

☐ Primary School
☐ Middle School
☐ Junior Secondary School
☐ Senior Secondary School
☐ N.V.T.I
☐ C.T.C.
☐ H.N.D.
☐ Others (state): …….

4. Position
   a) (Skilled and Unskilled)

☐ Foreman
☐ Mason
☐ Steel bender
☐ Carpenter
☐ Plumber
☐ Electrician

☐ Painter ☐ Tiler

☐ Others (state)…….

b) Professionals

☐ Quantity Surveyor ☐ Architect

☐ Project Manager ☐ Others (State)….……

☐ Engineer

5. Terms of employment

☐ Permanent ☐ Casual

☐ Contract

6. Years of experience…….
7. Years of working with the firm: ……
8. Are targets set daily for you?

☐ Yes ☐ No

9. If yes, do you always meet your target at the end of every day? Yes / No
   i. If No why? .....
   ……
   ……..
10. Do you always feel happy when you are working?

☐ Yes I always happy ☐ Not at all.

☐ Not always happy

11. If Yes, do you always give out your best when you feel happy?

☐ Yes ☐ No

12. If Not always, do you always give out your best when you feel happy?

☐ Yes ☐ No

13. If Not at all, do you always give out your best when you feel happy?

☐ Yes ☐ No

14. Have you ever gone on a strike? Yes / No

15. If Yes, why?

.....……
……. ……..

16. Below are factors that normally affect motivation and productivity at work in the construction industry. From your experience please rate the degree of effect of occurrence on your motivation as well as the degree of significance on your performance.

Tick once (√) as appropriate the following:

i. In order of effect in occurrence.

ii. In order of degree of significance on productivity

- **Effect : 1 = low; 2 = medium; 3 = high**
- **Significance: 1 = strongly not significant; 2 = not significant 3 = average; 4 = Significant; 5 = Strongly significant**

Item	Factors that affect motivation and productivity at work	Effect			Significance				
		1	2	3	1	2	3	4	5
1	Material shortage on site (materials getting finish while working)								
2	Late issuance of construction drawings by consultant (detail set of drawings not deliver in bulk leading to the work done in bits or small sections)								
3	Inadequate site planning(site layout which leads to difficulty in movement)								
4	Late payment of interim certificate								
5	Rework due to construction error (Making corrections on wrong work done)								
6	Workers strike due to unpaid work								
7	Unrealistic deadline for project set by client (deadline that is not easy to attain)								
8	Slow response of consultant's site staff attending to inspection work								
9	Inadequate site staff. (less labour for a task leading to excessive work load)								
10	Waiting for other crew (waiting for gang of different trade to finish before another can continue)								
11	Poor weather condition								
12	Poor buildability design (design which is difficult to construct)								
13	Contractor staff absenteeism (Crew members not being present for work)								
14	Job security (Permanent job, Job all the time, payment of SSNIT etc)								
15	Safety plans (Availability of first aid, provision of safety kits etc)								

Item	Factors that affect motivation and productivity at work	Effect			Significance				
		1	2	3	1	2	3	4	5
16	Provision of equipment for work (Adequate equipment to work with, quick replacement and repairs of broken down and old equipment)								
17	Transportation (Vehicle at your disposal, allowance for transportation, transportation from a location to site and back)								
18	Salary (Pay, wage, etc)								
19	Bonus at the end of project or year (showing appreciation at the end of the project and year)								
20	Overtime (Provision of extra money after normal working time)								
21	Teamwork (Everyone contributing in the work, all hands on deck)								
22	Worker participation in decision making (Making suggestions)								
23	Work based on contract (Finish and go)								
24	Supervision based on leadership by example								
25	Love and belongingness								
26	Employee training (Introduction into new ideas, further studies, workshops etc)								
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