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Factors Affecting Performance of Incentive Schemes in the Construction Industry in Nigeria

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Abstract
This study sought to empirically determine the factors that influence how incentive schemes induce construction industry workers to expend more efforts at work with a view to improving how the schemes are designed and implemented. The study was conducted with two sets of questionnaire administered on project managers on seventy one construction sites in Nigeria and five craftsmen on each of these sites. The respondents were required to rank twenty eight factors affecting incentive schemes on a five point Likert scale. The factors rated as high impacting by project managers were regular payment of bonus, clear work targets, site management input and performance measurement. The factors ranked high by craftsmen were quality of supervision, workers' involvement, regular payment of bonus and payout period. Achieving optimum performance of the incentive schemes would require harmonisation of the dissention in the views of management and craftsmen of construction firms.
Keywords; incentive schemes, factors affecting incentives, management of construction firms, craftsmen of construction firms.

Introduction

One of the tools construction firms use to increase productivity of their workers and to mitigate threat of time overruns is incentive schemes. There is ample evidence that these schemes have successfully induced workers to higher productivity in various proportions where they have been applied. Thus making it an important device to the construction manager. (Schrader (1972), Edmonds (1976), Borcherding (1981), Maloney (1983), (Wahab (1983), Aina (2000), Fagbenle (2000) Ikpo *et al*(2004).

Yet, despite the agreement over the significance of incentive schemes, it is still unclear which of the multiple factors that affect its operation induce workers to higher productivity. This arose mainly from insufficient appreciation and control of "motivation" which is the main bridge between applied incentives and workers productivity. Forces that affect motivation have direct effect on incentive schemes, the incentive schemes are designed to generate motivating forces.

Olomolaiye (1991) had attributed the short lifespan of incentive schemes to low understanding of relationship between incentives and motivation. Steers and Porters (1991) also believed that there is complexity in work motivation, this is evident in the interaction of the forces among an individual, the job and the work environment that account for the level, direction and persistence of effort expended at work. Elsewhere, Pinder (1998) also explaining factors contained in motivation. He described work motivation as the set of forces, internal (individual needs and motives) and external (environmental forces), that initiate work-related behavior and determine its form, direction, intensity and duration. Olomolaiye(1989) had earlier described Pinder's explanation of factors determining an individual's motivation as being dependent on the genetic and formative environment. Since the construction industry offer a different formative environment, its knowledge is invariably a crucial determinant of the effect of the motivation programmes used in the industry.

The behaviour of the genetic environment, though as dynamic as its formative counterpart, is largely accounted for by the conceptual and empirical motivation theories in general and construction based management literature. The formative environment is also important because most of the incentive schemes used in the construction industry were developed in the manufacturing and services industry selection and adaptation in the construction industry should therefore not be arbitrary. In addition, the effect of geographical and socio-economic settings on the behaviour of the motivating system is also part of the formative function. The importance of the environment on motivation systems is supported by research findings of Jones,(1964), Nave,(1972), Schrader,(1972),and Oxley,(1978), they showed that though the construction worker may have basic needs similar to that of all other workers the satisfaction of these needs is different because of the controlling environment. The environment of an applied incentive scheme consists of the factors within the internal and external surroundings of the incentive schemes.

The obvious part of the administration of incentive schemes is the physical application of the incentive to the worker and the worker's response of higher productivity; the implicit part of the process is the actual creation of the incentive itself and all the variables surrounding its maintenance. The consequence of creating and maintaining the incentive is that the incentive at the point of application is not the only input responsible for the higher productivity achieved by it, but that there are other inputs that worked with the incentive to effect the higher productivity, Belfield and Marsden(2003) agreed with this view, when they concluded in their study of

performance pay ,that the pay system alone does not drive organisational performance outcomes, but the combination of the pay system and the monitoring environment.

Most researchers have concentrated on the cause and effect relationship of the incentives schemes and workplace productivity or organisation performance, few writers have bothered to look behind the scenes at the internal and external factors that infuse or diffuse life from the incentives schemes. Some findings that could be approximated to explain the environments surrounding applied incentives are those of Towers (1990) and Bernadin and Russel (1993). Towers concluded that factors necessary for success of team incentives are senior management commitment, employee support/involvement, emphasis on communications, related HR activities, e.g. training, performance measurement at levels below corporate, shorter payout periods, operational or blended rather than wholly financial measures. Bernadin and Russel (1993) also listed factors such as employees' involvement and value of money, realistic productivity goals and fair performance measurement as necessary for successful financial incentives administration.

These lists provide industry practitioners with some guidelines on applying the incentives. However, their main limitation was that the basis for the factors were not specified and neither was their empirical/conceptual status nor elemental weights stated. This research therefore aims at studying the factors affecting the performance of incentives schemes in Nigeria, with the view to ascertaining the factors and establishing their relative status empirically. These could serve as indicators for effective design and implementation of incentive schemes in the construction industry.

Factors affecting performance of incentives schemes

Performance of incentives schemes has been described by Pinder (1998) to be dependent on internal(dependent on the individual) and external (dependent on "outside the individual") forces. Olomolaiye (1991) had earlier called these forces genetic and formative environments of an incentives scheme. The formative forces are strongly related to organizational or institutional factors.

Institutional factors affecting incentives schemes

Many researchers have presented success lists that can be adopted as institutional factors that influence performance of incentives schemes, the adoption is necessary because hardly is any of these lists captioned as influencing factors, but rather as factors necessary for successful incentives.

Oxley (1978) presented the following factors; (i) the amount of bonus to be paid to the operatives should be in direct proportion to the time saved with no upper limit to the amount that can be earned (ii) targets should be known to the workers before work commences (iii) targets should not be altered during the course of the operation (iv) operatives should know how the bonus is calculated (v) arrangements should be made to cover time loss outside control of operatives (vi) bonuses should be paid regularly. Bernadin and Russel (1993) also listed factors such as employees' involvement and value of money, realistic productivity goals and fair performance measurement as necessary for successful financial incentives administration.

In addition, Towers (1990) concluded that factors necessary for success of team incentives are Senior management commitment, Employee support/involvement, Emphasis on communications, Related HR activities, e.g. training, Performance measurement at levels below corporate, Shorter payout periods, Operational or blended rather than wholly financial measures. Other writers that developed different mixes of factors are Harris and McCaffer(1995) and Lee(1988). Synthesis of these lists will produce the factors to be assessed in this study.

The Concept of factors affecting incentive schemes

Notable empirical researches on the relationship between incentives and productivity of construction operatives include the works of Wilson (1979), Mckenzie and Harris (1984) and Olomolaiye and Ogunlana (1988) and Olomolaiye(1991). The thrust of their research was to identify motivating factors for craftsmen in the industry based on the Herzberg's and Maslow's lists of motivators, the approach used by these researchers was questionnaire survey used for evaluating the degree of importance workers attach to certain motivators. Other studies include that of Borcherding (1977), Borcherding and Oglesby (1977) and Maloney and Mcfillen (1985). These researchers sought to establish the fact that application of incentives motivated craftsmen to increase productivity, they also dwelt on determining the factors that cause satisfaction and dissatisfaction among construction operatives. The purpose of all these studies was to identify and prescribe elements to include in the incentive programmes of construction organisations.

The concept that can be deduced from all these researches is that incentives schemes generate satisfaction and dissatisfaction forces which induce the workers to higher or lower performance,see Figure 1

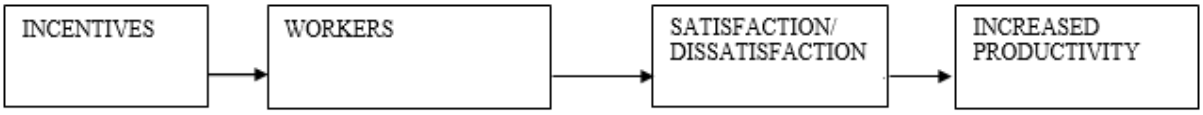

Figure 1: Incentives-Productivity chain deduced from previous studies. Source; Aina, (2010)

However, in spite of the contributions of these studies to the understanding of the relationship between construction workers and their motivation needs, these researches are silent on the intra and extra industry factors that affect the health of the incentives schemes and their performance. Against this background, a concept that includes the input of the factors affecting the incentives in the motivation chain was developed, this concept shows that these influencing factors impinge on the incentives directly and indirectly affect other elements on the motivation chain. See Figure 2.

Figure 2: Adopted Incentives- Productivity Chain. Source; Aina, (2010)

Research Methodology

This study was designed to evaluate the factors that affect performance of construction firms for the purpose of ascertaining the relative strengths of each of the factors. The data required for the study were primary data. The data was sourced using structured questionnaire and in depth interview with the management of construction firms. The population for the study were the contractors registered with the Federation of Construction Industry (FOCI) comprising medium and large construction contractors registered in the categories C and D with the Federal Ministry of works. These classes of contractors have formal organizations with structured incentive programmes suitable for this study. Out of the 95 firms on the FOCI register, 78 firms located in Lagos and Abuja was selected as the sample size. This figure constituted 82% of the firms on the FOCI register.

Twenty eight factors obtained from literature were presented for assessments by management of construction firms and craftsmen who work in the same firms. These respondents were asked to identify and rank these factors on a Likert scale of 1 – 5. The scale was defined as follows;1-very low impact, 2-low impact, 3-average impact, 4-high impact and 5-very high impact. The preferences of the contractors and craftsmen were used to compute factors affecting Incentives Scheme by contractors (FAIK) indices and Factors affecting incentives scheme by craftsmen (FAIC) indices. For the FAIK and FAIC, the total value for each factor was obtained by summing the product of the number of responses for each rating to a factor and the respective weight of the value expressed as $TWO=\sum_{i=1}^{5} P_i V_i$ where TWV is the total weight value, P_i is the number of respondents rating factor i and V_i is the weight assigned to factor i. the FAIK and FAIC for each factor is derived by dividing TWV by the total number of respondents (n)

$$FAIK, FAIC = \frac{\sum_{i=1}^{5} P_1 V_2}{n.}$$

The means of FAIK and FAIC were also computed. The deviation about the mean of each factor and the variance and standard deviation of the distributions were also calculated to measure the scatter about the means. The coefficients of variation were also calculated to measure the scatter in the data relative to the means in percentages.

Data Analysis and Discussion of Findings

Evaluation of Factors affecting Incentive Scheme (by contractors)

The indices of factors affecting performance of incentive schemes by contractors FAIKI are presented in table 5.27. the highest FAIKI is 3.36 and the lowest is 1.24. the factor affecting incentives schemes with the highest

FAIKI and impact is regular payment of bonus according to the contractors. While lack of feedback on performance is the lowest impacting factor. The average FAIKI was 2.29. The factors with FAIKI higher than FAIKI are: regular payment of bonus, clear work target, proportionality of bonus to time saved, performance measurement, payout period, competition among workers provision of tools and workers involvement and value for money. The factors with FAIKI lower than FAIKI are lack of cohesion among workers, management input, inflation, union's involvement, lazy workers among the group, lifespan of the incentives and lack of feedback on performance. The highest and lowest deviation about the mean of FAIKI are +1.07 and -1.05.

Other implications of the contractors ratings are as follows;
According to the contractors none of the factors performed at the "very high" impact level as none scored up to 5.0 FAIKI. The highest scores hovered around medium impact. The factors in this category are ;regular payment of bonus (FAIKI=3.36), clear work target(FAIKI=3.04) and management input(FAIKI=2.92). There is no "high" nor "very high" impacting factor.
Nineteen (or 67%) of the twenty eight factors performed between "below average" impact and "low" levels.
The remaining 6 (or 21%) of the twenty eight factors performed between below "low impact" and "zero impact" levels
The import of the FAIKI distribution according to the contractors is that it is those factors that performed from "average impact" and above that are the critical factors affecting performance of the incentive schemes .They represent 11% of the twenty eight factors.

Table 1: Factors affecting Incentive Scheme (by contractors) Indices.

Factors affecting incentive scheme	Factors affecting Incentive schemes indices FAIKI	Rank	FAIKI – FAIKI	(FAIKI – FAIKI)^2
Proportionality of bonus to time saved	2.60	6	+0.31	0.09
Limits to the money that can be earned	2.44	9	+0.15	0.02
Clear work targets	3.04	2	+0.75	0.56
Consistency of targets	2.36	11	+0.07	0.00
Regular payment of bonus	3.36	1	+1.07	1.15
Workers involvement	2.44	9	+0.15	0.02
Workers values for money	2.44	9	+0.15	0.02
Performance measurement	2.80	4	+0.51	0.26
Senior management support	2.60	6	-0.31	0.09
Communications with workers	2.44	9	+0.15	0.02
Training for the incentives	2.04	16	-0.25	0.06
Payout period	2.52	7	+0.23	0.05
Proportionality of bonus to effort	2.40	10	+0.11	0.01
Provision of tools	2.48	8	+0.19	0.04
Ease of understanding the schemes	2.32	12	+0.03	0.00
Suspicion between workers and management	2.24	13	-0.05	0.00
Competition among workers	2.64	5	+0.35	0.12
Lazy workers among gang of workers.	1.88	17	-0.41	0.17
Management's input	2.92	3	-0.63	0.39
Union's involvement	1.52	19	-0.77	0.59
Useful lifespan of the incentive scheme	1.48	20	-0.81	0.66
Inflation	1.76	18	-0.53	0.28
Quality of supervision	2.08	15	-0.21	0.04
Financial cost of running the incentives	2.24	13	-0.05	0.00
Moral factors e.g. cheating	2.16	14	-0.13	0.07
Peer pressure among workers	2.16	14	-0.13	0.07
Lack of cohesion among workers	1.52	19	-0.77	0.59
Lack of feed back on performance.	1.24	21	-1.05	1.10
$\overline{\text{FAIKI}} = 2.29$	64.12			8.47

Variance = $\frac{(FAIKI - \overline{FAIKI})^2}{n.}$

= $\frac{8.4}{28}$

= 0.303.

Standard deviation SD = $\sqrt{Variance}$

= $\sqrt{0.303}$

= 0.55

Coefficient of variation = $\frac{SD}{\overline{FAIKI}} \times 100.$

= $\left[\frac{0.55}{2.29} x100\right]\%$

= 24%.

Table 2: Factors affecting incentive schemes (by craftsmen) indices.

Factors affecting incentive scheme	Factors affecting incentive scheme indices FAICI	Rank	$FAICI - \overline{FAICI}$	$(FAICI - FAICI)^2$
Proportionality of bonus to time saved	0.50	19	1.41	1.99
Limits to the money that can be earned	1.88	10	0.03	0.00
Clear work targets	3.00	2	+1.09	1.19
Consistency of targets	2.50	5	+0.59	0.35
Regular payment of bonus	2.88	3	+0.97	0.94
Workers involvement	3.00	2	+1.09	1.19
Workers values for money	2.25	7	+0.34	0.12
Performance measurement	1.88	10	+0.03	0.00
Senior management support	2.50	5	+0.59	0.35
Communications with workers	2.00	9	+0.09	0.00
Training for the incentives	2.38	6	+0.47	0.22
Payout period	2.63	4	+0.72	0.52
Proportionality of bonus to effort	2.13	8	+0.22	0.05
Provision of tools	2.00	9	+0.09	0.00
Ease of understanding the schemes	2.00	9	+0.09	0.00
Suspicion between workers and management	1.00	16	-0.91	0.83
Competition among workers	3.00	2	+1.09	1.19
Lazy workers among gang of workers.	1.38	15	-0.53	0.28
Management's input	1.63	12	-0.28	0.08
Union's involvement	2.50	5	+0.59	0.35
Useful lifespan of the incentive scheme	1.50	13	-0.41	0.17
Inflation	1.40	14	-0.51	0.26
Quality of supervision	3.13	1	+1.22	1.49
Financial cost of running the incentives	1.75	11	-0.16	0.03
Moral factors, e.g. cheating	2.00	9	+0.09	0.00
Peer pressure among workers	1.38	15	-0.53	0.228
Lack of cohesion among workers	0.88	17	-1.03	1.06
Lack of feed back on performance.	0.75	18	-1.16	0.56
$\overline{FAICI}$ = 1.91	53.33			13.50

$$\text{FAICI} = 1.91 = \frac{\sum_{I=1}^{28} \text{FAICI}}{28}$$

$$\text{Variance} = \frac{(\text{FAICI} - \text{FAICI})^2}{n}$$

$$= \frac{13.50}{28}$$

$$= 0.4821$$

$$\text{Standard deviation} = \sqrt{Variance}$$

$$= \sqrt{0.4821}$$

$$= 0.69.$$

$$\text{Coefficient of variation} = \frac{\text{SD x 100}}{\text{FAICI}}$$

$$= \left\{\frac{0.69}{1.91} x100\right\}\%$$

Coefficient 0f variation = 36%.

Table 5.28 shows the factors affecting incentives schemes (by craftsmen) indices. The table shows that quality of supervision has the highest FAICI index. (3.13). closely followed by the trio of clear work target (FAICI = 3.00), workers involvement (FAICI = 3.00) and competition amongst workers (FAICI = 3.00). The factors with the lowest FAICI are proportionality of bonus to time saved (FAICI = 0.50) lack of feed back on performance (FAICI = 0.75), lack of cohesion among workers (FAICI = 0.88) and suspicion between the workers and the management (FAICI = 1.00). The average impact of all the factors FAICI was 1.19. Factors with FAICI higher than the mean are quality of supervision, clear work target, workers involvement, competition among workers, regular payment of bonus, payment pension, consistency target, senior management support, union's involvement, workers value for money and so on. Factors with FAICI lower than FAICI are lack of feedback on performance, lack of cohesion among workers, suspicion between workers and management, peer pressure among workers, managements input, proportionality of bonus to time saved, limits to the money that can be earned and so on. The highest and the lowest deviation about the mean are +1.22 and -1.41.

Other implications of the craftsmen ratings are as follows;

According to the craftsmen none of the factors performed at the "very high" impact level as none scored up to 5.0 FAICI. The highest scores hovered around medium impact. The factors in this category are ;quality of supervision (FAICI=3.13), clear work target(FAICI=3.00), competition(FAICI=3.00) and worker's involvement (FAICI=3.00). There is no "high" nor "very high" impacting factor.

Twelve (or 43%) of the twenty eight factors performed between "below average" impact and "low" levels.

The remaining twelve (or 43%) of the twenty eight factors performed between below "low impact" and "zero impact" levels

The import of the FAICI distribution according to the contractors is that it is those factors that performed from "average impact" and above that are the critical factors affecting performance of the incentive schemes. They represent 14% of the twenty eight factors.

The scatter around the means of the two distributions FAIKI and FAICI were small. This implied that the FAIKI and FAICI values cluster around their means. The computed FAIKI variance was 0.303 with a standard deviation of 0.55. the FAICI recorded a variance of 0.48 and a standard deviation of 0.69. the coefficient of variation were 24% and 36% for FAIKI and FAICI respectively. These computation show that the scatter of data relative to the mean was higher in FAICI than FAIKI. The ranges of the distributions were also varied; it was also larger in FAICI. The range of distribution of FAIKI was 2.12 (3.36 – 1.24) while that of FAICI was 2.63 (3.13 – 0.50).

Table 3: Grouping of factors according to their deviation about the means of FAIKI and FAICI.

Group	Factors affecting incentive Schemes	Deviation about mean of FAIKI	% Deviation	Deviation about mean of FAICI	% Deviation
A	Proportionality of bonus	+0.31	14	-1.41	74
	Limits to the money that can be earned	+0.15	6	-0.03	2
B	Senior management support	-0.31	14	+0.59	31
	Training for the incentives	-0.25	11	+0.47	25
	Union's involvement	-077	34	+0.59	31
	Quality of supervision	-0.21	9	+1.22	64
	Moral factors e.g. cheating	-0.31	6	+0.09	5
C	Clear work target	+0.75	33	+1.09	57
	Consistency of targets	+0.07	3	+0.59	31
	Regular payment of bonus	+1.07	47	+0.79	51
	Workers involvement	+0.15	6	+1.09	51
	Worker's value for money	+0.15	6	+0.34	18
	Performance measurement	+0.15	22	+0.03	2
	Communication with workers.	+0.15	6	+0.09	5
	Payout period	+0.23	10	+0.72	38
	Proportionality of bonus to effort	+0.11	5	+0.22	12
	Provision of tools	+0.19	8	+0.09	5
	Ease of understand the schemes	+0.03	1	+0.09	5
	Competition among workers	+0.35	15	+1.09	51
D	Lazy workers among gang of workers	-0.41	18	-0.53	28
	Management input	-0.63	28	-0.28	15
	Useful lifespan of incentives	-0.81	35	-0.41	21
	Inflation	-0.53	23	-0.51	27
	Financial cost of running the incentives	-0.05	2	-0.16	8
	Peer pressure among workers	-0.13	6	-0.53	28
	Lack of cohesion among workers	-0.77	34	-1.03	54
	Lack of feedback on performance	-1.05	46	-1.16	61

Appraisal of the variations around the mean of FAIKI and FAICI indices shows four categories of behaviour around the means. These four groups are presented in table 5.29.

Group A: These are the factors that affect IS that have positive deviation about the mean of FAIKI but have negative deviation about the mean of FAICI. These are factors that contractors believed to have great impact on incentives schemes, but their craftsmen do not believe so. The factors are proportionality of bonus to time saved and limits to the money that can be earned. Their deviation about the mean of FAIKI are +0.31 and +0.15 respectively, and their deviation about the mean of FAICI are -1.41 and -0.03 respectively. There is contrast in the indices of the two groups. This contradiction is more pronounced in the (factor) proportionality of bonus to time saved. The margin is from +0.31 in FAIKI to -1.41 in FAICI or a gap of 88% deviation in their opinions. The reason for this margin is because this factor primarily serves the interest of the contractor/management, who usually count the cost benefit analysis of the IS in use. The craftsmen really do not have use for this factor.

Group B: These are factors affecting IS that have negative deviation about the mean of FAIKI and positive deviation about the mean of FAICI. These are factors considered by contractors to have low impact on the IS but are considered to have great impact on the IS by craftsmen. These factors are senior management support, Training for the incentives, Union's involvement, Quality of supervision and moral factors. The distribution around the mean of FAIKI show an attitude of levity in the administration of IS by the contractors. They believed that senior management's involvement is not important, but that middle level management is sufficient to handle IS related issues. This does not recognize the need to ensure that the IS practice is synchronised into the overall policy direction of the firms. This falls under the purview of senior management. The 34% deviation of the union's involvement factor also shows that management is fully opposed to union's participation in IS related issues. The large deviation that craftsmen gave to the quality of supervision factors shows that mere application of IS alone does not guarantee quality products and service, but managements direct involvement by quality supervision is still a required force to enable optimum productivity of craftsmen. This confirms Olumolaiye (1991) and Marsden(2003) earlier views.

Group C: These are factors affecting IS with positive deviation about the mean of FAIKI and FAICI. These are factors considered to have great impact on the IS by both the contractors and the craftsmen. The factors are; clear work targets, consistency of targets, regular payment of bonus, workers involvement, workers value for money, performance measurement, communication with workers, payout period, proportionality of bonus to effort, provision of tools, ease of understanding the schemes and competition among workers. The convergence of opinions of the contractors and craftsmen signify the importance of this list of factors and consequently the importance that management of construction firms should bestow on them. Amongst this distribution, regular payment of bonus leads the group with total FAIKI and FAICI percentage deviation of 98%, followed by clear work target 90% and competition among workers (66%), followed by workers involvement (57%) and payout period (48%). Only two of the eleven factors exhibit some measure of balance scoring in the percentage deviations of the two distributions. The percentage deviation is generally larger in FAICI than in FAIKI. This indicates that though the two distributions are positive about their means, a measure of difference still exist between them.

Group D: These are factors affecting incentives schemes with negative deviation about the mean of FAIKI and FAICI. These are factors considered not to have much impact on incentive schemes by both the contractors and the craftsmen of construction firms. The factors are lazy workers among the group, management's input, useful lifespan of incentives, inflation, financial cost of running the incentives, peer pressure among workers, lack of cohesion among workers and lack of feedback on performance. The convergence of the positions of the contractors and craftsmen in this case also suggest that these factors are non impacting and not so important.

Conclusion

The study established that there are factors that influence the extent of effects that incentive schemes have on workers in the construction industry. Though this study did not delve into the morphology of how these factors actually influence the workers. (This is a subject for further studies). But respondents who are experienced construction workers in the study area showed by assessing these factors, that they agreed that the factors actually exist and that they truly influence the incentive schemes , and that the influence are not all in the same way, but in different proportions.

The study also unearthed the dissention in the views of management of construction firms and their craftsmen on some important factors. Achieving optimum performance of the incentive schemes would require harmonisation of these positions. For example, the importance that management of construction firms accorded proportionality of bonus to efforts is consistent with global best practices in monitoring the cost benefit of the applied incentives. The management thus has the responsibility of educating craftsmen on the overall benefit of this factor to the general wellbeing of the construction firms.

Similarly, the management of the construction firms have to jettison the old and unproductive practices of non involvement of senior management on matters relating to incentive schemes. Global best practices also stipulate mainstreaming incentive issues within the broad corporate objectives of organisations. Training for use of incentives and quality of supervision should also be addressed in the same context.

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