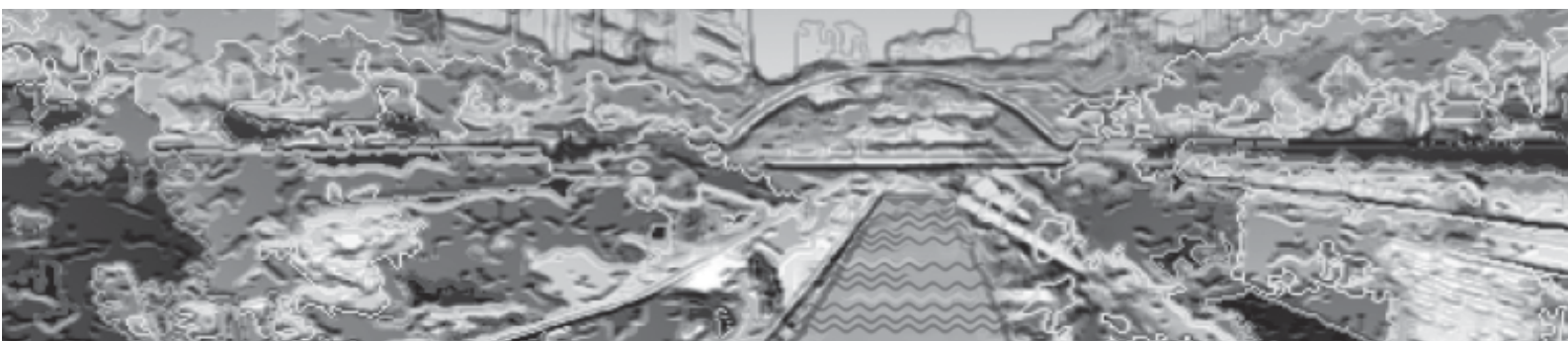


CM Versus CA
การบริหารการก่อสร้างกับการอำนวยการก่อสร้าง

Supreedee Rittironk
สุปรีดี ฤทธิรงค์



CM Versus CA

การบริหารการก่อสร้างกับการอำนวยการก่อสร้าง

Supreedee Rittironk

สุปรีย์ดี ฤทธิรงค์

Faculty of Architecture and Planning, Thammasat University

คณะสถาปัตยกรรมศาสตร์และการผังเมือง มหาวิทยาลัยธรรมศาสตร์

Abstract

A typical architectural project delivery is comprised of Designing, Bidding, and Building. Construction or building is the final and important step to make design become reality. It is impossible to become a real design professional without having a good understanding of construction and its logic. After completion of the design process, all design professionals need to get involved in construction to ensure that design gets built as intended. Here begins the Construction Administration or CA. CA is a required process for every project if it is permitted to build. To administer is to direct, supervise, and ease the execution of a construction project. This term is often confused with Construction Management or CM because their translation in Thai could be interpreted with similar meanings, which produce misuse and misunderstanding in construction studies. To manage is to direct and exhibit control over. The verb “to manage” sounds similar in meaning as “to administer” when translating in Thai. When they are tied to construction, they are quite different. Construction management is a consulting service to the project owner with special intent. The intent commonly has to deal with saving in cost, time, and quality. Consulting can be in the form of being owner’s representative, cost control, quality control, scheduling control, or all of these. CM is considered as an extra service, not required as CA. The bottom line is that CM and CA are two different disciplines, when comes to their incentives, responsibilities, length, and goals. To straighten out the confusion, this article will discuss more elaborately, the definitions, distinctions, and misinterpretation of these two terms. It also further discusses how CA and CM will affect the future of the construction business.

บทคัดย่อ

ในการสร้างโครงการทางสถาปัตยกรรม กระบวนการโดยทั่วไปมักสรุปได้ว่าประกอบด้วยสามขั้นตอนหลัก คือ การออกแบบ การประมูลงานก่อสร้าง และการก่อสร้าง ขั้นตอนการก่อสร้างที่เป็นขั้นตอนสุดท้ายเป็นขั้นตอนสำคัญที่ทำให้โครงการเกิดเป็นจริงขึ้นมา คงเป็นไปได้ที่สถาปนิกผู้ออกแบบจะเป็นมืออาชีพ หากขาดความเข้าใจในหลักการสำคัญของการก่อสร้างนี้ เพราะเมื่อหลังจากการออกแบบเสร็จสิ้น สถาปนิก ผู้ออกแบบ จะต้องมีส่วนร่วมในอำนวยการก่อสร้าง เพื่อให้แน่ใจว่าการก่อสร้างเป็นไปตามแบบที่ออกแบบไว้ อันเป็นจุดเริ่มในขั้นตอนที่เรียกว่า การอำนวยการก่อสร้าง หรือ Construction Administration

งานนี้เป็นงานที่จำเป็นต้องมีในทุกโครงการที่ผ่านการอนุมัติให้สร้าง คำว่า การอำนวยการ ตามนิยามเป็นขั้นตอนที่เป็นการสั่งการดูแล และอำนวยความสะดวกการปฏิบัติการ อีกคำหนึ่งที่มักใช้กันในวงการก่อสร้างคือคำว่า การบริหารงานก่อสร้าง หรือ Construction Management คำสองคำนี้ฟังดูผิวเผินแล้วคล้ายกัน โดยสร้างความสับสนให้กับการเรียนรู้วิชาการก่อสร้างมาก การบริหารงานมีนิยามที่เป็นลักษณะของการควบคุมและสั่งการการปฏิบัติการ หากแปลคำกริยาที่ว่าอำนวยการและบริหารการ ดูเหมือนจะเป็นหน้าที่เดียวกัน หากแต่นำมาใช้ร่วมกับคำว่าก่อสร้าง ทำให้เกิดเป็นสองหน้าที่ที่ไม่เหมือนกัน การบริหารการก่อสร้างเป็นงานให้คำปรึกษาแก่เจ้าของโครงการตามความต้องการพิเศษ โดยความต้องการนั้นมักจะเกี่ยวข้องกับการดูแลตารางเวลาราคาก่อสร้าง และคุณภาพเป็นสำคัญ การให้บริการจะอยู่ในรูปแบบของการเป็นตัวแทนการเจรจาต่อรอง ผู้ดูแลการควบคุมราคาคุณภาพ ตารางการก่อสร้าง หรือทั้งหมดที่กล่าวมา ซึ่งถือว่าหน้าที่นี้เป็นการว่างพิเศษหรือนอกเหนือจากการอำนวยการก่อสร้างโดยสรุปแล้ว สองคำนี้เป็นสองหลักการที่มีความแตกต่างกันอย่างสิ้นเชิง บทความนี้จึงขอเสนอเพื่อลดความสับสนในการใช้สองคำนี้ ในบทความได้กล่าวถึงความหมาย การเปรียบเทียบ ในรายละเอียดมากขึ้น นอกจากนั้น บทความยังกล่าวในตอนท้ายถึงการพัฒนาของคำสองนี้ อันมีผลกระทบต่อนาคตของธุรกิจการก่อสร้าง

Keywords (คำสำคัญ)

Construction Management (การบริหารการก่อสร้าง)

Construction Administration (การอำนวยการก่อสร้าง)

Incentive (สิ่งดึงดูดใจ, ผลตอบแทน)

Breakdown (การจำแนกแยกย่อย)

Take-off (จุดตั้งต้น, การเริ่มปฏิบัติการ)

1. Introduction

The growth of any countries' economy is sometimes predicted by how the construction industry is doing in the country. The construction industry will most likely have a direct link to the demand of estates and housing. If the estate demand is high, it shows that people's ability to spend is also high, which simply leads to the favorable status of country's economy. The growth for both economy and construction is directly side by side.

When construction demand is increasing, building projects are forced to grow rapidly. While they are growing, projects are demanding their complexity as well, in terms of size, schedule, contracts, and financial & human resources. The conventional way to manage a project is through Construction Administration or CA. Even though, CA today has improved its delivery for many complex projects, another method is introduced and has become commonly used, especially in large projects: Construction Management or CM. CM easily integrates to today industry because it is capable of organizing construction projects' structure thoroughly at many scales and of different complexities. It produces the positive result for all involved parties in construction, and fairness in business sense. However, CM is not new to the architectural business. It is simply new to Thailand.

There are increasing companies who are offering CM services in Thailand. The problem comes when terms "Manage" and "Administer" are used. They typically have generic interpretations used in many senses, but when they are both combined with construction terms, they became very specific, and they are very different. Often, people misinterpret Construction management as Construction Administration for to the same discipline. Even though, they sometimes can include doing the same activities, but their goals and responsibilities are totally different. Before trying to understand their differences, it may be important to understand how the layers of managing in the architectural business are broken down. Then CM and CA can be seen within the big-picture (Figure 1).

Many people may have heard the term "Management." It is used in many businesses combined with other terms that are related to specific duties, such as Data Management, Personnel Management, and Resource Management. The term "Project Management" or PM is probably the most commonly heard in many fields. It still has a generic sense that is to manage or organize in any "Project." In an architectural sense, the Project Management will refer to the making reality of an architecture and construction project effectively [1], or to a term "Big-picture Project." Big-picture project takes us from project initiation to a year after construction is completed. The

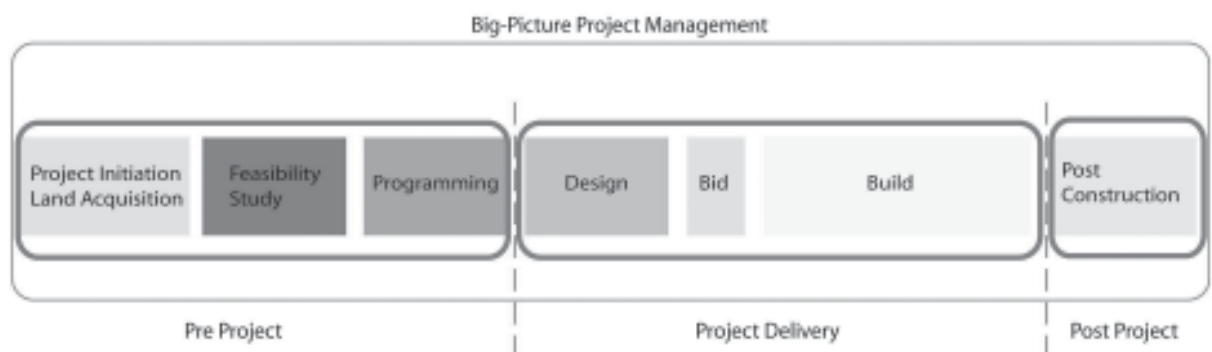


Figure 1. Structure of project management in big-picture is shown related to phases of project.

big-picture project contains so many tasks within its boundaries. These tasks are big enough to be called their own projects, like Feasibility Study Project or Programming Project. Therefore, if any mentions of Project Management, it refers to Big-Picture Project Management, unless the context states specifically, such as Project Management in Construction, Project Design Management, Feasibility Study Project Management, which refer to smaller projects within. Thus, the big-picture project manager, can be referred to a group of individuals or a company, since there are many responsibilities to handle. Now it is understood that this breakdown has many elements within, and the topic of interest, Construction Management and Administration, are also two of tasks within the big-picture project (Figure 2).

2. Defining CM

As previously mentioned, CM is Construction Management. Sometimes, Construction Management is referred to the same meaning in Project Management in Construction [1]. It occurs within the big-picture project breakdown after the pre-project phase. People may believe that

Construction Management is not needed until the construction has begun. But the Construction Management team is recommended to get involved as early as possible after the programming phase for the best result. The degree of involvement may not be intense at the beginning, but it will increase towards the construction phase. The earlier involvement will provide the ease throughout the construction process [2].

The logic of CM is very simple and always with human history. The first evidence indicating the same principle as CM can be explained as piling stones around the fire in the stone ages. Stones were carefully managed for better heating and cooking, in terms of stone sizes, lay-out location, or material acquisition. When building anything, CM logic is applied to enhance the performance and outcome. Throughout time, CM has been developed through the engineering thinking process to be scientific methods specifically to facilitate the construction.

A CM, which is referred to a person or a group of individuals as construction manager (s), is hired as an owner's representative who can communicate in the language of construction. It is a service in supervising the project planning, design, and construction to the direction of owner's

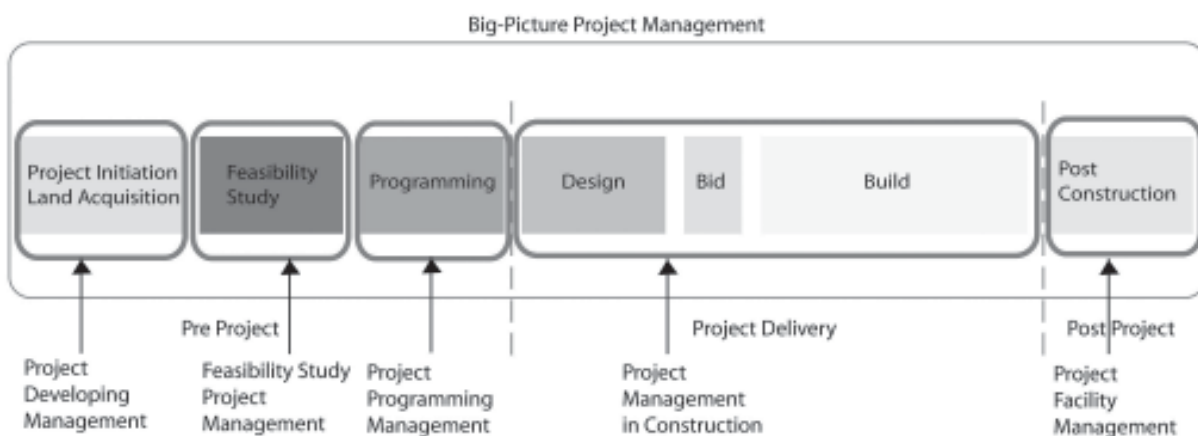


Figure 2. Big-picture project management can be broken down into series of individual project managements.

direction (Figure 3). CM today is most commonly introduced in construction business when people try to find ways to handle large or complex projects more efficiently. The CM is considered as an extra service to the owner. First, the owner will establish directions with the CM on goal or restriction guidelines, such as time or cost savings, accident-free guarantee, smooth construction, and fewer change orders. The CM will evaluate every party and aspect that might have an effect on owner's goals. Some people might think that a CM's job is to pick on CA, but in fact, monitoring CA and advising when necessary may be a better description. The CM's compensation is paid in flat negotiated fee. The percentage directly depends on size and complexity of the project. To the owner, it may be a good business deal, which varies from how much the owner will gain from expected goals, and possible cost savings. Some

projects, that are simpler and smaller, might not need CM, or the CM is hired with a lower negotiated fee.

A CM can be hired during any phases of project delivery, depending on where the owner needs help. The points where CM starts and stops are negotiated prior to actual performance, and will be documented in a signed contract. CM services are offered by many types of firms. It is commonly offered by consulting engineering firms. Now architects and even contractors are beginning to offer their services in CM as well. Since CM is an extra service, many professional firms are integrating CM with their basic services to generate more income for their business. The CM business is growing due to the reciprocity generated between project owner and a CM, which allows owner to get the cost and time savings, and the CM to get paid for their services.

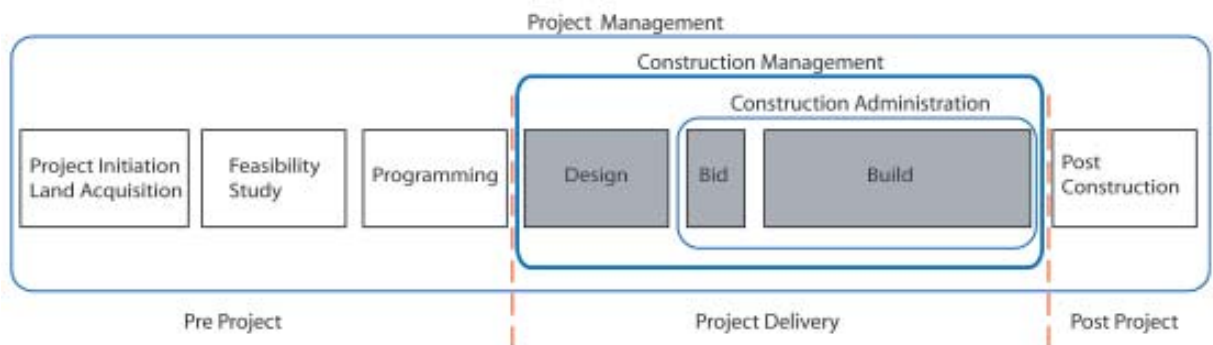


Figure 3. Construction Management is mostly involved during the project delivery phase.

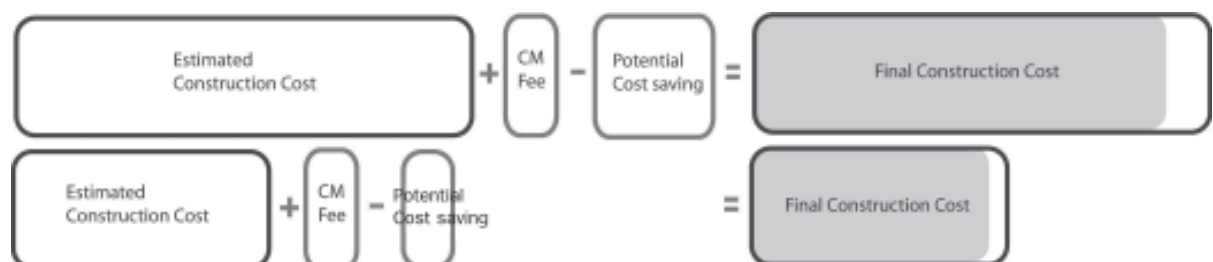


Figure 4. Cost saving due to the use of CM can be varied depending on sizes of projects.

The scale of project can significantly effect how CM is going to be a benefit to owner. Smaller projects with smaller construction budgets may not have enough potential savings to pay off the CM fee. The initial calculation for budgeting is required prior to make decision of whether or not CM will be used. Sometimes CM fee is an extra cost to the owner for the construction budget, however, if hiring a CM can help the owner's headaches with construction trouble, it may be worth paying for the service. Figure 4 compares final construction cost (in grey shades) from two different sizes of project if CM is used. It will typically be minor savings for a small project from the estimated cost (dark frame), and for large project a more substantial savings.

3. Defining CA

CA is Construction Administration, and a Construction Administrator is referred to a person or a group of individuals who perform CA. CA is used in both senses depending on the context. The term "Administration" is defined as a performance of executive duties [3]. To administer is to direct, supervise, and ease execution. It seems that the definition could be used more explanation when used as a construction term. In the general

sense, an administrative manager is not a specialist. It implies as a managerial task of a major segment of business [3]. Thus, a construction administrator is implied only as a general manager for a construction project. It is sometimes used in simple terms as a coordinator of design during construction. CA is required in every project that gets built (Figure 5). It is the owner's decision to have either the design architect carrying out the service, or a third party who is specialized in design and construction, such as architecture consulting firms, which are used mostly in Thailand. While in many western countries, most projects have CA services commonly included in a typical design contract [1].

In large architecture firms, CA service can be handled in its own department, which is separated from the design department. This way makes the CA process faster in response time and project continuity because they can communicate internally and rapidly between design and construction. On the other hand, in smaller firms, there may be either one or two persons handling CA in every project only, or having a project architect spend negotiated hours per week to continue to do CA on his own project. In many cases, having internal CA is common and preferred to the owner because reduced communication time shortens the construction schedule. However, some firms

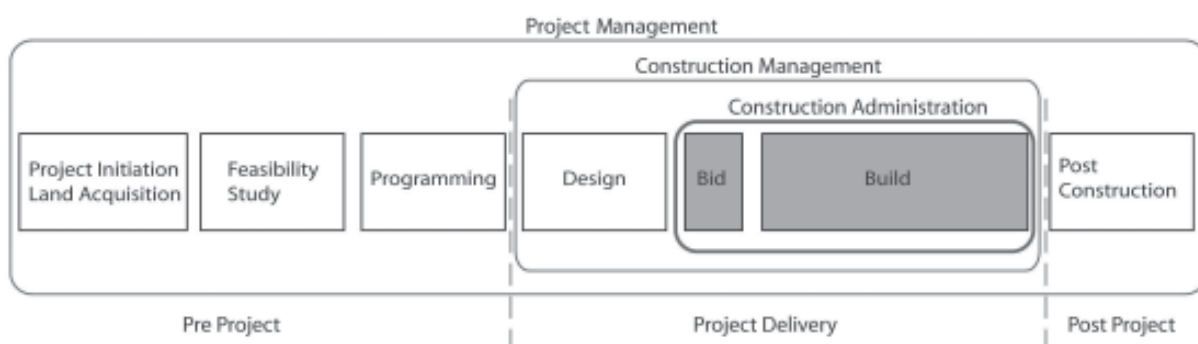


Figure 5. Construction Administration is mostly involved starting from bidding take-off to the finish of construction.

may be satisfied with their providing services in a designer's role only, thereby requiring the owner to sign a CA contract with another consulting company. Not surprisingly, there are many firms that offer CA services alone, whether architectural, engineering, or construction companies. This provides an alternative option for the owners who either have had bad experiences with a design firm or want to try something different or specialized. Providing CA services is very attractive job because, if the company can handle construction knowledge effectively, it does not take a lot of effort to run. The firm must have few construction experts, administrative staff with great organizational skills, and communication and computerized tools. This may explain why many consulting firms offer this service.

Because of the attractiveness, another type of service is offered mostly by CM firm, the combined service of CA and CM in one signed contract. This way can save the owner a little headache, so he/she can handle communication at one party. The bundling contract will provide CA service and at the same time CM service for double quality control. The owner is not necessarily saved by the fee, but the service provider may offer a little bargain, depending on the negotiation. Due to the nature of business, if the owner hires third party to overlook the other's work, the quality control should be better than bundling service with one party. This suggests that the quality of management should be higher to hire CA and CM separately, but the owner might not get the bargain on their overall fee.

4. So, are they the same thing?

There are many differences between these two terms, and it is very important for all design professionals. Administration and Manage-

ment, when translated in Thai, sometimes referred to the similar Thai terminology, "Borihan." However, they are not the same thing in the construction sense. Many people may think these two terms are two different methods to execute the construction projects, and would like to know which one is better to use. They cannot be compared in the same level because CA is a mandatory service, while CM is additional. They have entirely two different goals and tasks. Nevertheless, the understandings of their basic criterion are summarized in simple keywords as shown in Table 1.

CM service certainly changed construction from the traditional approach which is referred to the use of CA to administer contractors/ builders alone. Previously, the owner has taken all risks. The owner is still taking the risk with hiring a CM, but a CM will try to minimize the risks. One of risk factor is determined by the construction performance. It is the CM's service to overlook the performance of all parties, especially the general contractor, all sub-contractors, even the CA itself. The CM will make sure that all outstanding issues will get resolved within the determined timeframe. Moreover, the CM will provide assistance to the owner on selections of products, especially in time and value scales. These tasks are to ensure reliability within cost, time, and quality constraints [4], while CA is only to ensure the selections meet criterion as they are previously specified. It seems that the comparison provides more positive results of having CM than having CA alone. There is nothing wrong if CA performs alone, but it will be better to have somebody do double checking work. It is important before making decisions to have CM or not, the owner should understand that this extra service will cost them. Cost saving might happen with CM, while there is additional cost from CM fee. The owner is to do analytical thinking to ensure most profitable before pursue their decision.

Table 1. Basic criterion of CA and CM.

	CA	CM
Who perform the service?	<ul style="list-style-type: none"> • Architectural firm • Consulting firm* 	<ul style="list-style-type: none"> • Owner's construction manager • General contractor • Consulting firm
Incentive	<ul style="list-style-type: none"> • Contracted fee • Extension of design fee 	<ul style="list-style-type: none"> • Contracted fee • Profit sharing
Responsibility [5, 6]	<ul style="list-style-type: none"> • Ensuring construction conforming to building design as in construction documents • Observing and coordinating construction • Bookkeeping and recording decisions 	<ul style="list-style-type: none"> • General management, review, and follow-up process • Review and follow-up submittals and change orders • Review of all process payment requests • Review and update schedule
Length of process	<ul style="list-style-type: none"> • Varies depending on agreement • From bidding to substantial Completion (typical) • From bidding to post-construction 	<ul style="list-style-type: none"> • Varies depending on agreement • From bidding to substantial completion (typical) • From preliminary design to substantial completion
Goal	<ul style="list-style-type: none"> • To get the construction done as it was documented and decided 	<ul style="list-style-type: none"> • To run construction effectively • To minimize delays and extra costs that might get involved
Specialty skill	Organizing skill	Managerial skill
Keyword [7]	Facilitating and recording	Planning and controlling
Proposed Thai terminology	Amnuay Karn Kohsang	Borihan Karn Kohsang

* Consulting firm can be referred to A/E (Architecture/Engineering) or E/A (Engineering/Architecture) firms, depending on the quantity of professional staff majority or projects.

There are some of overlapping tasks of CM and CA having to do the same things. This is another issue that triggers more confusion between them. Within these tasks, CM's role is for planning and controlling, while that of CA is for bookkeeping. The list of tasks that CM and CA have to do include [8]:

- Report daily to project manager as to field progress and outstanding construction issues.
- Maintain a daily log of all construction activities.
- Perform field inspections at the job site.
- Perform field measurements, if required.
- Observe any testing.

- Verify that the construction is meeting Contract Documents and Specifications.
- Monitor and record time of all material quantities and deliveries.
- Plan and schedule work activities for field operations.
- Photo documenting of project progress.
- Verify field quantities constructed and installed as indicated on Contractor's pay requests.

These tasks are performed separately by CA and CM. They each have their own record, so the contents will not necessarily be the same. When something goes wrong or missing, there is still documentation available to be traced back for verifying. When two persons are doing same thing separately, each one is being aware of trying to get things right. Of course, hiring a CM is liked having somebody doing double-check work, rather than having one party or a CA alone. There are another list of tasks that CA and CM has to do alone.

CA tasks only [8].

- Reviewing all submittals: shop drawing, product information notes, and manuals and warranties
- Recording all communications: correspondence, meeting minutes, and Request for Information (RFI)
- Issuing documents of changes: addenda, revisions, change directives, and Architect's Supplemental Instructions (ASI)
- Issuing documents of cost adjustments: Request for Proposal (RFP) and Change Orders (CO)

CM tasks only

- Reviewing and following-up all communications: correspondence, meeting minutes, and Request for Information (RFI)
- Reviewing and following-up documents of changes: addenda, revisions, change directives, and Architect's Supplemental Instructions (ASI)

- Reviewing and Approving documents of cost adjustments: Request for Proposal (RFP), Change Orders (CO), and Value Engineering (VE)

Simply, the discipline of all tasks can be explained as CA role is to record, while CM role is to review and approve. In other words, a CA is supervising a general contractor, while a CM is supervising a CA and a general contractor.

5. The Development of Services

CA service in the past still uses the same approach as it does today, running in the traditional manner. Some developments in new computer software have been introduced to assist with the organizational operation. In Thailand, computer tools had not come until much later. Since CA is about bookkeeping, making revisions and notes via phone conversation, writing correspondence appear to be normal behavior. According to AIA contractual documents, the statement mentions handwritten overrules prints [5]. Therefore, it is not surprising that many CA works are still done without using computer.

CM is involved more with business profitability (Figure 6). Surely, people will try to get further if there are great incentives waiting ahead. The CM is paid based on the percentage fee. Nevertheless, CM has shifted its role to becoming benefit sharing. There is another kind of contractual agreement, and it has high incentives to both owner and a CM. A CM may no longer be paid by a flat-rate fee, if he/she can agree with the owner on their profit sharing. A CM can use managing experience to save more unnecessary cost of construction, of which a negotiated percentage of the savings become the CM's paid fee. Some people may think that it is risk-taking for the owner, because the risk is caused by less quality, but the cost savings is more significant.

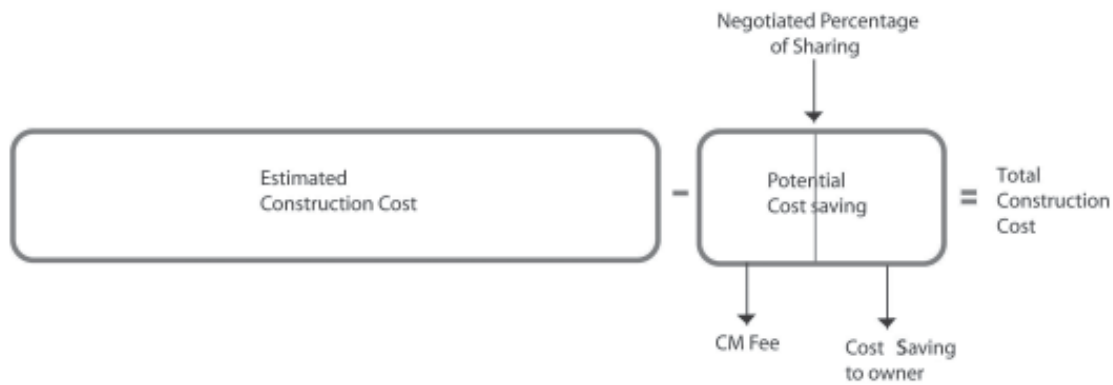


Figure 6. Potential cost saving can be maximized if more incentive is introduced to CM by using profit sharing.

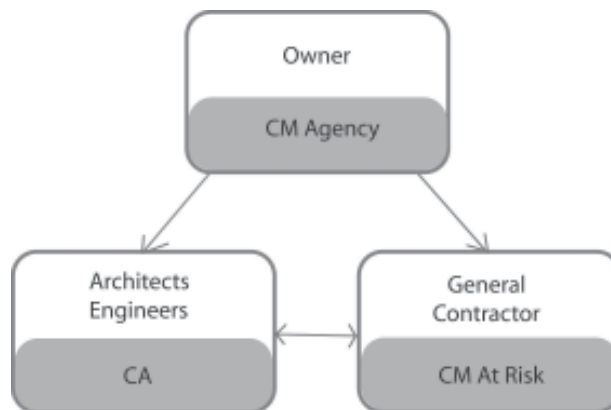


Figure 7. Triangulated contractual relationships between CM Agency and CM at Risk.

This profit sharing idea might be great only for the large projects or with high construction cost because there will be more spaces to cut down unnecessary cost, especially allowance cost. Estimated allowances in large projects are usually in large number in order to protect the contractor. If a CM manages a project carefully, those numbers can turn into cost savings easily. For smaller projects, allowances are much smaller, so opportunity for this method is not as beneficial.

6. CM at Risk and CM Agency

Profit sharing to the owner has developed and offered the clients to the contract level, CM

at Risk. It is the latest method that CM promises the owner to deliver the construction within competitive cost and bare its own risk. At end of construction, this method might not provide as much saving as profit sharing, but it is a big relief for the owner not to take any risk. Obviously, the additional saving cost is passed on the CM at Risk. CMs at Risk are most likely the well-running contraction company. Bearing the risk is costly, but if they know how to run it well, it is a great business. This contractual agreement is not quite opposed to CM agency, which is the tradition of how CM was started. CM agency is hired by owner to assist with construction matter.

Figure 7 shows that owner possibly can have CM agency and CM at risk in the same



Figure 8. CA and CM comparative matrix is to help owners determine which option is best meeting their selecting criterion. Sizes of square are varied by owner's favor and benefit. The bigger is the more favorable.

project, depending how much control and how much money the owner has. However, it is quite rare to see both CM contract in the same project. At the bottom line, a decision to select the CM contract will depend on the owner's preference to project controllability and cash.

7. Conclusion

There are differences of these two construction terms and their future. First, both terms are widely used in the architectural and construction businesses, but when it comes down to a simple understanding of the difference, CA is a basic service offering fair management, while CM is an additional service with more cost and best managing level. CM and CA bundle costs a little more than CA alone. Since CM and CA are in same organization, nature of business rivalry seems to provide less rivalry. Thus, this option might not have quality of management as good as CA and CM in separate identity. However, it costs more to hire CM, but they also are highly value for the amount spent (Figure 8).

Secondly, it is about the contractual relationship. In most cases, the owners do not have thorough understanding of how much architectural or construction companies can offer.

It is recommended that service providers are to inform of what they can do. Even though both the roles of CM and CA are created intentionally to provide ease for the project owner, there are still some differences and decision for owners to make. It is important for owners at least to understand what contract to use and what contract will fit their goals, needs, budget, quality, and timeframe.

The last point is about future of administering and managing construction projects. CA and CM are two different services, that single service provider may want to consider offering more services to expand their business. Architectural and engineering design firms, who offer only design services, may be interested in providing CA and CM. General Contractor may want to offer services in design or CM. When each firm is trying to offer many services, the industry is open for the competitive market. When there is a competitive market, the benefit will fall to the end products, which will be produced in high quality and good services for project owner. Poor service provider will not be able to stay to compete in business. That may be a picture of what everybody wants to see in our future of construction business.

The gathering information for this article is delivered though out reading, observing, investigating, and real-life experience.

References

- [1] Hendrickson, C. (1989). Project management for construction. Englewood Cliffs, NJ: Prentice-Hall.
- [2] Levy, S. M. (1994). Project management in construction (2nd ed.). New York: McGraw-Hill.
- [3] Merriam-Webster Online Dictionary. (n.d.). Administration. Retrieved from <http://www.m-w.com/dictionary/administer>
- [4] Kavanagh, T. C. (1978). Construction management: A professional approach. New York: McGraw-Hill.
- [5] American Institute of Architects. (1994) The architect's handbook of professional practice. Washington DC: AIA Press.
- [6] Fisk, E. R., & Reynolds, W. D. (2006). Construction project administration (8th ed.). Upper Saddle River, NJ: Prentice-Hall.
- [7] Ritz, G. J. (1994). Total construction project management. New York: McGraw-Hill.
- [8] May, P. C., & Novitski, B. J. (1997). Construction administration: An architect guide to surviving information overload. New York: John Wiley & Sons.