Performance of Incentive Schemes in Construction Projects in Nigeria

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Keywords : incentive schemes, project managers, craftsmen, performance indices.

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PERFORMANCE OF INCENTIVE SCHEMES IN CONSTRUCTION PROJECTS IN NIGERIA

Strictly as per the compliance and regulations of:

Performance of Incentive Schemes in Construction Projects in Nigeria

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I. INTRODUCTION

Incentives are rewards given to an individual or group that cause them to respond with specific behaviours. Stolovitch [1] defined incentives as something/item valued by an individual or group that is offered in exchange for increased performance and an incentives system as an organized programme of rewards/or recognitions offered for the purpose of motivating people to perform in specific ways. Incentives can positive or negative, tangible or intangible. They may be financial, or non financial, and are usually given to those who perform at a given level. Such rewards may be available to workers, supervisors, or top managers. Whether the incentive is linked directly to such items as safety, quality or absenteeism, the reward follows successful performance.

The purpose of incentives schemes is related to and advances the purpose of wages. [2] claimed that pay represents the most important and contentious element in the employment relationship, and it is of equal interest to the employer, employee and government. To the employer, because it can represent a significant part of his costs, is important to his employees' performance and to competitiveness, and affects his ability to recruit and retain a labour force of quality; to the employee, because it is fundamental to his standard of living and is a measure of the value of

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his services or performance. The wage is equally important to the government because it affects aspects of macro-economic stability such as employment, inflation, purchasing power and socio-economic development in general.

Monitoring and measuring performance of incentive schemes is crucial for successful implementation of incentive schemes. This view is shared by Belfield and Marsden [3] who concluded in their study of performance based pay system, that the pay system alone does not drive organizational performance outcomes, but the combination of the pay system and monitoring environment do. In the same vein incentive schemes that are not monitored and evaluated firmly and systematically against intended business outcomes are invariably those that have little or no business impact, if you don't measure it, you can't manage it. Incentive schemes should rather be treated as an on-going management initiative, requiring continual review and re direction.

The benefits derivable from performance measurement are several. For example Kaydos [4] asserted that managers derived benefits such as improved control, clear responsibilities and objectives in running their organizations, strategic alliance of company's objectives, understanding of the business process and ability to ascertain the capabilities/limitation of organizations. Spitzer [5] also listed benefits of performance measurement as focused attention, clarified expectations, accountability, increased objectivity, provides basis for goal setting, improved execution, promotes consistency, facilitates feedback, increases alignment, improves decision making, provides early warning signals, enables prediction and facilitates motivation.

Studies of performance measurement of applied incentives in the construction industry have measured the impact of the incentive schemes in general ways. The studies have predominantly assessed whether financial incentives are good motivators or not. Research conducted by Schrader [6], Bocherding [7] Burcherding and Laufer [8], Maloney [9], Wahab [10] and Aina [11] affirmed financial incentives as being able to improve performance of construction workers. But they all did not provide the extent of performance improvement, especially in empirical terms so as to justify the continuous use or review of the incentive schemes. This gap is the focus of this study.

II. RESEARCH METHODOLOGY

The data required for this 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 incentive schemes were presented for performance assessment by construction firms. The contractors and the craftsmen were separately asked to rank the performance scores of the incentive schemes on a Likert scale of 1 to 5. The scale was defined as follows; 1-very low performance, 2- low performance, 3-Average performance, 4- high performance and 5- very high performance. The preference of the contractors and their craftsmen were used to compute contractor's

incentive performance indices **KIPI** and craftsmen incentive performance indices **CIPI**. For the **KIPI** and **CIPI**, the total weight value for each incentive scheme is obtained by summing the product of the number of response for each rating to an incentive scheme and the respective weight value expressed as $\text{TWV}=\sum_{i=1}^{5} P_i V_i$

where **TWV** is the total weight value, P_i is the number of respondents rating an incentive i and V_i is the weight assigned to incentive i. The **KIPI** and **CIPI** for each incentive scheme is derived by dividing **TWV** by the total number of respondents (n).

$$\text{KIPI} / \text{CIPI} = \dfrac{\sum_{i=1}^{5} P_i V_i}{n}$$

The means of **KIPI** and **CIPI** were also computed. The deviation about the mean of each factor and the variance and standard deviation of the distribution were also calculated to measure the scatter about the mean. The coefficient of variation were calculated to measure the scatter in the data relative to the mean in percentages.

Table 1.0 : Contractor's Incentive Performance Indices (**KIPI**)

Incentive Scheme	Contractor's Performance Incentive Index **KIPI**	Rank	$\text{KIPI} - \overline{\text{KIPI}}$	$(\text{KIPI} - \overline{\text{KIPI}})^2$
Profit sharing	1.17	14th	-0.42	0.18
Day work	3.33	2nd	1.20	1.44
Piece work	1.16	15th	-0.97	0.94
Hour saved	2.08	8th	-0.05	0.003
Standard time	1.95	11th	-0.18	0.03
Geared system	0.56	18th	-1.55	2.40
Plus rate	1.88	13th	-0.25	0.06
Job and finish	3.21	3rd	1.08	1.17
Indirect scheme	0.88	16th	-1.25	1.56
Group Incentives	2.38	7th	0.25	0.06
Holiday with pay	3.13	4rth	1.00	1.00
Canteens	2.04	9th	-0.09	0.019
Sports facilities	0.67	17th	-1.46	2.13
Staff bus	1.92	12th	-0.21	0.04
Pension scheme	2.08	8th	-0.05	0.003
Training	2.00	10th	-0.13	0.02
Medical allowance	3.95	1st	1.82	3.31
Disability Insurance	2.63	6th	0.50	0.25
Free working tools	2.04	9th	-0.09	0.09
Relocation expense	2.88	5th	0.75	0.56

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

$$= \frac{15.26}{20}$$

$$= 0.76.$$

$$\text{Standard deviation } (SD) = \sqrt{variance}$$

$$= \sqrt{0.76}$$

$$= 0.87.$$

$$\text{Coefficient of variation} = \frac{SD}{\overline{KIPI}} \times 100$$

$$= 41\%.$$

III. Discussion of Results

The indices for incentive performance **KIPI** are presented in table 1.0. it is seen in the table that the highest **KIPI** is 3.95 and the lowest is 0.58. The incentive scheme with the highest **KIPI** and performance was medical allowance, while geared system had the lowest performance index. The average **KIPI** was 2.13.

Incentive schemes with **KIPI** higher than mean of **KIPI** were: day work scheme, job and finish scheme, Holiday with pay, Group Incentives, medical allowance, Disability insurance and relocation expense. Incentive schemes with **KIPI** lower than the mean of **KIPI** were profit sharing, piece work, hour saved, standard time, geared system, plus rate, indirect scheme, canteens, sport facilities, staff bus, pension scheme, training and free working tools. The highest and lowest deviations about the means were 1.82 and -1.55.

The implications of contractors' incentive performance indices **KIPI** are:

- None of the incentive schemes performed at the "very high impact" level because none scored up to 5.0.**KIPI**. The closest to the "high impact " level is medical allowance which scored 3.95 **KIPI**.
- Four of the incentive schemes, namely; medical allowance, daywork scheme, job and finish scheme and holiday with pay have **KIPI** that are between medium impact and high impact performance
- Eight incentive schemes, namely; freeworking tools, relocation expense, disability insurance, training, pension scheme, canteens, group incentives and hour saved scheme have performances that ranged between low impact and medium impact.
- All the remaining seven incentive schemes performed between zero impact and low impact levels.
- The non financial incentive schemes performed better than the financial incentive schemes.

Table 2.0 : Craftsmen Incentive Performance Indices (CIPI)

Incentive scheme	Craftsmen Incentive Performance index. CIPI	Rank	CIPI – $\overline{CIPI}$	(CIPI – $\overline{CIPI}$)^2
Profit sharing	0.60	13th	-1.75	3.06
Day work scheme	2.40	8th	0.05	0.00
Piece work	1.40	11th	-0.95	0.090
Hour saved scheme	0.60	13th	-1.75	3.06
Standard time	1.60	10th	-0.75	0.56
Geared system	0.40	14th	-1.95	3.80
Plus rate	2.80	7th	0.45	0.20
Job and finish	3.40	4th	1.05	1.10
Indirect scheme	2.60	7th	0.25	0.06
Group Incentive	2.00	9th	-0.35	0.12
Holiday with pay	2.00	9th	-0.35	0.12
Canteens	4.20	2nd	1.85	3.42
Sports facilities	0.80	12th	-1.55	2.40
Staff bus	1.60	10th	-0.75	0.56
Pension scheme	2.80	7th	0.45	0.20
Training	3.40	4th	1.05	1.10
Medical allowance	3.00	6th	0.65	0.42
Disability Insurance	4.40	1st	2.05	4.20
Free working tools	3.60	3rd	1.25	1.56
Relocation expense	3.40	4th	1.05	1.10
	47.00			27.94

$$\overline{CIPI} = \sum \frac{CIPI}{20} = 2.35$$

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

$$= \frac{27.94}{20}$$

$$= 1.39.$$

$$Standard\ deviation = \sqrt{variance}$$

$$= \sqrt{1.39} = 1.18$$

$$Coefficient\ of\ variation = \left\{ \frac{1.18}{2.35} x100 \right\}\%$$

$$= 50$$

Coefficient of variation = 50%.

Table 2.0 shows the craftsmen incentive performance indices (CIPI). The table shows that disability insurance has the highest index 4.40 while geared incentive has the lowest index 0.40. The average impact of all the incentives CIPI is 2.35. incentive schemes with CIPI higher than the mean were Day work scheme, plus rate, job and finish Indirect scheme, canteens, pension scheme, Training, medical allowance, disability insurance, free working tools and relocation expense. Incentive schemes with CIPI lower than the mean of CIPI are profit sharing, piece work scheme, hour saved, standard time. Geared scheme, group incentive, holiday with pay, sports facilities and staff bus. The highest and the lowest deviation around the mean are 2.05 and -1.95.

The scatter around the means of the two distributions KIPI and CIPI were large. This implied that the KIPI and CIPI values do not cluster around their means. The computed KIPI variance was 0.76 with a standard deviation of 0.87. The CIPI distribution recorded a variance of 1.39 and a standard deviation of 1.18. The coefficient of variation was 41percent and 50 percent for KIPI and CIPI respectively. The computation showed that the scatter of data relative to mean was higher in CIPI than KIPI. The ranges of the deviations of KIPI distribution was 3.37 (3.95 – 0.58) while that of CIPI was 4.00 (4.40 – 0.40).

The implications of craftsmen incentive performance indices CIPI were:

- According to the craftsmen none of the incentive schemes performed at the very high impact level because none scored up to 5.0CIPI. However two of the schemes, namely; disability insurance and canteens scored "high impact" performance of 4.4 and 4.2 CIPI respectively.
- Five of the incentive schemes, namely; job and finish scheme, training, medical allowance, free working tools and relocation expense have CIPI ranging between "medium impact" performance and "high impact" performance.
- Seven of the incentive schemes, namely; daywork scheme, plus rate ,indirect scheme, group incentives, holiday with pay and pension schemes performed between "low impact" and "medium impact" CIPI.
- The remaining six incentive schemes had CIPI that ranged between "zero impact" and "low impact".
- The non financial incentive schemes performed better than he financial incentives.

Table 3.0. : Grouping of the variables according to their deviation about the means of KIPI and CIPI.

Group	Incentive scheme	Deviation about mean of KIPI	% Deviation	Deviation about mean of CIPI	% Deviation
A	Group incentive	+0.25	+12	-0.35	-15
	Holiday with pay	+1.00	+47	-0.35	-15
B	plus rate	-0.25	-12	+0.45	19
	Indirect scheme	-1.25	-59	+0.25	11
	Canteens	-0.09	-4	+1.85	79
	Pension scheme	-0.05	-2	+0.45	19
	Training	-0.13	-6	+1.05	45
	Free working tools	-0.09	-4	+1.25	53
C	Day work scheme	+1.20	+56	+0.05	+2
	Job and finish	+1.08	+51	+1.05	+45
	Medical allowance	+1.82	+85	+0.65	+28
	Disability Insurance	+0.50	+23	+2.05	+87

	Relocation Expense	+0.75	+35	+1.05	+45
D	Profit sharing	-0.42	-20	-175	-74
	Piece work	-0.97	-46	-0.95	-40
	Hour saved	-0.05	-2	-1.75	-74
	Standard time	-0.18	-9	-0.75	-32
	Geared system	-1.55	-73	-1.95	-83
	Sports facilities	-1.46	-69	-1.55	-66
	Staff bus	-0.21	-10	-0.75	-32

IV. APPRAISAL OF THE VARIATIONS AROUND THE MEANS OF KIPI AND CIPI INDICES

The variations showed four categories of behaviors around the means of KIPI and CIPI. These four groups are presented in table 3.0:

Group A : These are incentive schemes with positive deviation about the mean of KIPI but with negative deviation about the mean of CIPI. These are incentive schemes considered to be high performing by contractors but low performing by the craftsmen. The Is are group incentives and Holiday with pay, their deviation about the mean of KIPI are 0.25 and 1.00 respectively and their deviation about the mean of CIPI are also -0.35 and -0.35. the contrast in the indices of the contractors and the craftsmen show the perceptions on the both sides. While the contractors believe these incentive schemes are performing well, their craftsmen do not share their views. The large positive deviation (47%) of the holiday with pay shows that the KIPI for this is stronger than the CIPI (15%).

Group B : These are incentive schemes with negative deviation about the mean of KIPI, but positive deviation about the mean of CIPI. These are iIS considered to be low performing by the contractors but high performing by the craftsmen. These incentive schemes are plus rate, Indirect scheme, canteens, pension scheme, Training and free working tools. The percentage deviation of canteens by the craftsmen (+79%) is the largest in this group, followed by free working tools (53%) and Training (45%). These high percentages show the high premium that craftsmen placed on canteens, free tools and Training against the opinion of the contractors on these incentive schemes. Though the negative deviation about the mean of the KIPI for canteen, free tools, training and pension suggest that the contractors scored these incentive schemes as low performing, but the percentage deviation of the incentive schemes about the mean is very small and close to the mean. They are 4%, 2%, 6% and 4% respectively. This suggests that though they are negative, they are almost on the mean and do not suggest that the contractors are avowed to such important incentive schemes such as training and pension scheme.

Group C : These are incentive schemes with positive deviation about the mean of KIPI and the mean of CIPI. These are incentive schemes considered to be high performing by both the contractors and the craftsmen. These incentive schemes are Day work scheme, job and finish, medical allowance, disability insurance and relocation expense. Convergence of the opinions of the contractors and craftsmen points to the importance of this list of incentive schemes and consequently the premium that management of construction firms should bestow them. In this group, medical allowance leads the pack with positive total CIPI and KIPI deviation of +113%. Followed by disability insurance (110%). Job and finish scheme and relocation expense have balance scoring by both the contractors and craftsmen 51% and 45% for job and finish and 35% and 45% for relocation expense. This balance scoring suggests that these two incentive schemes deserve the attention of management of construction firms because of the concordance exhibited by the contractors and craftsmen.

Group D : These are incentive schemes with negative deviation about the mean of KIPI and the mean of CIPI. These are incentive schemes considered to be low performing by the contractors and the craftsmen. These incentive schemes are profit sharing, piece work, hour saved, standard time, geared system, sports facilities and staff bus. The convergence of position of contractors and craftsmen in this case too suggest that these schemes are low performing and not so important. The population of this group is made up of more financial group of incentive schemes (5#) and two non financial incentive schemes. The lowest performing IS are geared system (-156%) and sports facilities (-136%).

V. CONCLUSION

The findings of this study showed that incentive schemes used in the construction industry in Nigeria are of wide variety and different compositions. These incentive schemes impact workers differently and thus perform the function of motivating workers differently. The high performing incentive schemes are day work scheme, job and finish scheme, medical allowance, disability insurance, and relocation expense. Though these are high performing, none of their performance rating was at "very high impact" level, the highest was at

"high impact level". The result also showed that there was consensus among the project managers and craftsmen that non financial incentives performed better than the financial incentives. Conversely, there was strong variance between them on the motivating strengths of group incentives, holiday with pay, plus rate and indirect schemes. This dissention requires harmonization for the purpose of optimizing the use of the incentive schemes.

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