TCPI Practice Exercises

Introduction

The To-Complete-Performance-Index (TCPI) is the cost efficiency a contractor needs to achieve to be able to meet a cost target. The cost target typically is either an estimate at completion (EAC) or budget at completion (BAC).

Often TCPI is compared to the contractor's cost performance index (CPI) to determine if the cost target is reasonable. The CPI indicates the contractor's historical cost performance on the contract, or the contractor's cost efficiency in terms of the amount of work performed compared to the amount spent. If the TCPI and CPI are diverging significantly, then the cost target may not be reasonable.

This job aid provides practice exercises related to:

- TCPI calculations
- Relationship between TCPI and EAC or BAC

Part 1 contains the practice exercises. Part 2 contains the solutions for the practice exercises.

PART 1—Exercises

Calculate TCPI

The formula to calculate TCPI is:

$TCPI_{TARGET}$ = Work Remaining / Cost Remaining

= (BAC - $BCWP_{CUM}$) / (TARGET - $ACWP_{CUM}$)

➲ **Note:** TARGET = EAC or BAC

The EAC used to calculate TCPI can be either a Government-generated EAC or a contractor-generated EAC. A common Government-generated EAC is the Joint Program Office (JPO) EAC. The contractor-generated EAC also may be referred to as the contractor's latest revised estimate (LRE).

Current EVM Program Status

EVM Metric	Status	Comments
BAC	1000	Total contract budget
$BCWP_{CUM}$	750	The amount of work that has been completed (at the budgeted value)
$ACWP_{CUM}$	500	What was spent so far to complete the work (in real dollars)

Using the BAC, $BCWP_{CUM}$, and $ACWP_{CUM}$ in the previous table, calculate the TCPI based on the following EACs.

For this exercise, use the EACs provided below as the Target:

$TCPI_{EAC}$ = (BAC - $BCWP_{CUM}$) / (EAC - $ACWP_{CUM}$)

1. **EAC: 1250** $TCPI_{EAC}$ =

2. **EAC: 1100** $TCPI_{EAC}$ =

3. **EAC: 700** $TCPI_{EAC}$ =

4. **EAC: 600** $TCPI_{EAC}$ =

$TCPI_{EAC}$ Summary

Summarize your $TCPI_{EAC}$ answers in the following table.

EAC	$TCPI_{EAC}$
1250	
1100	
700	
600	

What do you notice about the $TCPI_{EAC}$?

As the EAC gets smaller, the $TCPI_{EAC}$ gets _____.

Now calculate the TCPI, using the BAC as the Target:

$TCPI_{BAC}$ = (BAC - $BCWP_{CUM}$) / (BAC - $ACWP_{CUM}$)

Relationship between TCPI and EAC or BAC

Estimated Cost at Completion	TCPI
JPO (Government) EAC	.8
Contractor EAC (LRE)	1.2
BAC	.85

Using the information in the previous table, answer the following questions.

1. Is the JPO EAC higher or lower than the contractor's EAC? _____

2. Is the JPO EAC higher or lower than the BAC? _____

3. Is the contractor's EAC higher or lower than the budget for this contract? _____

4. Rank the estimated costs at completion from lowest to highest (i.e., Low, Middle, High):

Estimated Cost at Completion	TCPI	Comparison of Estimated Costs at Completion
JPO (Government) EAC	.8	
Contractor EAC (LRE)	1.2	
BAC	.85	

Part 2—Solutions

Calculate TCPI

Current EVM Program Status

EVM Metric	Status	Comments
BAC	1000	Total contract budget
$BCWP_{CUM}$	750	The amount of work that has been completed (at the budgeted value)
$ACWP_{CUM}$	500	What was spent so far to complete the work (in real dollars)

Using the BAC, $BCWP_{CUM}$, and $ACWP_{CUM}$ in the previous table, calculate the TCPI based on the following EACs.

The formula to calculate TCPI is:

$TCPI_{TARGET}$ = Work Remaining / Cost Remaining

= (BAC - $BCWP_{CUM}$) / (TARGET - $ACWP_{CUM}$)

➲ **Note:** TARGET = Contractor EAC (LRE), Government EAC, or BAC

For this exercise, use EAC as the Target:

$TCPI_{EAC}$ = (BAC - $BCWP_{CUM}$) / (EAC - $ACWP_{CUM}$)

1. **EAC: 1250**

   $TCPI_{EAC}$ = (1000 - 750) / (1250 - 500)

   = 250 / 750

   = 0.333

2. **EAC: 1100**

   $TCPI_{EAC}$ = (1000 - 750) / (1100 - 500)

   = 250 / 600

   = 0.417

3. **EAC: 700**

   $TCPI_{EAC}$ = (1000 - 750) / (700 - 500)

   = 250 / 200

   = 1.250

4. **EAC: 600**

   $TCPI_{EAC}$ = (1000 - 750) / (600 - 500)

   = 250 / 100

   = 2.500

$TCPI_{EAC}$ Summary

Summarize your $TCPI_{EAC}$ answers in the following table.

EAC	$TCPI_{EAC}$
1250	0.333
1100	0.417
700	1.250
600	2.500

What do you notice about the $TCPI_{EAC}$?

*As the EAC gets smaller, the $TCPI_{EAC}$ gets **larger**.*

Now calculate the TCPI, using the BAC as the Target:

$TCPI_{BAC}$ = (BAC - $BCWP_{CUM}$) / (BAC - $ACWP_{CUM}$)
= (1000 - 750) / (1000 - 500)
= 250 / 500
= 0.500

Exercise Summary

A higher TCPI (i.e., higher efficiency) results in a lower cost than a lower TCPI (i.e., lower efficiency).

In other words, the more efficient a contract is, the overall costs will be lower; the less efficient a contract is, the higher the overall costs will be.

Relationship between TCPI and EAC or BAC

Estimated Cost at Completion	TCPI
JPO (Government) EAC	.8
Contractor EAC (LRE)	1.2
BAC	.85

Using the information in the previous table, answer the following questions.

1. Is the JPO EAC higher or lower than the contractor's EAC? ***Higher***

2. Is the JPO EAC higher or lower than the BAC? ***Higher***

3. Is the contractor's EAC higher or lower than the budget for this contract? ***Lower***

4. Rank the estimated costs at completion from lowest to highest (i.e., Low, Middle, High):

Estimated Cost at Completion	TCPI	Comparison of Estimated Costs at Completion
JPO (Government) EAC	.8	***HIGHEST***
Contractor EAC (LRE)	1.2	***LOWEST***
BAC	.85	***MIDDLE*** ***(Lower than JPO, higher than BAC)***