



Copyright © 2021 by the Construction Financial Management Association (CFMA). All rights reserved. This article first appeared in *CFMA Building Profits* (a member-only benefit) and is reprinted with permission.

BY DR. PERRY DANESHGARI, DR. HEATHER MOORE & JENNIFER DANESHGARI

# PMs & CFMs: Increase Information-Sharing to Improve Profitability



The responsibility of managing risk is transferred to the project manager (PM) once a project is won. While elements of risk must be an integral part of the design, the process should include all the contributing participants in the project life cycle. This article will look at how designing a system of project tracking and visibility is a necessary element of risk reduction and will help increase the involvement of CFOs and other executives.

## MITIGATING RISK

Business risk, technical risk, and integration risk are inherent in every project. While integration risk is the most underestimated and least measured of the three types, it has the highest impact on the other two categories and contributes the most to project mismanagement, which leads to a higher project volatility and lower performance projection accuracy.

The PM's role is to mitigate and make these risks visible. However, when PMs come from the field and/or have not been formally exposed to or trained on risk management – or if their managers have tried to control the risk for them due to lack of system design that reduces the risk – then the PMs often try to fix the issues on their own before the inevitable “write-down” of a job's profits.

The CFO's role is to help bridge this knowledge gap by educating PMs about risk and money management, as well as how to measure them correctly. In other words, there must be sufficient independent variables to measure the project progress and show what the PM may not be able to see or manage on their own.

## THE CFO'S ROLE IN MAINTAINING PROJECT VISIBILITY

Linking the field/job performance to the company's performance is the key deliverable and role of the PM, and yet one of the least addressed at the company level. The CFO has access to billing and collections information but typically



does not have access to timely job-specific risk information. That information is normally held at the job/project level and mostly visible to the PM, who often works on multiple projects simultaneously.

It is typical for a PM to move money between projects and cost codes, such as material, labor resources, subcontractors, tools, and rentals, which is referred to here as horse-trading. While the CFO knows that these cost drivers should be managed and reported individually, with wins in any area belonging to the company profitability, PMs have been known to think of project costs and profits as their own lump sum to manage. Here are four scenarios:

### Scenario #1: "I Made Money on the Buyout"

If PMs are the decision-makers for project purchases, then they might have negotiating power with the vendors and may have the ability to purchase the material at a price less than the estimated cost. These savings often come with a trade-off – reduced service from the vendor and, in the long run, individually incented behavior where the vendor's salespeople can "sell" to individual PMs without the contractor's total business in mind. If the buyout savings are allowed to be a PM's savings on a project, then they might not work as hard to manage the project and other risks.

### Scenario #2: "I'm Covering It with Change Orders"

Some companies have standard pricing or other policies in place for change orders to avoid acceptance of verbal orders by their field personnel. However, many PMs accept change orders as an excuse for a fading job without written verification on their projects. Similar to the first scenario, allowing for change orders to be dealt with on an individual basis will mask the profitability of the change orders and their true impact on the main job's productivity and performance.

### Scenario #3: "The Time/Cost Was Charged/Allocated to the Wrong Place"

Without an independent variable for measuring progress (i.e., ASTM E2691, the Standard Practice for Job Productivity Measurement),

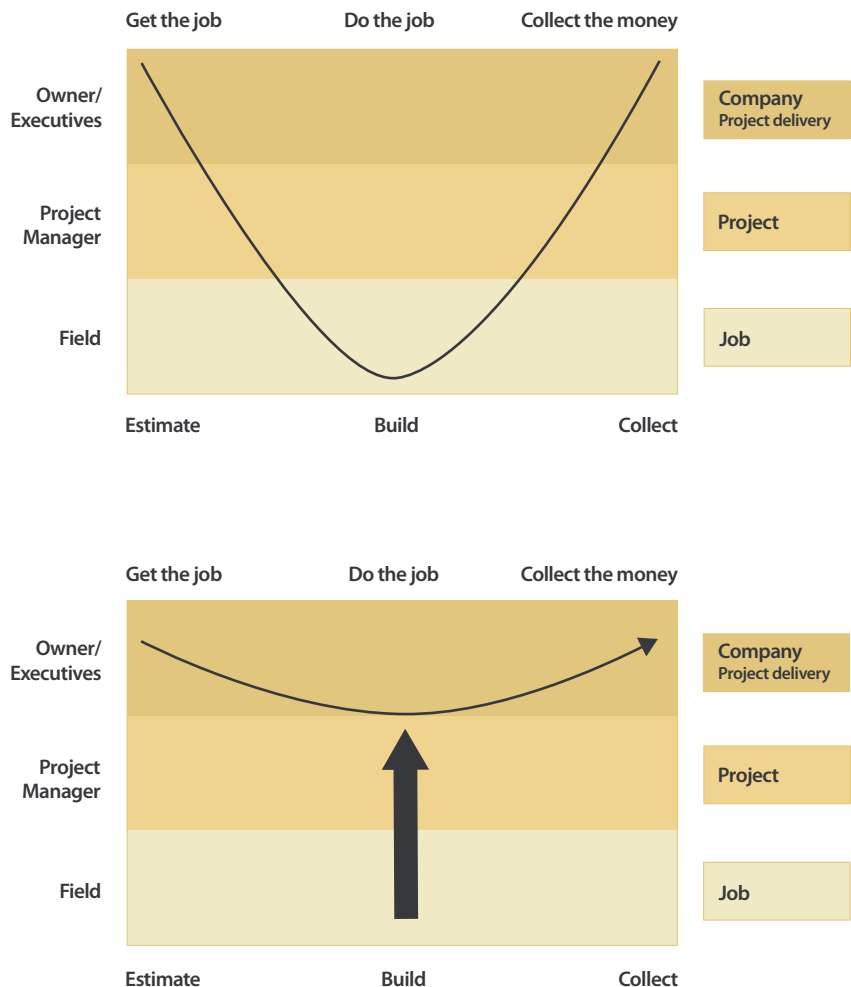
PMs have been known to move time around into different labor codes or pay items. In some cases, an entire set of overhead has been dedicated to job cost transfers.

In this way, the PM can move money among "buckets" of labor codes or even job numbers. When one code or job looks bad, PMs move the time or cost to another one to make it look better. Again, this completely masks the true picture and underlying issues.

### Scenario #4: "Sandbagging"

This term refers to a situation in which a PM identifies a whole host of potential (but not likely) risks for which they are holding onto money in their projection. Then, at the end of the job, the PM becomes the hero by bringing the job in at a high margin, though the financial information throughout the duration suffered and the CFM sees wild swings in financial

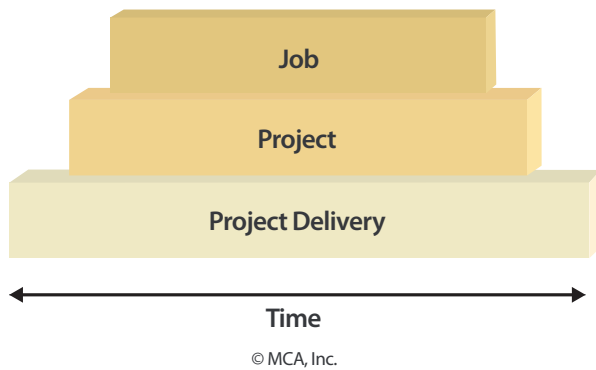
Exhibit 1: Project Cycle



© MCA, Inc.

# THE CFO'S ROLE IS TO HELP BRIDGE THIS KNOWLEDGE GAP by educating PMs about risk and money management, as well as how to MEASURE THEM CORRECTLY.

Exhibit 2: Components of Project Work



performance from month to month. This scenario also has a negative effect due to holding onto unnecessary reserves.

### Lack of Visibility

These behaviors result in a lack of visibility at the company level to the sources of poor or good performance which, in turn, will reduce the company's ability to manage financial risk of projects. Integration risk is left being managed, and normally not planned for, by the PM.

Often this information on job/project profitability and integration risk management is not shared at the company level until the job's end, as funds may be horse-traded throughout the life of the job. In order to improve the predictability of the project performance outcome and to keep costs tied to the right projects, company policies must be set forth in the following areas:

Exhibit 3: TPAC™ Project Info

Task Description	Cost Code	Task Notes	Initial Cost	C/O	Rev. Cost	% for Cost Code	% for Project	% Complete	Incurred Cost	Prod. Diff.
<b>Project Total</b>			\$264,060.29	2	\$264,060.29			38.39%	\$101,369.36	35.01%
Original Estimated Cost	100		\$76,906.04	0	\$76,906.04	98.72%	36.91%	50%		
Approved Change Order	100		\$1,000.77	1	\$1,000.77	1.28%	0.48%	0%		
<b>Total for Cost Code Preferred Name: Labor</b>	100		\$77,906.81	1	\$77,906.81	100%	37.39%	49.36%	\$34,597.53	10%
Original Estimated Cost	200		\$117,444.91	0	\$117,444.91	97.35%	56.36%	50%		
Approved Change Order	200		\$3,195.94	1	\$3,195.94	2.65%	1.53%	0%		
<b>Total for Cost Code Preferred Name: Material</b>	200		\$120,640.85	1	\$120,640.85	100%	57.89%	48.68%	\$29,520.77	49.7%
Original Estimated Cost	300		\$55,687.86	0	\$55,687.86	100%	21.1%			
<b>Total for Cost Code Preferred Name: Subcontractors</b>	300		\$55,687.86	0	\$55,687.86	100%	21.1%	63%	\$35,017.86	7%
Original Estimated Cost	400		\$9,825.54	0	\$9,825.54	100%	4.72%	50%		
<b>Total for Cost Code Preferred Name: Other &amp; Equipment</b>	400		\$9,825.54	0	\$9,825.54	100%	4.72%	50%	\$2,233.20	54.5%



- Avoid the zero-sum-game approach to money management; there needs to be a measurement source independent of cost to reflect the progress of work and resource productivity
- Manage the funds resulting from material buyouts and change orders; these should not be available to the PM to hide mismanagement of the project resources including manpower, money, and material
- Reduce inter-project money exchanges

Visibility to these issues will increase the involvement of the PMs, CFOs, and other executives. Exhibit 1 shows how information about the job expands from being shared only at the job/project level to being shared at the company level.

This method of timely visibility of project information leads into a key item of tracking profits, accounting, and control (TPAC™) in real time – thus reducing the time span of the lagging indicators.

### TRACKING PROFITS, ACCOUNTING & CONTROL

To effectively manage all three types of risks, TPAC™ can be managed by breaking down a project into the following four areas:

- 1) Cash flow
- 2) Work-in-progress (WIP) projections
- 3) Financial projections
- 4) Labor resources, financial resources, and material visibility

The historical project involvement during the project lifetime is depicted in Exhibit 2. The TPAC™ must be designed in such a way that the actual events impacting the integration risk during the job's life cycle are made visible throughout the project. Exhibit 3 is a sample layout of TPAC™ that enables the company to work on managing the risk by measuring the information flow from the source of risk, namely the jobsite.

In each cost code (labor, material, subcontractors, and other and equipment), the original estimate plus the change order is compared to the true utilization or burn rate of the resource.

For example, a backhoe was rented for an estimated \$5,000 per month with an initial estimated total cost of \$50,000. After two months, \$10,000 had been spent, and the projected end-of-job cost appeared to be on track.

However, what if that backhoe sat for the first three weeks onsite, and now the PM recognizes it will be needed for an extra month? That information would not be visible until after the fact.

Another example: If the estimated labor cost was \$250,000 and the Job Productivity Assurance and Control (JPAC®) measurement (application of ASTM E2691) shows a projected labor cost gain of 10%, then TPAC™ would reflect these savings on the project overall rather than letting the PM use it for leverage in a change order negotiation.

As a CFO or financial leader in the company, striving for visibility through planning in all areas, including business, technical, and integration risk, is key. Allowing these areas of risk to be defined and understood helps to manage the causes of risk for the company's long-term benefit. TPAC™ is used in a project audit process, where all of the information about a project – including estimate, operations/field, and accounting – are triangulated to understand the project's current situation and reduce risk in the next quarter. Audits are recommended to be held every 25% of work completion and facilitated by the CFO and PM.

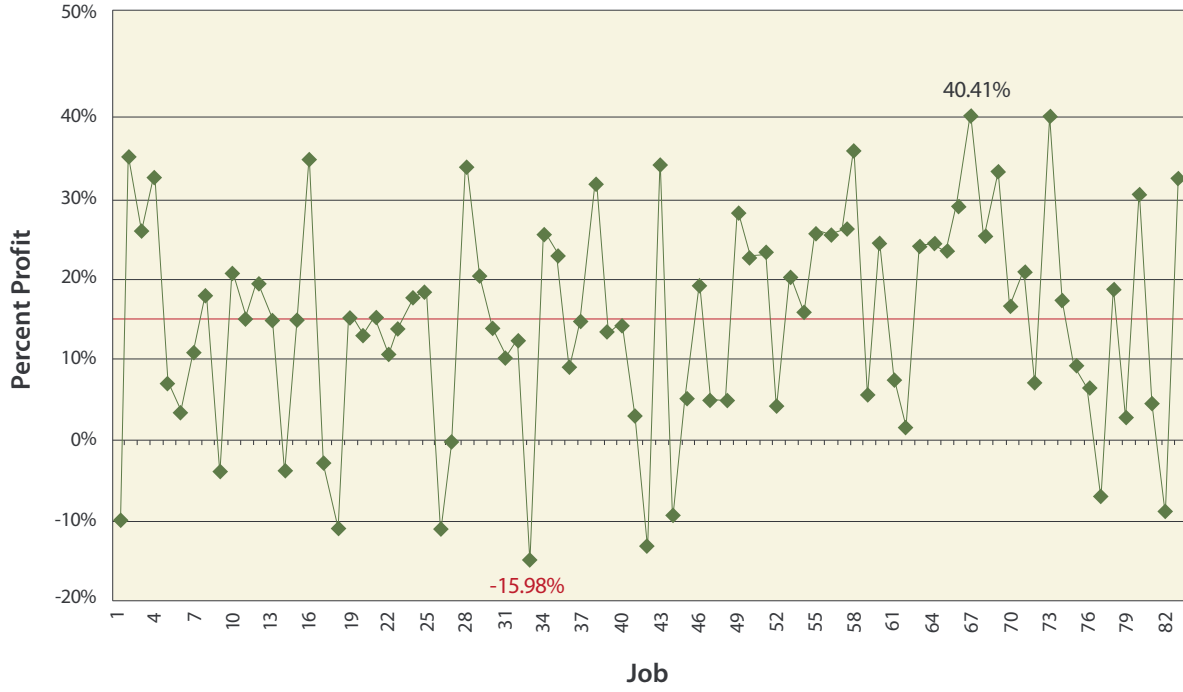
### CONCLUSION

The CFO's role in the total integration of the elements of risk is monumental and requires a full understanding of the degrees of freedom available to the PMs and project participants. The CFO and accounting department should be involved at the onset of setting cost codes, tracking during the project, and accurate projection with visible tools. The cost drivers should be measured and tracked based on estimated, committed, and actual costs.

Additionally, the relationship between materials and labor must be taken into account as another measure for project progress and triangulation of cost drivers. Often, when material starts to run over, it is predictive of labor overruns because the estimators might have missed something in the estimate. It is important for the CFO to understand the relationships among the different cost types to ensure that all of the cost overruns are captured as soon as possible.

The combination of the ongoing observed percent complete with the initial and updated estimate and current burn rate will allow the CFO to triangulate the job performance and increase its predictive outcome without relying on the PM's guess work. ■

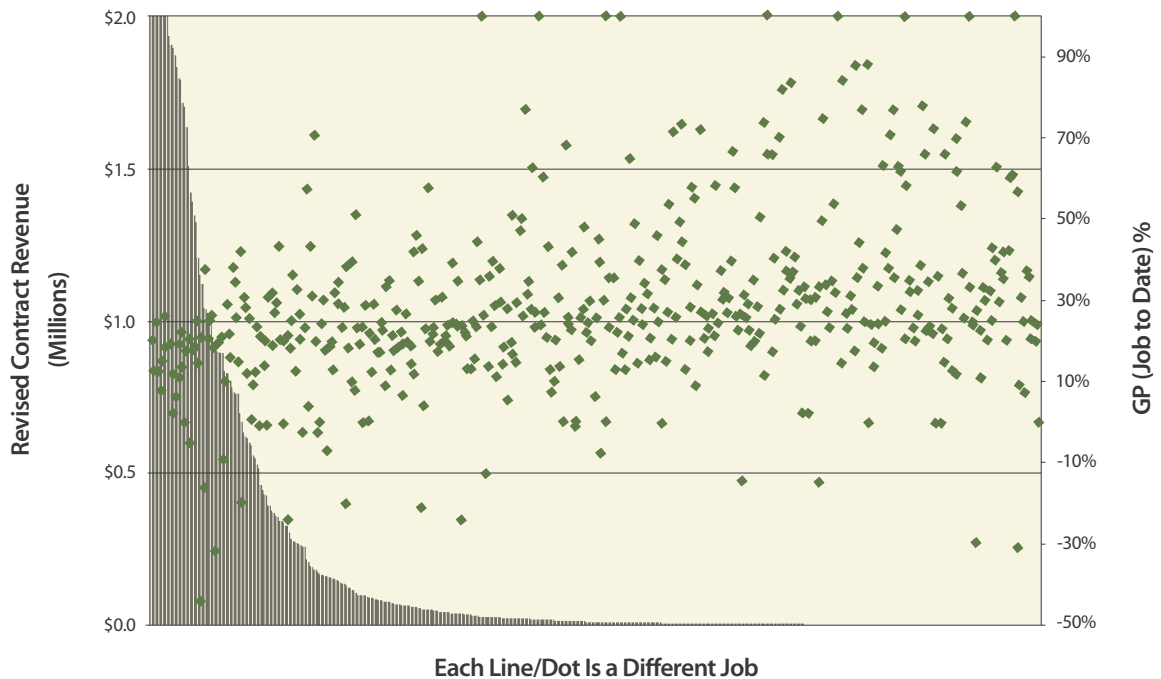
**Exhibit 4: Typical EC Job-to-Job Profitability**



© MCA, Inc.

**Exhibit 5: Predictability of Financial Performance**

**Variation in Profitability Percentage**



Each Line/Dot Is a Different Job

© MCA, Inc.



DR. PERRY DANESHGARI is President and CEO of MCA, Inc. in Grand Blanc, MI. MCA focuses on implementing process and product development, waste reduction, and productivity improvement of labor, project management, estimating, and accounting. He has been previously published in *CFMA Building Profits* and teaches courses at the University of Michigan on Project and Program Management, as well as Mechanical Engineering.

Phone: 810-232-9797  
E-Mail: perry@mca.net  
Website: www.mca.net

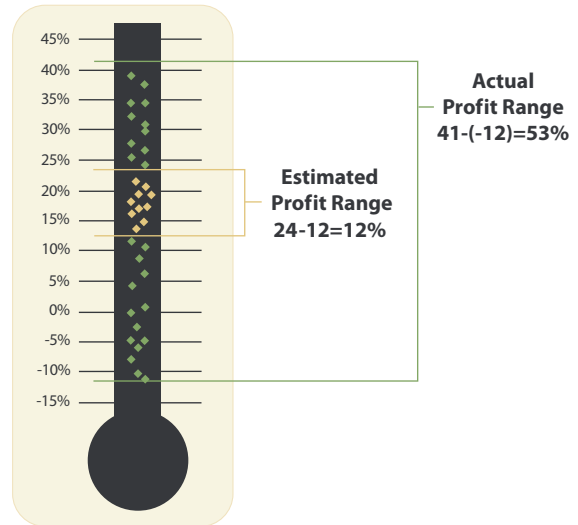
DR. HEATHER MOORE is the Vice President of Operations of MCA, Inc. in Grand Blanc, MI. Her focus is on measuring and improving productivity. A previous author for *CFMA Building Profits*, she holds an Industrial Engineering degree from the University of Michigan and a PhD in Construction Management from Michigan State University.

Phone: 810-232-9797  
E-Mail: hmoore@mca.net  
Website: www.mca.net

JENNIFER DANESHGARI is the Vice President of Financial Services of MCA, Inc. in Grand Blanc, MI. Jennifer has experience in global engineering leadership and was General Motors' first Global Female Engine Chief Engineer. Jennifer also has 20 years of experience in small business ownership, real estate holdings, product development leadership, and project management. She is the 2018 recipient of Society of Automotive Engineers' J. Cordell Breed Award for Women Leaders. She holds a Juris Doctor with a concentration in Business Transactions from Western Michigan University – Cooley Law School, an MBA from the University of Michigan, and a BS in Electrical Engineering from Kettering University.

Phone: 810-232-9797  
E-Mail: jennifer@mca.net  
Website: www.mca.net

### Exhibit 6: Predictability of Estimation Performance



© MCA, Inc.

---

## Managing Risk

To manage the risks associated with running a project, it is important to first breakdown the risks by type and category:

- 1) **Business Risk:** any and all investment of capital and cash flow-related risk.
- 2) **Technical Risk:** any and all risk associated with the expertise and skill required in an endeavor. In construction, it is the expertise and risk

required to design, manufacture, or construct and is proportional to the effect of failure mode on the consumer usage of the completed building or structure.

- 3) **Integration Risk:** the risk associated with bringing together all the required resources necessary to provide the final product or service timely, cost effectively, and with expected quality.

## Measuring Volatility

### Gross Margin

Exhibit 4 is a sample company's gross margin volatility. Based on this historical job volatility, it is nearly impossible to predict what will happen on the next job. This way of looking at the project's performance indicates lack of ability to control risk.

### Profitability Variations

Exhibit 5 shows higher profitability volatility in smaller jobs using Power Law distribution, which is a functional relationship that represents a situation where a change in one variable can lead to a large change in another. It governs many relationships in nature; for example, situations where there are multitudes of small/unnoticed events relative to one significant event, such as earthquakes and forest fires.

In construction, the volatility of profits on small jobs is the reality of the system behavior; companies overmanage the large projects to assure this system-caused volatility

doesn't bring risk to large jobs. However, every so often, there is risk for the phenomenon known as the "Killer Job," where the system behavior of small job volatility causes catastrophic losses on large jobs – which can single-handedly wipe out an entire company's profits in a year. The risk of a "Killer Job" happens when there is low predictability and high volatility in profitability of larger jobs.

### Comparing Performance

A third way of measuring volatility, albeit after the fact, is by comparing the original estimate with the job's final performance. Exhibit 6 shows that there is often a much larger range in *actual* profits than expected in *estimated* profits, and this is mainly from the impacts of integration risk.

To avoid unpredictability of the financial performance of the projects, and therefore the unpredictability of financial performance for the company, planning and watching for early warning signals of integration risk must be part of the fabric of a company's total project tracking system.