Panacea for Improving Labour Performance

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Abstract
The management of daily labour productivity variability on site is an important aspect of lean construction management thinking. The lean technique suggests that reducing variability gives better labour performance. Therefore this paper examines the relationship between performance and variability in labour productivity data of block work activity from sixty one construction sites for single storey buildings in Abuja metropolis. The data used were collected from sixty one live projects within the study area. The daily method of data collection was adopted in this research. A total of 1127 data points were observed for all block work activities from the sampled sites. The analysis of the performance index (Project Waste index PWI) revealed that some the projects studied were poorly managed because the projects had low productivity rating. While few other projects performed well. The PWI values computed for the project studied ranged from 0.117 to 0.808. The values for coefficient of variation in labour productivity range from 0.108 to 0.443. These values and the performance indexes calculated for all projects were tested for correlation analysis. The coefficient of correlation for the two variables was found to be 0.630**, which is significant at 0.01 confidence level. The result showed that the variability in daily labour productivity is more highly correlated to project performance which means that reducing variability in labour productivity appears to have a significant effect on performance. Also the performance gap value for block work was found to be 0.374 man hrs/m^2. It was recommended that the site managers should determine to get more output with a reduction in labour input.
Keywords: Variability, Labour, Management, Performance, Productivity, Input, Output.

1. INTRODUCTION:

Construction is a labour exhaustive business, especially in developing countries such as Nigeria where the level of automation is low and labour is readily at hand. Labour is an important factor of production therefore labour productivity has been identified as an index for measuring efficiency because labour is acknowledged as the most important factor of production since it is one of the major factors that creates value and sets the general level of productivity (Ameh and Odusami, 2002). Enshassi *el al.* (2007) identified labour productivity as the key factor contributing to the inability of many indigenous construction contractors to achieve their project goals which include most importantly, the profit margin amongst others. They suggested the need to investigate and understand the key variables of labour productivity and to keep accurate records of productivity levels across projects. In this research work, with the application the lean technique concept, labour productivity data was obtained from concrete activity on a number of projects sites to test relationships between output variability and performance.

A survey of the literature revealed several primary contributions to the theory and practice of lean production principles. Some of the research works provided support for this study. In construction the application of lean production model stems from the discussion of research work Koskela (1992), which emphasized the importance of the production processes flow, as well as aspects related to converting inputs into finished products as an important element to the creation of value over the life of the project. Many other researchers namely Ballard and Howell, (1998); Alarcon and Calderon (2003); Bertelsen (2004) and Salem *et al.* (2005) have expanded this concept and provided evidence of it applicability in the construction industry. The pioneering work of koskela (1992) opened up streams of researches into lean construction principles. The core lean concepts were identified and translated from the manufacturing production management into construction language (Shingo, 1984; Koskela, 1992, 1993; Ballard and Howell, 1994a). To operate these core concepts in the construction industry a new set of management techniques were developed (Paez *el al.*, 2005). The last planner system of production control was introduced in 1992 but developed by Ballard and Howell (1994b). In the application of these tools, previous researches revealed substantial improvement in productivity for those who improved plan reliability to the 70% level, Howell and Ballard (1994) in their study on the last planner technique showed that the use of formal and flexible production planning procedures is the first step to keep the production environment stable. The technique emphasizes the use of daily production plans, constrains analyses, Lock ahead and percentage of planned and completed items. Thomas *et al.* (2002) asserted that, with the last planning technique, the percentage of planned tasks (PPC) is measured to show changes in planning reliability. However, they argued the extent to which a larger PPC improves project performance. According to them, there is limited evidence showing that productivity performance for crews with a PPC above 50% is 35% better than that of crews with a PPC below 50%. This still remains unclear. Also while these techniques have proven useful, El Mashaleh *et al.* (2001) believed that their application has no methodology that could relate the activity and project level accomplishment to firm's accomplishment.

Abdel – Razek *et al.* (2007) suggested that better labour and cost performance can be achieved by reducing variability and measuring benchmarking. However, all the previous studies on benchmarking were done on non homogenous projects (Thomas and Zavrski 1999; Abdel – Razek *et al.*, 2007; Enshassi *et al.*, 2007). Thomas and Zavrski (1999a) and (1999b) developed the framework for international labour productivity benchmarks of selected construction activities.

The application of these benchmarks can lead to evaluating the labour productivity and identifying the best and worst performing projects. Therefore, from these series of inferences it could be said that the exploration of improving construction labour performance in Nigeria by applying some lean construction principles, namely benchmarking and reducing variability is a possibility. Therefore this paper covers review of related works, method of data collection, determination of research variables, analysis of data and discussion, research findings and conclusion.

2. RESEARCH METHODS

2.1 Collection of Data

The data collection for on-site productivity study was conducted on blockwork activity. The research procedures involved the engagement of ten research assistants, who were trained on how to observe the workmen and record observations in terms of input and output. Data collection covers concreting work in 61 live projects from building contractors within the study area (Abuja). Daily visit method of observation of labour productivity was adopted throughout the study. This involved personal observation of labour activities on the selected work on live projects. The strategy here was to visit the site daily and interact with the foreman and workers in order to record the dates, number of workers, starting time, closing time and measurement of length/breadth of work done (quantities) of each worker. Entries were made on research instrument collection sheet designed for this purpose. The figures collected were analysed using lean benchmarking approach of calculating performance using Thomas *et al* (1990) mathematical model.

2.2 Determination of Research Variables

Thomas and Zavrski (1999a), 1999b) expressed the projects attributes in the following forms.

$$\textit{Total work hours} = \sum \textit{Daily work hours} \qquad (1.1)$$

$$\textit{Total quantities} = \sum \textit{Daily quantities} \qquad (1.2)$$

$$\textit{Cumulative Productivity} = \frac{\textit{Total work done (whr)}}{\textit{Total quantity } (m^2)} \qquad (1.3)$$

Definition of Baseline Productivity: This is defined as the paramount performance a contractor can get from a particular model or design. To compute the baseline productivity values certain laid down steps were applied to the daily productivity figures for each project (Abel Hamid *et al.*, 2004 and Enshassi *et al.*, 2007).Establish the figures for workdays that consist 10% of the workdays studied.

1. The number established in one above should be rounded off to the next highest odd number which should not be less than (5) five. This number, n, explains the size of the baseline division.
2. The contents of the baseline division are the n workdays that have the highest daily production or output.
3. The next step is to compute the summation of the work hours and quantities for these n workdays
4. The baseline productivity can now be expressed as the ratio of work hours and the quantities contained in the baseline division.

Project Management index (PMI) or Project Waste Index (PWI) According to Abdel-Hamid *et al.* (2004); Thomas and Zavrski, (1999a), 1999b) it is expressed as follows:

$$\textit{Project Waste Index (PWI)} = \frac{\textit{Cumulative Productivity-Baseline Productivity}}{\textit{Expected Baseline Productivity}} \qquad (1.4)$$

Project Waste Index (PWI) has been identified in previous studies as a useful tool to measure performance (Thomas and Zavrski 1998, 1999).

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$$\textit{Coefficient of productivity variation (CPV)}_j = \frac{PV_j \times 100}{(\textit{Baseline Productivity}_j)} \quad (1.5)$$

Where CPV_j = coefficient of productivity variation for $project_j$. Alternatively it can be computed as a ratio of the standard deviation to the mean.

2.3 Population of the Study and Sampling Technique

The population of the study was drawn from contractors handling building projects in the study area. The builders were involved in different types of construction activities such as mass housing projects of bungalow category, storey building housing projects and infrastructures. In order to meet the objectives of the study, the research samples were drawn from contractors constructing single storey buildings for the purpose of homogeneity. The research team was able to collect data from sixty one (61) construction sites, randomly drawn from the available list of builders. A total of 1127 data points were obtained for all block work activities from these sites. At the time of data gathering, it was observed that most of the firms were executing projects at various levels of completion.

2.3 Data Analysis and Evaluation was conducted using the following statistical tools: 1. Descriptive Statistics 2. Inferential Statistics Normality test 3. Mathematical Model by Thomas *et al* (1990; 1991)

3. ANALYSIS AND DISCUSSION OF RESULTS

3.1 Normality Test for Productivity Data for Block Laying

The test for normality of labour productivity data was found to be slightly normally distributed. The normal probability plot of labour productivity data for block laying used for the study is shown in Figure 1. A sample size of 518 was earlier tested and computed to be adequate but a data set of 1127 was used for the study. The purpose for large data set gathering was for accuracy. The mean of the sample was found to be 1.19 whr /m^2 and the median was determined to be 1.09 whr /m^2. It was observed that the mean of the estimate was higher than the median. This indicates that the frequency distribution is not symmetrical. An observation of the line of fit graph in Figure 4.2 does not show any clear fit to the normal distribution. It is a skewed distribution. The analysis further indicates that the distribution is positively skewed having a skewness value of 0.425 and standard deviation of 0.419.

The distribution of the sampled variable was insignificantly normal in distribution (Figure 1), while the measure of variability was determined from the normal probability statistics computed. The range was found to be 2.214 which is the difference between the highest and the lowest scores in the distribution. The coefficient of variation for all the projects investigated for block work, which is the measure of the standard deviation and the mean, was calculated as 35.21%.

The labour productivity values gotten were used to compute the cumulative productivity. The cumulative productivity is a measure of the overall effort required to accomplish a task. It is a major component in assessing crew performance from project management index perspective. Statistical analysis of data showed that the mean and standard deviation of cumulative productivity were found to be 1.10 whr / m^2 and of 0.207 respectively.

3.2 Variability in Daily Labour Productivity for Block Work Activities

Figure 2 shows the variability in daily labour productivity of block laying activity for project 33 which provides a measure of levels of capacity flexibility. It was computed for each of the projects examined. It was determined from input (the number of man hours) to output (the quantities produced) relationship. The coefficients of variability in labour productivity for all studied project are shown in appendix 1. The computed values of coefficient of variation for block work trade range from 0.108 its 0.443. This is the product of the standard deviation divided by the mean of the estimate.

The Table 1 illustrates the days for observing masonry work activities, the gang size, work hours, daily quantity, daily labour productivity, baseline days and abnormal days. These attributes were calculated using the benchmarking procedures as described previously in equations 1.1 to 1.5.

The block laying task monitored for project 33 was done for nineteen days. The total team size employed to construct 881 square metres of block work was 126 work men with a total work hours of 1008hrs. This indicates that the construction firm used one site worker to achieve approximately 6.992m^2 of block work. The daily productivities ranged from 0.427 to 2.00whr/m^2. The block laying work has a cumulative productivity of 1.144whr/m^2.This indicates that labour input was low since the cumulative productivity is greater than unity. Days' 2, 5, 10, 11 and 14 were identified as baseline days. These are the highest productivity scores that were considered to define the baseline subset and the average of these five figures (0.516, 0.496, 0.478, 0.508 and 0.427whr/m^2) represents the baseline productivity or benchmark for the project which is calculated to be 0.485whr/m^2. The block laying task for this project witnessed two abnormal days.

The project waste index which provides a measure of labour performance was found to be 0.808 which is the worst project waste index (pwi) of all projects investigated. This index facilitates the comparison of labour performance to a baseline criterion. The higher the pwi figure the poorer the labour performance. An examination of Figure 2 showed some level of gap between daily labour productivities and the baseline productivity which was found to be 42.10% coefficient of variation. This level of variation shows ample room for improvement. The closer the values of daily labour productivity to the baseline productivity the better the labour performance, this is evidenced with project 49 in Figure 3. The baseline productivity for the project was computed to be 0.688whr/m^2.

Also it was observed that the gap between the daily productivities and the baseline productivity provided a coefficient of variation of 10.8% which produced a better labour performance (pwi) of 0.117. This supports the lean theory of improving performance by reducing variability in labour productivity.

3.3 Performance Improvement Gap

The normal distribution graph in Figure 4 defines the productivity variability which provides opportunity for improvement. The target performance (TP) improvement gap, which is as a result of variability is measured by determining the difference between expected mean productivity (EMP) which is represented by the mean baseline productivity and present mean productivity (PMP).

$$TP = EMP - PMP \qquad (1.6)$$

The larger the disparity between PMP and EMP the bigger the value of the TP. This means a wider space of labour performance improvement opportunity. The performance improvement gap value for block laying activity was found to be 0.374 man hrs/m^2. The process performance improvement can be achieved by adjusting the group of variables that mainly influence the performance indicator. Therefore reducing this performance gap value could mean a significant improvement in performance, profit and productivity for builders and contractors.

The assessment of variability is achieved by measuring the variations in daily labour productivity rates over the period of the projects. This assessment has been carried out in this research work. Considering the results of individual projects for all 61 sites (Table 1) for all the selected site activities investigated, it was observed that the analysis demonstrated various degrees of variability in daily labour productivity.

The mean variability for the site activity under review namely block laying was found to be 35.21%. This result competes favourably with that of previous study which was discovered to be 34%, block laying. Although the result for concrete exhibited large disparity in variability compared to block laying activity from the previous research, it was judged that the data range used for concrete activity was too wide. Which is the difference between the minimum and maximum values of data. This to a large extent affected the level of variability.

The level of variations in daily productivities of all site activities examined showed ample rooms for labour performance improvement. This means that the extent of gaps between the daily productivities and the baseline productivity were dependent on the level of the coefficient of variability. It was also found out that the closer the values of daily labour productivity to the baseline productivity the better the labour performance this is evidenced with some of the projects that performed well which have low pwi values. This implies that reducing variability improves labour performance. This supports the lean theory of improving performance by reducing variability in labour productivity. The following important observations are hence note worthy.

(1) Correlation result shows that there are strong associations between dependent variables project waste index (performance) and coefficient of variability for labour productivity which is the independent variables. The analysis yielded R value of 0.630**; Therefore, the independent variable is thus found to be significant predictor of performance of site labour crew for the activity investigated.

(2) It was found that 42.10% variation in crew performance in block laying is accounted for by variability in labour productivity.

(3) Labour productivity gap which was measured by the differential in expected mean productivity and the present mean productivity for block activity was found to 0.374 man hrs/m^2.

4. CONCLUSION AND RECOMMENDATIONS

It has been discovered in this research work that variability exist in daily labour productivity of cement based works on site in Nigeria to such a magnitude that is consistent with the findings of previous researchers. This work investigated the effects of labour productivity variability on the job site performance. Using labour productivity data from block laying, various parameters of output and input variability were tested against construction performance. Data gathered from the sampled sites activity namely block laying, was slightly skewed positively. All values of skewness were greater than zero but less than one. This showed the level of reliability of data used in the analysis.

The correlation between labour productivity and performance was discovered to be highly significant for all selected site activities therefore it is suggested that in measuring the impacts of variability on performance, emphasis should be placed on labour productivity variability instead of work flow or construction output variability. The values of variability in labour productivity were compared with the project performance (PWI) it was found out that the higher the values of labour productivity variability the poorer the performance. Also the baseline productivities computed for all selected activities were compared with the mean labour productivities. It was discovered that performance gap exists for the activity investigated. This is an indication of opportunity for performance improvement in labour utilization for all site activities investigated. The present productivity distribution was higher than the expected productivity distribution, this represents a gap in performance. The variability level on jobsite performance was determined for the work activity. The level was established to be 44% block laying. This suggests that reducing variability will bring about improvement in labour performance. From the foregone discussion, the following recommendations can, therefore be made:

1 The correlation between labour productivity and performance was discovered to be highly significant for all selected site activity therefore it is suggested that labour productivity variability be used to measure the impacts of variability on performance.

2 The variations in crew performance in all activities investigated were found to be as a result of variations in labour productivity. Consequently the following suggestions are made:

  i. Where there is growth and the output increases faster than input; the increase in input should be fairly proportionately less than the increase in output throughout the period of operation.
  ii. If labour input must be kept stable to increase output incentives, plan must be in place.
  iii. Determine to get more output with a reduction in input.
  iv. For greater efficiency maintain same output with fewer inputs to reduce output variability.
  v. Where Output decreases, the decrease in input should be proportionately greater than the decrease in output.

3 It is recommended that site managers should close up performance gaps in project execution by reducing the disparity in values between baseline productivity and the mean labour productivity for the project.

References

Abdel-Razek, H.A., Hany, A.M. and Mohammed, A. (2007). Labour Productivity: Benchmarking and Variability in Egyptian Projects. *International Journal of Project Management*, 25, 189 – 197.

Alarcon, L.F. and Calderon, R. (2003). Implementing Lean Production Strategies in Construction Companies. *Journal of Construction Research*, ASCE.

Ameh, O.J. and Odusami, K.T. (2002). Factors Affecting Labour Productivity in the Nigeria Construction Industry – A case study of indigenous contracting organization in Lagos: *Journal of Nigeria Institute of Quantity Surveyors*. Vol. 40 pp. 14 – 18.

Ballard, H. G. and Howell, G. (1994a). Implementing Lean Construction: Improving Downstream Performance. *Proceedings of the Second Annual Conference of the IGLC,* Santiago, Chile.

Ballard, H. G., and Howell, G. (1994b). Implementing Lean Construction: Stabilizing work Flow. *Proceedings, 2nd Annual Conference of International Group for Lean Construction (IGLC),* Santiago, Chile.

Ballard, H.G. and Howell, G. (1998). Shielding Production: An Essential Step in Production Control. *Journal of Construction Engineering and Management*, ASCE, Vol. 124, No. 1, pp. 11-17

Bertelsen, S. (2004). Lean Construction: where are we and how to proceed? *Lean Construction Journal* vol. 1(1) 46-69.

El Mashaleh, M., O'Brien, W. J. and London, K. (2001). Envelopment methodology to measure and compare subcontractor productivity at firm level, *Proceedings of the 9th Annual Conference of International Group for Lean Construction (IGLC), National University of Singapore, Singapore.*

Enshassi, A., Mohammed, S., Mayer, P., and Abed, K. (2007). Bench marking Masonry Labour Productivity, *International Journal of Productivity and Performance Management* .Vol. 56(4) 358 – 368.

Koskela, K. (1992). *Application of the New Production Philosophy to Construction*. CIFE Tech. Rep. No 72, Center for integrated facility Engineering, Stanford Univ. Stanford, LA., 4-50.

Koskela, L. (1993). Lean production in construction in L.F.A. Larcon, ed. Lean construction. Rotterdam: A.A Balkema, 1-9.

Paez, O., Salem, S., Solomon, J. and Geneidy, A. (2005). Moving from Lean Manufacturing to Lean Construction: Toward a common socio technological frame work: Human factors and Ergonomics in Manufacturing; 15 (2), 233-245.

Ross, D., Buchan, F. W., Eric, F. and Fiona, E. R. (2007) *Estimating for Builders and Surveyors*. 2nd Edition. Publisher Butterworth Heinemann, Oxford.

Salem, O., Solomon, J., Genaidy, A., and Luegring, M. (2005). Site Implementation and Assessment of Lean Construction Techniques. *Lean Construction Journal* . Vol. 2 (2)

Shingo, S. (1984). Study of 'TOYOTA' Production System. Tokyo: Japan management Association.

Thomas, H.R. and Zavrski, I. (1999a). Theoretical Model for International Benchmarking of Labour Productivity. Tech. Rep. No. 9913, Pennsylvania Transportation Institute, University Park, PA.

Thomas, H.R. and Zavrski, I. (1999 b). Construction Baseline Productivity: Theory and Practice Journal of Construction Engineering and management. ASCE, Vol. 125, (5)

Thomas, H.R, Horman, M.J, Lemes de Souza, U.E, and Zavrski, I. (2002). Benchmarking of Labour – Intensive Construction Activities: Lean construction and fundamental principles of workforce management. Tech.

Rep., Pennsylvania Transportation Institute, University Park, PA.

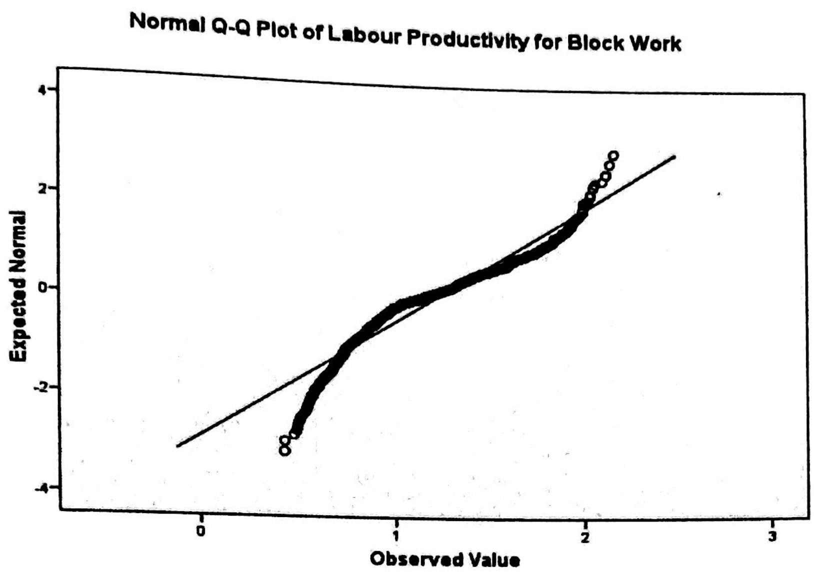

Fig 1 Line of Fit Probability Plot of Labour Productivity Data for Block laying

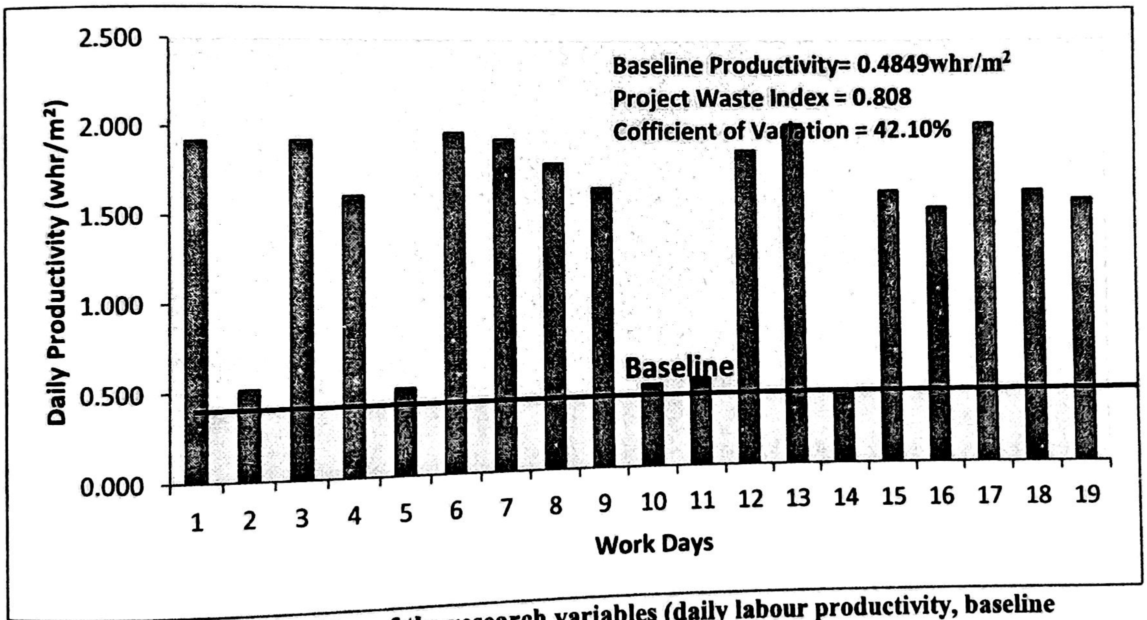

Figure 2 Relationships of the research variables (daily labour productivity, baseline productivity and performance Project 33)

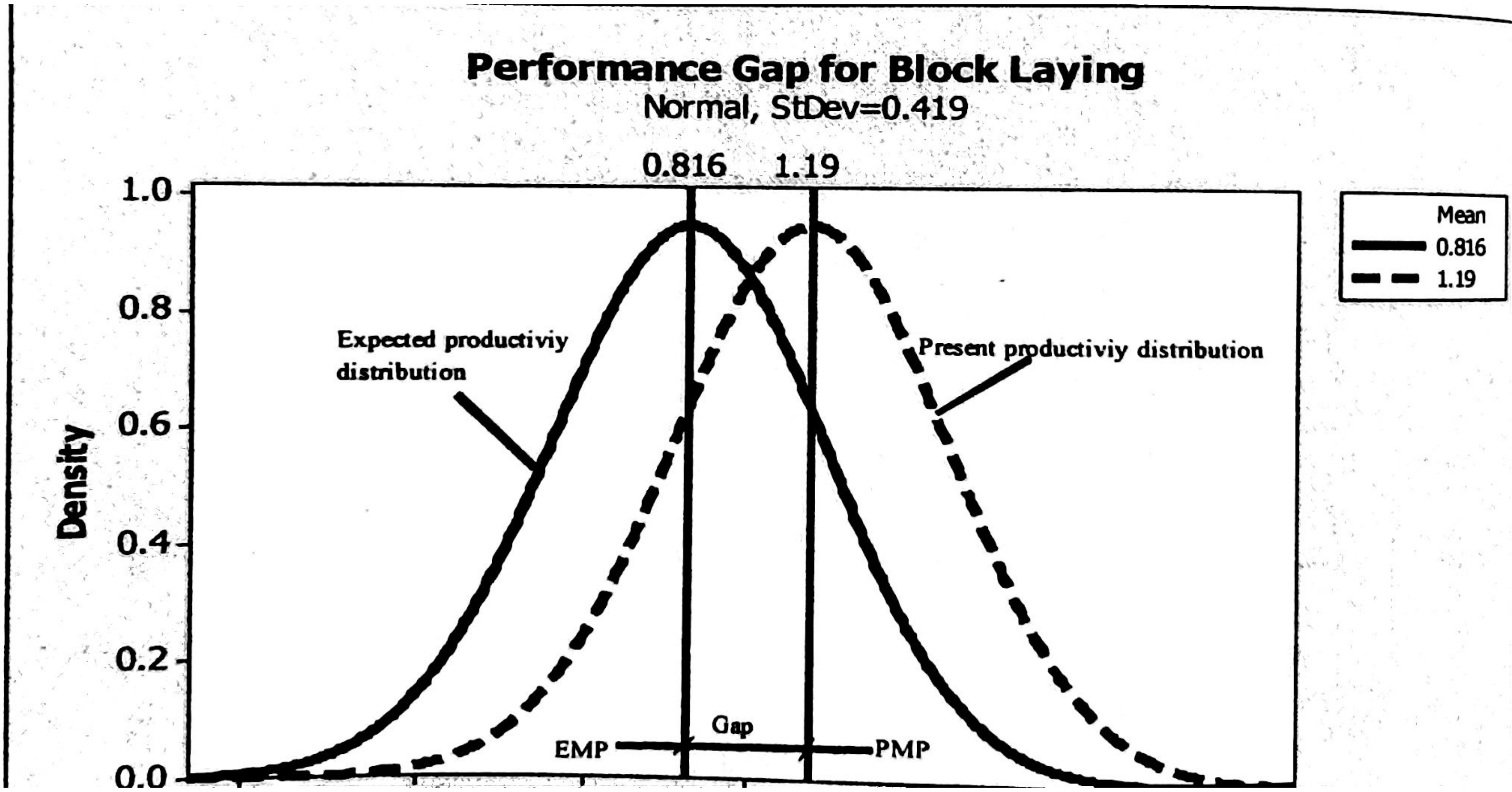
Performance Gap for Block Laying
Normal, StDev=0.419
0.816
1.19
Mean
0.816
1.19
Density
1.0
0.8
0.6
0.4
0.2
0.0
Expected productiviy distribution
Present productiviy distribution
Gap
EMP
PMP

Table 1 Computation of Research Variables

S/N	Project code number	Coefficient of Variation Qty	Coefficient of Variation LP	Average daily output m³	Cumulative Productivity whr/m³	Baseline Productivity	Project waste index
1	Project 1	0.729	0.344	88.188	1.056	0.805	0.308
2	Project 2	0.434	0.342	129.765	0.693	0.571	0.149
3	Project 3	0.709	0.354	51.053	0.964	0.729	0.288
4	Project 4	0.903	0.375	89.625	1.031	0.671	0.441
5	Project 5	0.461	0.381	59.292	1.125	0.764	0.442
6	Project 6	0.616	0.299	60.572	1.458	0.936	0.640
7	Project 7	0.544	0.342	84.250	1.243	0.802	0.540
8	Project 8	0.267	0.304	61.200	1.452	0.896	0.683
9	Project 9	0.425	0.246	25.316	1.347	0.940	0.500
10	Project 10	0.477	0.328	99.600	1.217	0.840	0.462
11	Project 11	0.842	0.323	66.067	1.165	0.794	0.454
12	Project 12	0.472	0.204	85.053	1.084	0.799	0.349
13	Project 13	0.576	0.242	91.300	1.066	0.723	0.420
14	Project 14	0.363	0.254	59.706	1.181	0.918	0.323
15	Project 15	0.223	0.311	55.842	1.205	0.795	0.502
16	Project 16	0.845	0.371	64.857	1.067	0.750	0.388
17	Project 17	0.451	0.248	42.900	1.063	0.727	0.413
18	Project 18	0.755	0.436	41.417	0.999	0.728	0.332
19	Project 19	0.876	0.336	70.167	1.023	0.691	0.408
20	Project 20	0.973	0.235	70.412	1.276	1.046	0.282
21	Project 21	0.033	0.123	76.850	1.005	0.863	0.174
22	Project 22	0.372	0.202	66.692	1.588	1.323	0.325
23	Project 23	0.354	0.259	79.214	1.335	1.129	0.252
24	Project 24	0.482	0.442	61.350	1.055	0.775	0.343
25	Project 25	0.315	0.246	78.263	1.314	0.854	0.564
26	Project 26	0.579	0.251	78.650	1.010	0.806	0.250
27	Project 27	0.726	0.307	75.167	1.142	0.855	0.352
28	Project 28	0.418	0.149	66.421	1.566	1.352	0.263
29	Project 29	0.576	0.431	80.550	1.011	0.652	0.439
30	Project 30	0.421	0.137	81.400	0.597	0.491	0.130
31	Project 31	0.377	0.139	48.579	1.049	0.892	0.192
32	Project 32	0.303	0.112	81.895	0.999	0.884	0.141
33	Project 33	0.684	0.421	46.421	1.144	0.485	0.808
34	Project 34	0.397	0.229	42.350	1.152	0.846	0.376
35	Project 35	0.300	0.158	70.737	1.108	0.925	0.224
36	Project 36	0.341	0.342	130.905	1.220	0.839	0.467
37	Project 37	0.605	0.193	61.950	1.421	1.179	0.298
38	Project 38	0.495	0.244	49.789	1.355	0.940	0.510
39	Project 39	0.417	0.289	89.100	1.283	0.841	0.542
40	Project 40	0.401	0.203	69.571	1.098	0.915	0.224
41	Project 41	0.502	0.261	79.765	1.142	0.966	0.216
42	Project 42	0.314	0.139	98.000	1.095	0.891	0.250
43	Project 43	0.375	0.157	120.650	0.774	0.632	0.174
44	Project 44	0.404	0.112	115.952	0.844	0.735	0.134
45	Project 45	0.249	0.114	117.750	0.860	0.716	0.177
46	Project 46	0.503	0.361	96.550	1.131	0.802	0.403
47	Project 47	0.468	0.391	79.750	1.024	0.723	0.369
48	Project 48	0.474	0.443	58.350	0.972	0.678	0.361
49	Project 49	0.253	0.108	108.100	0.783	0.688	0.117
50	Project 50	0.471	0.383	55.900	1.146	0.770	0.461
51	Project 51	0.266	0.109	100.952	0.816	0.702	0.140
52	Project 52	0.554	0.375	66.895	1.122	0.742	0.466
53	Project 53	0.483	0.149	65.905	0.931	0.771	0.196
54	Project 54	0.295	0.112	45.143	1.268	1.073	0.240
55	Project 55	0.464	0.187	52.727	1.025	0.930	0.117
56	Project 56	0.488	0.210	66.400	1.298	0.908	0.478
57	Project 57	0.462	0.443	106.286	1.145	0.635	0.625
58	Project 58	0.360	0.174	98.381	0.762	0.629	0.162
59	Project 59	0.412	0.199	136.550	0.736	0.622	0.139
60	Project 60	0.540	0.348	26.389	0.958	0.694	0.324
61	Project 61	0.442	0.268	96.600	0.812	0.686	0.155