



Influence of Employees Motivational Factors on Total Quality Management Implementation in the Construction Industry

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study determines the employees' motivational factors and their influence on Total Quality Management (TQM) implementation in the construction industry. The instrument used in the study was a survey questionnaire with a sample size of 536 out of the 641 questionnaires which were administered to population consists of top management in the Ghanaian construction industry. The analysis was carried out using Exploratory Factor Analysis (EFA) technique. The study identified the following motivational factors that influence the successful implementation of TQM in the construction industry: Teamwork, Recognition of employees, Conducive working environment, Employee involvement in TQM activities, Education and training/re-training of staff, Salary/position promotion, Bonus scheme, Employee commitment, Employee reward, and Availability of a suggestion forum for employees. The findings revealed that all the motivational factors considered in the study have a high influence on TQM implementation in the construction industry. The study

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therefore suggests that managers should consider these identified motivational factors when applying the principle of Total Quality Management in the construction industry. Consequently, employees that are motivated with these identified motivational factors will help to achieve successful implementation of TQM in the construction industry and subsequently give their best effort to accomplish the job.

Keywords: Construction industry; employees; motivation; total quality management.

1. INTRODUCTION

When the quality management practices and employees' motivation are improved, eventually, the society gains benefits such as customer satisfaction [1]. Therefore, it is essential that employees are well motivated in construction industry in order to improve their outcomes and performance. Unarguably the role of employee motivation in improving Total Quality Management (TQM) is very important in construction industry. Academics and practitioners both agree that employees' motivation is an essential pillar in building a quality management system. TQM has become a key philosophy to assist organisations in becoming the most efficient, the most competitive, and the most successful in the marketplace. TQM can be considerably affected by the employees' behaviour and the skills sets that are being implemented. Juran and Grayna [2] mentioned that "certain roles of employees' can be recognized as establish quality policies, establish and deploy quality objectives, provide resources, provide problem-oriented training, and stimulate improvement". "The new TQM strategy directed toward quality improvement, which is suggested in this paper, seeks new activities in the field of employees' motivation. This means a drastic change in the behaviour of the employees, radical changes in the organizational positioning, a clear definition of the rights, obligations and responsibility of each individual" [3,4]. Addressing the subject of motivation in the construction industry, there are a number of factors considered to be most effective job motivators. Beside monetary reward, there are other important factors such as challenging work, job recognition, and a sense of achievement and a feeling of personal growth. Indirectly, all these factors affect moral and thus have direct relationship to personal productivity. In an attempt to gain insight into this subject, Maloney [5] conducted "a review of factors of job motivation in the construction industry". Similarly, Maloney and McFillen [6] presented "a model of construction crews' motivation, performance and satisfaction, including results from other studies

that support the validity of their model. In the model, motivation was defined as a function of a worker's expectancy, which provides a means of understanding and assessing worker's level of performance and satisfaction". The motivation according to Fudge and Schlacter [7] refers to "the readiness of the individual to show a high level of determination in achieving organisational goals, which is in direct relation with the eagerness to meet the individual needs". The key rule, according to Zahra [8], is that "it is necessary to stimulate those forms of employee behaviour that contribute to the realization of the business strategy and the achievement of organisational goals. This means that motivation should be in a form to guide people to live the organisational culture, to accept and share the same pattern".

"A great deal of work has been done on motivation of people. Among them is the classical work of Maslow [9], with his theory of the hierarchy of needs as a motivator; Herzberg [10], who distinguishes between motivators and hygiene factors; and McGregor [11], who claims that people are motivated by their dominant need among the need for power, need for affiliation, and need for achievement". These theories are useful in the basic understanding of behaviour usually occurring for a reason, and that understanding this reason would help managers to influence behaviour to a certain extent. The general limitation of all these theories is that they do not take enough cognizance of the fact that people are different. They generalize motivators as if people are either motivated by one thing or another. As such, before trying to generalise motivators, it may be advisable to conduct an investigation into the present culture of the workforce, in particular to uncover their values. This study was therefore designed to determine the employees' motivational factors that influence the successful implementation of TQM in the construction industry.

2. LITERATURE REVIEW

"TQM is considered by many researchers as an important approach in quality and business

performance improvement. It is a system focusing on customer satisfaction through the concept of continuous improvement. The definitions of TQM are numerous, depending on the organizations' perception of quality. The definition of TQM in the BS 7850 is the company practices and management philosophy that seek to control the human and material resources of an organization in the most efficient way to achieve the goals of the organization" [12]. "A report from the Asian Institute of Technology (AIT) indicates that TQM is a philosophy that reinforces the culture to foster continuous organizational enhancement through systematic, integrated, constant effort involving everything and everyone, focusing mainly on total satisfaction of internal and external customers, where employees work collectively in teams with process ownership, directed by a dedicated top management, which takes a proactive involvement" [13]. "On the other hand, British Quality Association defines TQM as a comprehensive business management philosophy focusing on entirely satisfying customer requirements with a maximum of efficiency and effectiveness" [14]. "Another meaning of TQM which is utilized by USA Defence Department is that it is a philosophy and a set of directing concepts that signify the basis of a continually improving organisation" [15].

It should be noted that TQM evolved in the 1980s and began to have a major impact on management and engineering approaches with the purpose of developing and expanding quality management strategy by adding more aspects related to quality. The concept started in the manufacturing industry, giving the impression that TQM cannot be applied in any other construction engineering industry but the manufacturing industry. Regardless of the fact that construction engineering is different from the manufacturing sector in terms of its uniqueness in production, studies according to Ahmed [16], Arditi and Gunaydin [17], Low and Jasmine [18], and Harrington and Voehl [19] have all confirmed the benefits and applicability of TQM in the construction engineering industry. Pheng and Ann Teo [20] discussed the implementation of TQM in construction firms, and concluded in their study that TQM has been recognized as a successful management philosophy in the manufacturing and service industries, so can likewise be embraced in the construction engineering industry to help raise quality and productivity. "Of late, every organization including

construction engineering industry is concerned with what should be done to achieve and sustain high levels of performance in terms of quality and productivity 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 organization context within which they carry out the work" [21]. Excellence requires that employees must identify a benefit for themselves in the achievement of organizational goals. This benefit is not always measured in terms of remuneration. Branham [22] believes that "people want more than just material rewards. They want to believe that their jobs are vital to the company's success". Cartwright [23] proposes "a motivational tool that he refers to as instrumentality to motivate employees to achieve desirable goals for the company, and to avoid undesirable outcomes". According to Cartwright [23], instrumentality happens in two directions:

- Feed forward, which is to be motivated by goals, objectives and expectations.
- Feedback, which is to give recognition and encouragement for efforts made or to give admonishment when things are not happening as they should.

Another motivator suggested by Cartwright [23] "in encouraging people to share in the organisational goals is identification". "Personal identity is the most important thing that humans possess. It is the way humans feel about themselves, the way they express themselves, and the way other people see them. This is the core of what makes individuals unique" [23]. "The realization of the importance of this identity for managers is fundamental for people management. People like to be recognized for what they are, what they uniquely possess, and what their specific contribution can add to business. This is a major motivator towards continuous improvement and total quality. Identification is also a motivator in so far as individuals can identify attractive attributes in a leader that encourages them to use them as a role model. In the same way, unattractive leadership may repel and act as a demotivator for employees" [23]. "In terms of the factor of identification, employers have to take time to understand each individual in the company and treat each one as a unique person. In summary, Cartwright [23] proposes nine key motivating factors for continuous improvement". These are listed below:

- Identification which defines the uniqueness of each individual.
- Equity which refers to a balance between expectations and rewards.
- Equality refers to the fact that while not all employees can be treated equally, everyone should be treated with respect irrespective of status.
- Consensus is an arrival at a mutual understanding, underscoring the importance of teamwork in quality.
- Instrumentality which is a means by which to achieve an objective.
- Rationality which introduces the idea of a scientific approach to management.
- Development which refers to continuous improvement of an organisation through the development of its people.
- Group dynamics refers to intra group relationships within a group and inter group relationships between groups.
- Internalisation of cultural beliefs and value as the most powerful and permanent motivating factor.

“In the understanding of the nine factors as motivators, Cartwright [23] cautions that motivation has two directions, namely the positive direction, which is to attract, and the negative direction, which is to repel. Between these two forces is indifference” [23].

“In fact, 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” [24]. “Motivation can therefore be said to be at the heart of how innovative and productive things get done within an organisation” [25]. It has been established that motivation is concerned with the factors that influence people to behave in certain ways. According to Petri [26] “motivation is a concept used to explain the action on and in an organism to initiate and to direct the behavior. The motivation concept is also used in the distinctions of behavior intensity”. “Behavior with a greater intensity is considered as the result of a higher motivation. Such a motivation is realized in an action to gain a so-called satisfaction of needs” [5]. “Based on the general definition of motivation above, some approaches concerning the work motivation have been developed since early

1900. In its definition, work motivation theory has no much difference with other motivation theories in general. However, it is necessary to realize one basic distinction that work motivation has more specific focus on the behavior related to the ‘work’ in a certain institution or organisation. Work motivation theories attempt to explain the things related to work problems” [27]. “Theories of work motivation can be categorized into three, i.e., content theories, process theories and contemporary theories” [28]. Most research on work motivation concerning the construction workers to date used the content theories and just started to progress with the process theories. Within the content theories, Maslow’s hierarchy of needs and Herzberg theories are the two most prominent ones used by construction researchers. Due to their comprehensiveness, this paper will also apply the two theories to accomplish its objectives. The following paragraphs will briefly describe the theories.

2.1 Maslow’s Theory

“The hierarchy of needs theory was pioneered by Abraham H. Maslow in 1954” [9]. “According to this theory, in order to motivate a person, there is a need to understand what level of condition the person has in the hierarchy of needs and to focus the attention on the satisfaction of the needs on that level or on the level above of it” [29]. This theory stated that in each individual, there are five hierarchies of needs: *physiological needs, safety needs, social needs, the need for esteem, and self-actualization*. The five categories of needs in general can be grouped into two major categories: *lower-order needs, covering physiological and safety needs; and higher-order needs, encompassing social, esteem, and self-actualization needs*. This study utilized the theory to explain the needs of construction employees.

2.2 Herzberg’s Theory

“This theory, sometimes known as Two-Factors Theory or Motivation-Hygiene Theory, was stated by Frederick Herzberg and his colleagues in the Psychological Service of Pittsburgh. The basic idea of this theory is that one’s relationship toward his work is absolutely fundamental and that one’s behavior toward his work undoubtedly determines the work’s success. Herzberg’s study showed that people have two distinct categories of need, i.e., hygiene factor and motivator factor, in which the two are independent and influence behavior in different ways. The first factor, called

hygiene, defines the environment where people work and has the main objective to avoid job dissatisfaction. It is also defined as maintenance because the factors are never fully satisfied and require maintenance. Manager needs to pay attention to this factor so that the employees keep working at their normal condition. Examples of hygiene factor are policies and administration, supervision, and working conditions” [30].

“On the other hand, Herzberg called the second factor as the motivator since it seems to be very effective in motivating a person to a better action. The factor is more related to the job itself and can include achievement, recognition for accomplishment and challenging work” [29]. Herzberg had an idea that if a factor is a motivator, it surely leads to job satisfaction. This paper employed the Herzberg theory as the basis to investigate factors motivating the employees’ motivation. It is apparent that the culture and context within which people work is an important factor in their motivation. As such, before trying to implement new management strategies in the pursuit of improved motivation it may be advisable to conduct an investigation into the present culture of the workforce, in particular to uncover their values. With an understanding of the existing workforce culture and values, combined with knowledge of the importance of intrinsic and extrinsic motivating factors, it may be more viable to develop and implement measures which will encourage the development of a workforce culture which increases worker motivation.

3. METHODOLOGY

The research was conducted with reference to existing theoretical literature. Additionally, a structured questionnaire was administered to the construction companies by the researchers. Personally administered or face-to-face structured questionnaire for data collection was the preferable option used for the study. Oppenheim [31] opined that “it is always essential for questionnaires intended to bring forth data for research to be easy to answer, unbiased, concise, and clear to be analysed”. As a result, questionnaire instrument was designed to express the rationale for the study to the respondents. The population for the study was made up of all the Small to Large Sized (D4K4 to D1K1) construction companies in Ghana. The respondents were asked to rate each of the items on a Five Point Likert scale regarding the extent to which they agreed or disagreed with

employees’ motivational factors that influence TQM implementation in the construction industry. The sample frame was established by obtaining a list of registered construction companies in good standing from the Association of Building and Civil Engineering Contractors of Ghana (ABCECG). Good standing construction companies which have registered with the ABCECG as at the time of collecting the data for the research was one thousand two hundred and eighty-two (1282). The study decided to target a sample size of 50% from the entire population of the study. This decision was based on Leedy and Ormrod [32] assertion that if the population size is around 1500, then 20% or more of the population should be sampled. Therefore, because the entire population of the study was 1282, a sample size of 50% (641) chosen from the population deemed adequate for the study. The study used the probability sampling technique, which allows all segments of the construction companies as defined earlier, to be represented in the sample. Also making sure that a representative sample of companies was selected for the study, a simple random sampling technique was used, which allows each member of the population to have an equal chance of being selected [33]. The rationale for selecting this method of sampling was based on the nature and composition of the companies in Ghana. The selection of a representative sample for the study was also based on the justification by Smith [34] who informed that random sampling must be used for a study of this nature.

Out of 641 questionnaires administered to top management in the Ghanaian construction industry, 536 were fully completed and retrieved for analysis representing a response rate of 83.62 percent. The data collected was coded and analyzed through Statistical Package for Social Sciences (SPSS) version 20 to evaluate the Kaiser-Meyer Olkin and Bartlett’s test. Also, data suitability test was conducted to circumvent multicollinearity and to ensure satisfactory internal reliability of variables using the Cronbach’s alpha [35] and validity (convergent and discriminate). Furthermore, Exploratory Factor Analysis (EFA) was performed to gather information on the unidimensionality of the factors to yield their factor-analysability. The Maximum Likelihood, with a minimum eigenvalue of one, together with Principal Axis Factoring with Oblimin Kaiser Normalization was specified as the analysis method for this study. Factor analysis is deemed appropriate when the Kaiser-Meyer-Olkin (KMO) is higher than the

satisfactory minimum limit of 0.5 and a desirable limit as 0.8 or greater [36]. Hair et al. [37] also suggested that a cut-off value of KMO should be greater than or equal to 0.7. According to Hair et al. [37], Bartlett's test with a significance level of less than 0.0001 substantiates the appropriateness of the factor. The output from the analysis was presented as Means, Standard Deviations, Factor Loading, Corrected Item-Total Correlation and Cronbach's Alpha which helped to establish the influential employees' motivational factors towards the implementation of TQM in the construction industry.

4. RESULTS AND DISCUSSION

Table 1 indicates the employee's motivational factors in terms of percentage responses on a scale of 1 (Not at all influential) to 5 (Extremely influential), and a Mean Score (MS) ranging between 1.00 and 5.00. All the MSs are above the midpoint score of 3.00, which indicates that the respondents agreed with the employee's motivational factors towards Total Quality Management implementation in the construction industry.

It is notable that all the motivational factors have $MS > 4.00 \leq 5.00$, which indicates that the respondents perceive the motivational factors to be between 'very influential' and 'extremely influential'. The relatively high $MS = 4.04 - 4.29$ achieved suggests that the variables selected for this study are very significant in driving Total Quality Management implementation among construction firms in Ghana. Teamwork was rank first, followed by Recognition of employees, Conducive working environment, Employee involvement in TQM activities, Education and training/re-training of staff, Salary/position promotion, Bonus scheme, Employee commitment, Employee reward, and Availability of a suggestion forum for employees in that order. Also, EFA was conducted to assess the unidimensionality and reliability of Total Quality Management. Principal axis factoring with oblimin rotation (PAF Oblimin) was specified as the extraction and rotation method. There were ten items measuring motivation construct under study. The result is reported in Table 2.

The corrected item-total correlation was greater than the suggested cut-off value of 0.30, suggesting that the items were good measures of the construct and the Cronbach's alpha was greater than 0.700 at 0.915 (see Table 4), indicating acceptable internal reliability [38]. "The

Kaiser-Meyer-Olkin (KMO) of 0.911 with Bartlett's test of sphericity of $p < 0.000$ was also obtained (see Table 3), indicating consistency with the recommended KMO cut off value of 0.70 and Bartlett's test of sphericity of $p < 0.05$ suggested by" [37]. "Further, the parameter coefficients represent the magnitude of correlation or covariance between an item and a construct. Higher parameter coefficients show that the indicator variables have a stronger relationship with a construct and thus converge at a common point. Parameter coefficients of greater than 0.5 indicate a close relationship between the construct and an indicator variable. A parameter coefficient of 0.5 is interpreted as 25 percent of the total variance in the indicator variable being explained by the latent variable (factor). Hence, a parameter coefficient should be 0.5 or higher, and ideally 0.7 or greater to explain about 50 percent of the variance in an indicator variable" [39]. "The standardized parameter coefficient presented revealed that all coefficients were significantly higher with the lowest being 0.660 reported in Table 2, which were greater than the recommended value of 0.40" as suggested by [40,39]. The magnitude of the parameter estimate was above the 50 percent minimum. This indicates a strong relationship between the indicator variables (factors) and the Employees Motivational factors (constructs). Therefore, the Employees Motivational factors satisfied both internal reliability and the construct criteria. All the ten attributes (Teamwork, Recognition of employees, Conducive working environment, Employee involvement in TQM activities, Education and training/re-training of staff, Salary/position promotion, Bonus scheme, Employee commitment, Employee reward, and Availability of a suggestion forum for employees) are therefore expected to influence successful implementation of TQM in the construction industry. The result of this study has no much difference with other work motivation theories in general. "However, it is necessary to comprehend one basic distinction that, work motivation theories attempt to explain the things related to work problems" [27]. On other hand, this study focused on employees' motivational factors that influence the successful implementation of TQM in the construction industry. This study affirms Branham [22] believes that "people want more than just material rewards". The study also supports Maloney [5] work which states that "beside monetary reward, there are other important factors such as challenging work, job recognition,

and a sense of achievement and a feeling of personal growth. Indirectly, all these factors affect moral and thus have direct relationship to personal productivity". "Teamwork which was rank first in this study confirm a report from the AIT which indicates that TQM is a philosophy that reinforces the culture to foster continuous organizational enhancement through

constant effort involving everyone, where employees work collectively in teams" [13]. Both AIT report and this study approved the importance of teamwork among employees in organization. Hence, teamwork is recognised as top most motivational factor that will help to improve TQM in the construction industry.

Table 1. Employees Motivational factors and its influence on Total Quality Management

Attributes	Not at all influential Extremely influential					MS	SD	Rank
	1	2	3	4	5			
Teamwork	0.00	0.75	12.13	44.78	42.35	4.29	0.70	1
Recognition of employees	0.19	1.31	20.34	34.33	43.84	4.20	0.82	2
Conducive working environment	0.00	3.92	17.54	37.13	41.42	4.16	0.85	3
Employee involvement in TQM activities	0.00	3.17	18.10	38.25	40.49	4.16	0.83	3
Education and training/re-training of staff	3.36	5.78	12.50	28.17	50.19	4.16	1.07	3
Salary/position promotion	0.00	4.48	16.98	39.74	38.81	4.13	0.85	4
Bonus scheme	0.19	7.84	15.11	33.40	43.47	4.12	0.95	5
Employee commitment	0.00	2.80	20.90	39.37	36.94	4.10	0.83	6
Employee reward	1.31	6.16	13.81	38.99	39.74	4.10	0.94	6
Availability of a suggestion forum for employees	0.19	2.24	26.31	35.82	35.45	4.04	0.85	7

MS – mean score; SD – standard deviation

Table 2. Factor Loading, Corrected Item-Total Correlation and Cronbach's Alpha Results

Factors/Attributes	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Education and training/re-training of staff	0.694	0.653	0.902
Teamwork	0.715	0.683	0.900
Salary/position promotion	0.709	0.674	0.900
Employee reward	0.826	0.789	0.892
Bonus scheme	0.688	0.656	0.901
Conducive working environment	0.737	0.705	0.898
Employee involvement in TQM activities	0.663	0.627	0.902
Availability of a suggestion forum for employees	0.691	0.654	0.901
Employee commitment	0.725	0.685	0.899
Recognition of employees	0.660	0.623	0.903

Table 3. Sampling Adequacy Test (KMO and Bartlett's Test)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.911
Bartlett's Test of Sphericity	Approx. Chi-Square	3109.429
	Df	45
	Sig.	0.000

Table 4. Reliability of Motivational factors of TQM implementation

Construct	Number of Items	Cronbach's alpha value	Cronbach's alpha Based on
Motivational factors of TQM implementation	10	0.915	0.916

5. CONCLUSION

It has been established that motivation is concerned with the factors that influence people to behave in certain ways. 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. Hence, with a positive motivation philosophy and practice in place, productivity, quality and service would be improved. This study was intended to contribute to the discussion about motivation and more specifically to determine the employees' motivational factors that influence the successful implementation of TQM in the construction industry based on participants' perception of various relevant variables. The conclusions of the study are anticipated to fill the gap in the literature on the most important motivational factors which influence Total Quality Management implementation in the construction industry. Conclusively, the study identified ten motivational factors as the most influential factors towards successful implementation of TQM in the construction industry. These are: Teamwork, Recognition of employees, Conducive working environment, Employee involvement in TQM activities, Education and training/re-training of staff, Salary/position promotion, Bonus scheme, Employee commitment, Employee reward, and Availability of a suggestion forum for employees. It can be concluded from the findings that all the motivational factors considered in the study have a high influence on TQM implementation in the construction industry. Therefore, the study suggests that managers should understand these most important factors that are likely to motivate the employees to perform more efficiently when they applied the principle of Total Quality Management in the construction industry. The authors also argue that managers are responsible to generate an environment that is able to naturally motivate the employees in order to improve TQM and thereby achieve excellence in the construction industry. Consequently, employees that are motivated will give their best effort to accomplish the job, and subsequently will bring benefit to the company.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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