

Asian versus Current Labor for the Construction Industry in Jordan: A Comparative View

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ABSTRACT

This study aimed at establishing a comparative study between the cost of “Asian” labor and “current” labor working in Jordan to determine the most economical alternative for construction projects in Jordan. Current labor consisted of Jordanian, Egyptian, Syrian, in addition to other nationalities. The monthly rates for the current labors were gathered from medium size construction contractors in Jordan, while the monthly rates for the Asian labors were gathered from similar construction firms based in Saudi Arabia employing Asian labor in their construction projects. Primavera Project Planner (P3) was used to generate baseline schedules. Economical comparison was done using incremental analysis. In conclusion, the cost difference between the two named labors is biased toward the Asian Labor, especially when it comes to skilled labor. However, other considerations should be taken since financial saving should not be solely considered.

KEYWORDS: Construction industry, contractors, labor cost, Asia, Jordan, and Saudi Arabia.

1. INTRODUCTION

In the construction industry, cost is the dominant criterion that provides the contractor with a competitive edge, since most of the construction projects are awarded to the lowest bidder. Consequently, a smart contractor has to look for the best alternative that decreases his costs, and increases his profits. Additionally, the contractor has to be aware of financial planning and cost estimation techniques and principles. Financial planning for any construction project includes cost estimation prior to bidding, forecasting the project’s incomes and expenditures (cash flow) and determining the amount of work that the company can safely take at one time. Cost estimation for a project involves estimating the total cost to carry out a construction project in accordance with the drawings and the specifications, including the cost of labor, equipment, materials, subcontracts and services, indirect costs and finally the general overhead costs. These are the main components of the contractor’s cash

flow; reflecting expenditures and incomes during the project life. Most likely, the owner will withhold payments according to the actual progress, and not according to the contractor’s expectations, additionally; such payments are not received until after the end of each accounting period. Therefore, the project income will almost always lag behind the project expenditures, such difference must be covered from the company assets or by borrowed funds, in most cases, the contractor depends on borrowed funds to cover his expenditures. Hence, it’s highly important to have good financial planning during the Project Life Cycle (PLC); Whereas cash flow can be generated manually from any project schedule, or from commonly used methods that facilitate preparation of the financial schedule, such as critical path schedule. This makes it easy to determine the effect on CF when changes are taking place on the work schedule; it also shows the difference between Early Start (ES) and Late Start (LS) cash flows. Since labor is the most important production player in the construction process, as they run the equipment and put materials into place, it is extremely important to understand the labor markets, and be aware of the ranges of the labor rates, in order to be able to control cost and to reduce it as much as possible.

The study aimed at analyzing rates gathered from

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both Jordan to represent “current” labor, and Saudi Arabia to represent “Asian” labor. Current labor consisted of Jordanian, Egyptian, Syrian, in addition to other nationalities. Rates were gathered for the same year to reduce the effect of inflation or the obsolescence; all wages were converted to US dollars for future comparison with universal rates. A comparative evaluation between the skilled and unskilled cost of Asian and current labor to determine if the decision to use Asian workforce is economically sound for the Jordanian construction industry was carried out. Since politics is outside the scope of the study, political and social reasons and justifications are not being discussed.

2. Importance of the Study

Since labor plays a very important role in construction projects and labor costs highly affect the total project costs, it is highly important to explore methods and ways to reduce labor costs whenever possible in order to reduce the project’s total costs and be able to better compete in the construction market.

According to the Ministry of Labor (MOL) annual report (2003), the total number of non-Jordanian workers in Jordan was 127,181, see Table (1), of which 19,904 are working in the construction sector, see Table (2). Hence, it is obvious that Egyptian labor is the major contributor to the construction sector with 94.5%. On the other hand, Asian labor contributed by only 0.51%, which can be considered minimal contribution.

Moreover, the annual report revealed that of those non-Jordanian who are working in construction sector 0.34% were professionals and technicians, with 98% unskilled and production workers, see Table (3). Hence, Current labor in the Jordanian construction industry consists of several nationalities; Egyptian, Syrian, Iraqi, Asian and others. In addition, most of the professionals and technicians are Jordanian, while unskilled labor was mixed with major percentage of unskilled Egyptian labor, which indicates that Jordan suffers a shortage in unskilled labor. One main reason of this shortage is that most Jordanians decline to work as laborers in the construction sector; moreover, current labor rates are not very attractive for Jordanians.

3. Literature Review

Several researchers addressed the issue of labor,

skills, productivity and cost at different sectors in general, and in the construction sector in particular. Downey (1995) discussed the aspects of risk that must be managed with the use of contingent workers and methods of controlling these exposures to ensure the continued viability of the firm. He stated that each decision to outsource must be carefully reviewed from a risk and benefit perspective. He mentioned the financial advantages to outsourcing such as the reduction of capital investment in plant and equipment, the reduction of expenses. He also stated that human resource advantages included the ability to staff flexibly in order to meet volume demands, the use of temporary workers as the training or screening ground for new hiring the transferal of administrative and human resource functions, including the reduction of training needs, and access to professional expertise. On the other hand, Castley (1996) presented a sartorial approach to the assessment of skill needs and training requirements. He stated that manpower plans require immense data inputs, concentrating on quantitative rather than qualitative measures, assuming unchanged labor productivity rates and a unique education-occupation linkage, producing long-term forecasts which bear little relationship to reality and fail to determine the causes of skill shortage, ignoring the costs of education and training and also the different modes of training. Thomas (2000) suggested that there is more than one way to measure workers productivity in the construction industry as productivity is measured as the work output per unit time. The quantity-completed method of measuring workers productively was used. It is a simple and easy method where the workers productivity is measured in terms of the amount of work in measurable units such as cubic meters, meters long or square meters. From a scheduling point of view it has been found that scheduling of manpower according to type (skilled or unskilled), or according to trade, in addition to the optimization whether based on cash flow analysis, or time scale for finishing the project, is a research area attracting many researchers. According to Hegazy (2000) many techniques are used to perform the scheduling task but most of these techniques assume single-skilled resources and use heuristic rules to decide which activity will receive the resource first and which ones to delay. El-Ehwany and Metwally (2001) analyzed the structure of the Egyptian labor market and identified the economic, regulatory and institutional factors and mechanisms that

determine its competitiveness in terms of both labor productivity and unit labor cost. It also considered issues related to labor market flexibility and labor market reforms.

4. Methodology

Thusen and Fabrycky (2001) stated that cash flow analysis and diagrams represent the free body diagram of all receipts and disbursements and project them on a time line to assist in calculating their value at different points in time. This should help contractors better understand the value of money they are spending or receiving at different times. Hence, average cash flows of thirty medium size construction projects were randomly selected in Jordan and Saudi Arabia to determine the average value of monthly costs. In addition, monthly rates for current labors were gathered. Jordanian construction contractors provided the current rates, while the monthly rates for Asian labors were gathered from similar size construction firms based in Saudi Arabia, since the gulf region mainly uses Asian labor in its construction projects. Rates were gathered for the same year to reduce the effect of inflation or the obsolescence of rates; all wages were converted to hourly rates in US dollars for future comparison with the universal rates. A baseline time schedule was prepared using Primavera Project Planner (P3) software and those hourly rates were assigned into P3 schedules per activity, one for the Asian labor and another for current labor. ES and LS cash flows for different monthly were generated using P3 software for each type of labor. Economic comparison was conducted between the two different types of labor using incremental analysis. The annual worth, present worth and the future worth were calculated using 9% annually as interest rate in the Jordanian market.

To explore the effect on the financial savings for the skilled and unskilled labor types, each was analyzed separately. Table (4) shows the average monthly cost difference between current and Asian skilled labor, the difference in cost is biased toward the Asian labor.

Figure (1) depicts the S-curves for both current and Asian skilled labor over the PLC, the variance becomes larger as the project advances in life.

Table (5) shows the incremental analysis between current and Asian skilled labor costs, which gives a present worth total variance of \$ 23,662.52 without the time value of money and a present worth total variance of

\$ 12,696.61 with a 9% interest rate. Hence, employment of Asian labor is feasible over the current status.

Table (6) shows the total monthly and cumulative costs for unskilled labor. Moreover, Table (7) shows the incremental analysis between current and Asian unskilled labor costs. Analysis gives a present worth total variances of \$ 2,738.69, respectively, without the time value of money and a present worth total variance of \$ 1,538.74 at 9% interest rate. Again, the financial saving is biased toward the Asian labor but with a smaller margin. Hence, employment of Asian labor is feasible over current status, especially when it comes to skilled labor.

Figure (2) depicts the S-curves for both current and Asian unskilled labor over the PLC, the variance becomes larger as the project advances in life, however, the total variance is less than that for the skilled labor.

5. CONCLUSIONS

A comparative study between the cost of Asian labor and current labor working in Jordan to determine the most economical alternative for construction projects in Jordan was conducted. Current Jordanian labor consisted of labor from Jordan, Egypt, Syria, in addition to other nationalities. The monthly rates for the current labors were gathered from medium size construction contractors in Jordan, while the monthly rates for the Asian labors were gathered from similar construction firms based in Saudi Arabia employing Asian labor in their construction projects.

Analysis demonstrated that the cost of Asian labor is less than current labor for both skilled and unskilled labor types, regardless of the time value of money. In fact, even if the time value of money is considered, the result will not differ, and the cost variance is still valid. Hence, employment of Asian labor is feasible over current status in Jordan, especially when it comes to skilled labor. Some exceptions exist when it comes to highly skilled labor and technicians as very high labor rates prevail regardless of the nationality of the labor.

Even though economic analysis showed a challenge to reduce the cost of labor in the construction sector, one cannot decide to shift to Asian labor without evaluating other variables such as; project risks, cost of accommodation, traveling, and working permits for Asian labor. In addition, communication is important for project success, as most Asian labors might not be able to communicate freely either in English nor Arabic, which might be a problem. Such difficulties may constitute major

reasons for slow work progress, in addition to the high probability of errors and mistakes, which is in most cases translated into additional costs. Further research is required

before reaching the final decision to replace Current labor or not, which might be dependent upon the project's specifics.

Table (1): Distribution of non-Jordanian workers by nationality.

Nationality	Number of Labors	Percentage
Egypt	97,178	76.41
Syria	2,607	2.05
Other Arab countries	2,760	2.17
Asian Countries (Non Arabs)	23,914	18.80
Europe Countries	468	0.37
U.S.A.	89	0.07
African Countries (Non Arabs)	108	0.085
Other Countries	57	0.045
Total	127,181	100.00

Table (2): Distribution of non-Jordanian workers by nationality in construction sector in Jordan.

Nationality	Number of Labors	Percentage
Egypt	18,809	94.50
Syria	848	4.26
Other Arab countries	82	0.41
Asian Countries (Non Arabs)	101	0.51
Europe Countries	50	0.25
U.S.A.	7	0.04
African Countries (Non Arabs)	3	0.02
Other Countries	4	0.02
Total	19,904	100.00

Table (3): Distribution of non-Jordanian workers by job category in the construction sector in Jordan.

Job Category	Number of Labor	Percentage
Professionals & Technicians	68	0.342
Seniors & Management Workers	35	0.176
Clerks	9	0.045
Sales Workers	1	0.005
Service Workers	220	1.105
Agricultural Workers	98	0.493
Unskilled & Production Workers	19473	97.835
Total	19904	100.00

Table (4): Total monthly and cumulative costs for current and Asian skilled labor.

Period	Month	Current Labor Cost (\$)		Asian Labor Cost (\$)	
		ES	Cumulative	ES	Cumulative
0	Dec-03	0.00	0.00	0.00	0.00
1	Jan-04	1,445.20	1,445.20	718.00	718.00
2	Feb-04	3,006.65	4,451.85	1,571.72	2,289.72
3	Mar-04	310.00	4,761.85	145.84	2,435.56
4	Apr-04	1,137.20	5,899.05	595.28	3,030.84
5	May-04	5,188.14	11,087.19	2,767.52	5,798.36
6	Jun-04	5,872.69	16,959.88	3,305.88	9,104.24
7	Jul-04	7,148.17	24,108.05	3,860.12	12,964.36
8	Aug-04	9,474.57	33,582.62	4,985.00	17,949.36
9	Sep-04	13,783.73	47,366.35	7,875.09	25,824.45
10	Oct-04	7,211.31	54,577.66	4,467.03	30,291.48
11	Nov-04	1,878.00	56,455.66	1,189.84	31,481.32

Table (5): Incremental analysis between current and Asian skilled labor costs.

Period	Month	Present Worth (\$)		Alternative B-A (\$)
		Asian Labor "A"	Current Labor "B"	
0	Dec-03	0.00	0.00	0.00
1	Jan-04	712.66	1,434.44	721.79
2	Feb-04	1,548.41	2,962.05	1,413.65
3	Mar-04	142.61	303.13	160.52
4	Apr-04	577.75	1,103.71	525.96
5	May-04	2,666.03	4,997.89	2,331.85
6	Jun-04	3,160.94	5,615.22	2,454.28
7	Jul-04	3,663.41	6,783.90	3,120.49
8	Aug-04	4,695.75	8,924.81	4,229.06
9	Sep-04	7,362.92	12,887.28	5,524.36
10	Oct-04	4,145.42	6,692.12	2,546.70
11	Nov-04	1,095.96	1,729.82	633.86
Present worth of total variance @ 0%				23,662.52
Present worth of total variance @ 9%				12,696.61

Table (6): Total monthly and cumulative costs for current and Asian unskilled labor.

Period	Month	Current Labor Cost (\$)		Asian Labor Cost (\$)	
		ES	Cumulative	ES	Cumulative
0	Dec-03	0.00	0.00	0.00	0.00
1	Jan-04	1,004.16	1,004.16	656.00	656.00
2	Feb-04	468.00	1,472.16	308.64	964.64
3	Mar-04	122.88	1,595.04	81.92	1,046.56
4	Apr-04	122.88	1,717.92	81.92	1,128.48
5	May-04	730.08	2,448.00	485.60	1,614.08
6	Jun-04	578.72	3,026.72	380.96	1,995.04
7	Jul-04	359.36	3,386.08	235.84	2,230.88
8	Aug-04	725.44	4,111.52	473.92	2,704.80
9	Sep-04	3,054.80	7,166.32	1,997.52	4,702.32
10	Oct-04	994.72	8,161.04	656.80	5,359.12
11	Nov-04	236.80	8,397.84	154.88	5,514.00

Table (7): Incremental analysis between current and Asian unskilled labor costs.

Period	Month	Present Worth (\$)		Alternative B-A (\$)
		Asian Labor "A"	Current Labor "B"	
0	Dec-03	0.00	0.00	0.00
1	Jan-04	651.12	996.68	345.57
2	Feb-04	304.06	461.06	157.00
3	Mar-04	80.10	120.16	40.05
4	Apr-04	79.51	119.26	39.75
5	May-04	467.79	703.31	235.51
6	Jun-04	364.26	553.35	189.09
7	Jul-04	223.82	341.05	117.23
8	Aug-04	446.42	683.35	236.93
9	Sep-04	1,867.61	2,856.13	988.52
10	Oct-04	609.51	923.10	313.59
11	Nov-04	142.66	218.12	75.46
Present worth of total variance @ 0%				2,738.69
Present worth of total variance @ 9%				1,538.74

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