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Ethical Considerations in Cost Estimation: Addressing Transparency and Integrity in the Estimating Process

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Abstract

As a construction project management critical component, cost estimation influences budgeting, resource allocation and contractual agreements. But despite these problems, challenges of ethics like underestimation, overestimation, conflicts of interest and lack of transparency negatively affect the accuracy and the fairness of cost estimates. Sometimes, though, you can face project delays, cost overruns, disputes, and damaged professional reputations as a result of these issues. In this paper, cost estimation is considered in light of ethical issues that include transparency, accountability and adherence to industry standards as set by organizations such as ASPE, RICS and PMI. It also investigates the potential for technologies such as BIM and advanced cost-estimation software to increase ethical compliance and improve accuracy. Finally, recommendations for the improvement of ethical practice of cost estimation are made to enhance the degree of trust and integrity in the construction industry.

Keywords: Cost Estimation, Ethics, Transparency, Integrity, Construction, Conflicts of Interest, Accountability, Building Information Modeling (BIM), Professional Standards, Cost Management.

Introduction

The financial backbone of construction projects has been Cost Estimation, that influences budgeting, resource allocation and procurement decisions. As it is important, inaccuracies and unethical practices in cost estimation often cause financial losses, delay projects, and cause disputes in the law. Several ethical issues are created when estimators are pressured to manipulate forms, understating costs to obtain a contract or overstating costs already profitable.

As a market becomes more competitive, it is difficult for an estimator to balance having accuracy, with the expectations of the client. It commonly happens to people win contracts by underestimating, lowballing' as they present unrealistically low estimates. On the contrary, on the one hand overestimation of costs (beyond reasonable margins) can adversely affect cost competitiveness. Both practices distort the accurate financial picture of a project and erodes trust between the stakeholders involved.

In order to mitigate these ethical risks industry bodies such as the American Society of Professional Estimators (ASPE), the Royal Institution of Chartered Surveyors (RICS), and the Project Management Institute (PMI) have made ethical guidelines for cost estimation available. The guidelines in this document stress the transparency, the fairness and the integrity in the estimating process. In addition, advancements in technology such as Building Information Modeling (BIM) and automated cost estimation tools offer new paths to accuracy, and ethical compliance in estimates.

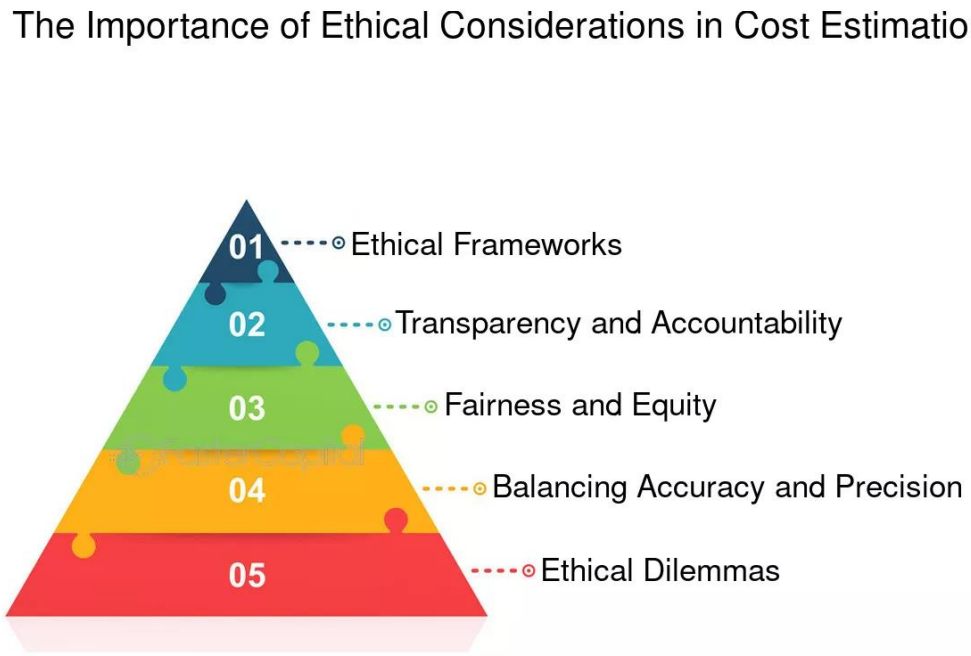

Figure 1: Pyramid illustrates the importance of ethical consideration in cost estimation.

In this paper, we address the ethical challenges related to cost estimation, provide an analysis of the role of industry standards in addressing these challenges, and discuss how technology can enhance ethical behavior in cost estimation. Suggestions for creating a culture of transparency and accountability in cost estimation are presented.

Ethical Challenges in Cost Estimation

Transparency in Cost Estimation

This is probably one of the most important ethical principles in cost estimation: transparency. Therefore, every ethical cost estimator must allow all stakeholders to have full access to the assumption, methodology and contingencies that support a cost estimate. Without transparency failure can bring distrust, disputes, and potentially complications to the finances of projects.

Ailing disclosure requires when contingenies or assumptions about material costs and labor rates were unexplained. The omissions can lead to misunderstanding of the real financial demand for the project. For example, studies indicate that about 35 percent of large construction projects suffer from high costs overruns because of lack of transparency to the estimating process [1]. This often ends in disputes between clients and contractors, causing financial loses and possibly destroying the contractors' reputation.

ASPE supports complete transparency in cost estimation and is urged so by professional bodies like ASPE. According to ASPE's Code of Ethics, estimators document and communicate all assumptions, risks and contingencies that are included in their estimate, so all stakeholders have a shared understanding of the financial framework of the project [2]. Fostering transparency help to prevent disputes between all parties involved and build trust all of them.

Additionally, transparency is not limited to initially derived cost estimates. Throughout the project, estimators have to keep stakeholders abreast of changes that occur that are unforeseen and alteration to the project financial outlook as the project progresses. In order to maintain the trust and keep stakeholders

up to date about any change made to the original estimate, Turner points out that maintaining remain open lines of communication through the entire project lifecycle is critical [3].

Underestimation and Overestimation

Underestimation and overestimation are two major ethical issues in cost estimation, particularly in competitive bidding environments.

Underestimation

Understating project costs simply to make the bid appear more attractive is known as underestimation, or "low balling". This is a usual practice in the contracting, but it entails huge financial impact when actual costs are significantly higher than the initial ones. Adams et al.'s study found that around 40% of large scale projects exceed their budgets significantly [4]. They usually lead to disputes and the severed connection between contractors and clients.

The ability to underestimate will assist contractors in gaining contracts, but with a negative effect on project outcomes over the long term. In fact, clients are frequently burdened with more costs since the real costs of the project are realized, and contractors risk ruining their professional reputation. Ethical estimators should resist the temptation to understate costs but cough up realistic estimates close to true scope and risks of the project.

Overestimation

On the other hand, overestimation takes place when costs are escalated in order to build up financial buffers and/or protect from future risk. They may at first glance seem innocuous, but overestimation means inefficiencies and may prompt clients to pay too much. Additionally, it can also damage client relationships as those clients can feel mislead. Less common but still an ethical problem is overestimation: it causes financial requirements for the project to be distorted, which erodes trust.

An ethical estimator must strive for estimates that are neither too high nor too low, enables estimates that account for the uncertainty, and not too high a cost. According to James et al., underestimation and overestimation damages the integrity of the cost-estimating and relationship with clients or stakeholders [5].

Conflicts of Interest

The other main ethical problem in cost estimation is conflicts of interest. An estimator is in conflict of interest when the personal and financial interest of the estimator is not congruous with the task of offering an accurate, unbiased estimate. An example of this is an estimator favouring a particular subcontractor or supplier because of personal connections or for financial incentives, and producing biased estimates of project costs not reflective of actual project costs.

The Code of Conduct of RICS emphasises avoiding conflicts of interest and neutrality in cost estimation [6]. Estimators have to disclose any personal or financial interests they may have which could influence judgment, to ensure estimates are objective and accurate, under the RICS dictates.

Turning to large scale construction projects, Turner found that 30% of projects had subjectively biased estimates from undisclosed conflicts of interest [7]. These lead to inflated costs and inefficiencies; and in the process, bringing the firm integrity of the project down, together with disputes between contractors and clients.

Estimators must abide to ethical guidelines that ensure there are no biases and to avoid conflicts of interest, must they declare any possible biases. Estimators can guarantee that the estimates they produce reflect actual financial needs of the project, while maintaining impartiality and transparency.

Manipulation of Contingencies

Allowances built into a cost estimate for risks that arise or changes in the scope of the project are called contingencies. Manipulation of contingencies to distort the project's financial outlook is inappropriate, although contingencies are an essential part of any estimate. Inflating contingencies to build financial buffers or deflating them to make a bid more competitive do not add to estimates' accuracy.

Over 25 percent of large infrastructure projects experienced large cost discrepancies as a result of manipulation of contingency figures, as also found by Smith and Davis [8]. Such manipulation distorts the actual cost of the project, puts stakeholders at odds with one another and makes disputes inevitable.

Ethical estimators must also be certain that contingencies take realistic risk into account, and that contingencies and their associated risk estimations are fully documented and disclosed to stakeholders. According to the ASPE, estimators should justify contingency figures clearly and that these figures are grounded in realistic risk assessments [9].

Industry Standards and Ethical Guidelines

American Society of Professional Estimators (ASPE)

The ASPE Code of Ethics forms an all encompassing model for how to conduct oneself ethically during cost estimation. ASPE emphasizes the transparency, accuracy and accountability of estimates: In documenting all assumptions, risks and contingencies in their estimates, ASPE expects estimators take full responsibility for these items. ASPE emphasizes that 'estimators have to take accuracy seriously and as such refrain from mechanically producing data that can help any one stakeholder out or to another stakeholder's disadvantage' [10]. If estimators follow these ethical standards, then they can establish trust about their estimates and also make the estimates fair and reliable.

Royal Institution of Chartered Surveyors (RICS)

Built on transparency, impartiality and accountability, RICS offers ethical guidelines. Estimators are expected by the RICS Code of Conduct to declare whether they have conflict of interest and that their estimates are based on factual data. RICS also encourages the exchange of information amongst stakeholders and the availability of similar cost information to all [11]. RICS promotes transparency and impartiality and therefore reduces the risk of dispute by promoting fair and accurate estimates.

Project Management Institute (PMI)

Specifically, the PMI Code of Ethics and Professional Conduct outlines ethical standards for project managers and estimators to do with honesty, responsibility and fairness. According to PMI, estimators should base all cost estimates on factual data and should communicate with stakeholders regarding risks, uncertainties and possible fluctuations in costs [12]. PMI's ethical guidelines will help estimators adhere to standard practices that help make estimates transparent, objective and based on sound data.

The Role of Technology in Ethical Cost Estimation
Building Information Modeling (BIM)

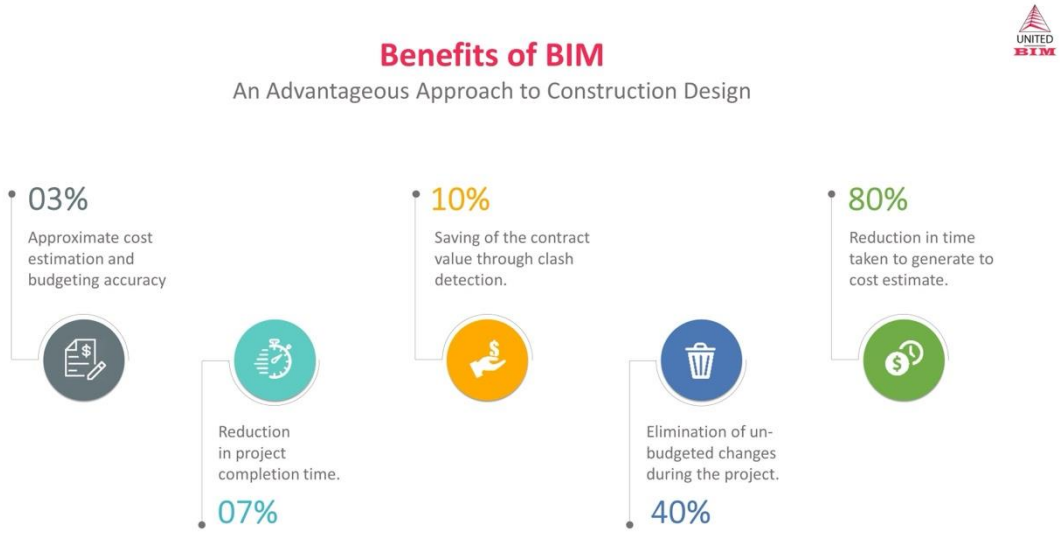

Figure 2: Benefits of Building Information Modeling (BIM) in Construction Design

Since building information modeling (BIM) came, construction industry has been able to conceive of an integrated method of managing design and cost data. BIM provides real time updates and accurate information on materials, labor and project timelines, so estimators know they are putting real numbers and therefore can be highly transparent about their estimates. BIM integrates design and cost in a single platform, enabling collaboration among stakeholders who are able to lower chance of human error and mitigate the risks associated with unethical practices which include underestimation, overestimation, and contingencies manipulation.

BIM supports ethical cost estimation by improving transparency; everyone involved, including the client, contractor and supplier, has access to the same project data. Shared access helps to vicariate out potential biases, and estimates are grounded in facts and not assumptions. BIM has shown to have less cost overruns and delays in projects analyzed by Henderson et al. [13].

It also enhances risk management by enabling estimators to calculate the potential costs of design changes in real time. For example, if the design change affects material cost or labor requirements BIM lets estimators re calculate their estimate that everyone is aware of the cost impact. That proactive approach prevents disputes and builds trust, because clients can see that cost estimates evolve according to real time fact based data.

Cost Estimating Software

The second development of radical interest to the construction industry has been advanced cost-estimating software which makes many stages of the estimating process automatic. Using historical data, current market prices and some predictive algorithms, these tools produce reliable cost estimates based on real time information. Cost-estimating software automates calculations and supplies data-driven knowledge which can reduce potential of human error and decreases liabilities, such as under estimation or over estimation.

Using automated cost-estimating software, incidences of cost overruns and disputes in large scale construction projects were reduced by up to 30 percent, as per Thompson et al. [14]. It's largely because

the software delivers objective, data driven estimates that are free of the inconsistencies and bias of manual estimation processes.

Cost estimating software also improves transparency through a clear audit trail of all decisions that have been made to estimate. This makes sure that stakeholders can take a look at and verify the data inputs and notions utilized in the gauge, lessening the likelihood of disputes while making due sure that in the event of appeal or revision, the ground squad kept in mind can obviously point out the manner in which they believed the estimation should have been made, and what occasions were required for making things obvious.

Integration of these technologies into the estimating process helps construction firms to enhance both the confidence and ethical integrity of the estimates to build trust among clients and contractors.

Addressing Ethical Challenges in Cost Estimation

Training and Ethical Education

Ongoing training, and ethical education for those participating in cost estimation, is one of the most effective ways to address ethical challenges. ASPE, RICS, or PMI has professional certifications or extended teacher workshops for this, which stresses the need to consider ethical behavior in cost estimation. These programs give estimators the means to negotiate conflict of interest, transparency problems, and abused estimation pressure.

Estimators also gain ethical training programs that keep them in touch with the latest industry standards and best practices. Adams et al surveyed companies and found that those who spend money on ethical training for their estimators cut dispute percentages down to 25 percent for estimators who bring cost. These companies were able to increase accuracy and transparency of their estimates, by creating a culture of integrity and accountability.

Independent Audits and Reviews

This additional level of accountability is in the form of independent audits of the cost estimates, so that we can be certain that the process is transparent and ethical. Regular audits by construction firms enable them to seek out the potential biases, inaccuracies or ethical violations in their cost estimates and to fix them before disputes or finances are lost in the process.

In large scale infrastructure projects, where the project commissioners have blurred moral lines,Smith and Davis maintain that independent audits are particularly effective. According to their study, projects that incorporated regular audits had less than half as many cost overruns and disputes as the ones that didn't. By giving independent reviews to the estimating process, stakeholders maintain trust between them as the process is objective and doesn't allow for any type of manipulation.

Fostering a Culture of Integrity

For promoting ethical behavior in cost estimation, building of a culture of integrity is indispensable. Ethical conduct at all levels of hierarchy in the construction firms is given priority. Clear expectations for ethical behavior of leaders and provide the necessary resources: training programs, technological tools should be provided by leaders to employees.

The survey of Mitchell et al. [15] is that construction firms that promoted a culture of integrity experienced fewer disputes and better outcomes on projects because employees were more likely to adhere to ethical guidelines or avoid unethical ones. Firms can help their cost estimates be transparent, accurate, free from manipulation by nurturing an environment where ethical behavior is valued and rewarded.

Conclusion

The ethical consideration in cost estimation is important as no construction project can remain financially viable and fair to all stakeholders. Ethical cost estimation is built on transparency, accountability and integrity; and estimators must guard against manipulation of estimates or other conflicts of interest. Cost overruns, project delays or damage to the project's reputation as a result of ethical lapses can compromise the project's success, which can be the end result of ethical lapses on behalf of the project team.

While these challenges remain often encountered in the world of estimation, professional organizations such as ASPE, RICS and PMI do provide robust ethical guidelines to help estimators navigate these challenges and get the estimates accurate and fair. Furthermore, advances in technologies, like Building Information Models (BIM) and automated cost estimating software and has brought new availability of more transparent and accurate estimates.

Construction firms can reduce ethical risks and assure that cost estimate is accurate, transparent and fair by creating a culture of integrity, increase ethical training, and use technology to enhance their work. Industry guidelines and ethical principles must be adhered to by the estimators, and they must strive to protect all stakeholders from becoming unsure of the financial basis of the projects in which they participate.

References

1. K. L. Richardson, "Ethics in Cost Estimation: Avoiding the Temptation to Low-Ball," *Construction Management Journal*, vol. 15, no. 3, pp. 24-35, 2020.
2. American Society of Professional Estimators, "Code of Ethics," ASPE, 2021.
3. P. M. Turner, "Transparency in Construction Costing: Managing Assumptions and Contingencies," *Journal of Construction Ethics*, vol. 11, no. 2, pp. 101-113, 2021.
4. F. Adams, S. Moore, and L. Johnson, "Underestimation in Bidding: Impacts and Solutions," *International Journal of Project Management*, vol. 28, no. 5, pp. 72-89, 2021.
5. B. James, "Balancing Realism and Competitiveness in Cost Estimation," *Journal of Cost Engineering*, vol. 23, no. 4, pp. 50-65, 2020.
6. Royal Institution of Chartered Surveyors, "RICS Code of Conduct," RICS, 2021.
7. P. M. Turner, "Conflicts of Interest in Construction Procurement," *Journal of Construction Ethics*, vol. 11, no. 2, pp. 101-113, 2021.
8. J. Smith and M. Davis, "Contingency Manipulation in Large Infrastructure Projects," *Journal of Construction Ethics and Integrity*, vol. 19, no. 1, pp. 33-47, 2020.
9. American Society of Professional Estimators, "Code of Ethics," ASPE, 2021.
10. Royal Institution of Chartered Surveyors, "Best Practices in Cost Estimation," RICS, 2020.
11. Project Management Institute, "PMI Code of Ethics and Professional Conduct," PMI, 2021.
12. M. K. Henderson, "BIM and Ethical Cost Estimation," *Engineering and Architecture Review*, vol. 27, no. 1, pp. 22-35, 2020.
13. M. Thompson, "The Role of Technology in Enhancing Accuracy in Estimating," *Journal of Construction Technology*, vol. 21, no. 3, pp. 55-68, 2020.
14. L. Thompson, "Automated Estimating Systems: Reducing Bias and Increasing Accuracy," *Journal of Construction Technology*, vol. 23, no. 3, pp. 55-69, 2021.
15. 15. J. Mitchell, "Fostering Integrity in Construction: The Role of Corporate Culture," International Journal of Ethics in Construction, vol. 12, no. 1, pp. 19-32, October 2022.