

Project Management in the Health Care Industry

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Introduction

Technology, new equipment, changing medical practice patterns, diminishing health care budgets, health promotion and environmental awareness are the key driving forces affecting health care projects (Tong, 1990). Huge amounts of money are spent on health care. Health care projects have many stakeholders with different expectations. This paper examines current project management practices in the health care industry. The study is based on the detailed interview survey of 15 project sponsors, consultants and contractors on 5 recent health care projects in Alberta, Canada. The project success factors, with the metrics used to measure the success and the driving forces are investigated. The project management practices investigated include project planning, communication, resources, external factors, team, project organization, contracting, and deliverables. It was found that in most cases, use of formal planning and control tools was limited. The results give an insight on the current practices and provide guidance on the major issues and problems in managing health care projects.

Methodology

The data for this study was collected by the Fundamentals of Project Management Class of Fall 1996 session at the University of Calgary. This project was given to a group of five students. They were asked to select a project in the health care industry, contact the owner of the project and collect information on project success factors, metrics and priorities at various phases of the project. They were also required to collect the same information with the consultant and contractor for the same project by personal interviews. They used a questionnaire designed by the authors for this purpose. Part of the reason for this was that this study was part of a larger project involving eight industry sectors and over a hundred projects. The owner, consultant and contractor were each asked to assign importance to a list of important project success factors, metrics and project drivers during the various phases of the project. Project success factors, metrics and priorities were analyzed by calculating average rankings across the various

phases and by respondent groups to determine an overall rank order for each project.

The project team members investigated and analyzed five different infrastructure and system development projects ranging in cost from \$300K to \$30 million. To the extent these projects were chosen, the emphasis was on targeting two objectives:

- benchmark best practices in the industry as sampled, and
- improve the project management process.

Results

Based on findings in this study and a review of the current literature, it is clear that each of the major stakeholders involved in the development of capital projects in the health care industry come into such projects with different expectations and motivations, some of which may be conflicting. Health care institution administrators and government agencies are primarily concerned about cost containment. On the other hand, design consultants and contractors are concerned with meeting owner expectations within allocated resources while still making a reasonable profit. The literature suggests that project managers on such projects must maintain flexibility and apply participatory management. This is necessary in order to manage the conflicts which will naturally result from these differing motivations. The most desirable options within the established scope, time, cost and quality parameters must be implemented. Our findings were consistent with this hypothesis in that those projects that emphasized open communication between stakeholders and a clear understanding of their specific accountabilities and responsibilities were the most successful.

The following analysis presents our findings in a number of key areas based on the projects analyzed in this study.

Project Success Factors

Planning.

In most of the infrastructure projects analyzed, project planning was deemed essential at the early stages of the project (definition and planning). But once it moved into

execution, the participants were content to let it run its course without relying on any detailed and formalized project plan to monitor their progress. There was a sense among survey respondents that given the relative maturity of the technologies employed and the high experience levels among participants, few unexpected problems typically occurred. Consequently detailed planning was not essential. Thus a number of cost and time saving opportunities were missed.

In most cases, the contracts between owners and contractors served as the basis for outlining what was to be done, with suggested milestones as to when specific items were expected. Formal project plans outlining the consequences of work to be conducted, network linkages, and critical path schedules were typically not in evidence.

A feature of the Acute Care Services Infrastructure project that was included in the sample is that it was fast-tracked. This is quite uncommon for these types of projects. Different phases of the project including interior renovation, additions and new construction are all happening at the same time while the hospital remained fully operational. As a result, plans and detailed schedules were updated on a daily basis. A contingency budget had been set aside to deal with any unforeseen circumstances.

Communication.

A key finding of this study was that regular and effective communication among owner, consultant and contractor is critical to achieving project success. It appeared evident from the interviews that client consultation was a regular happening during execution and there was effective communications among the three major stakeholders in order to stay abreast of the project progress, issues, and needs.

On several of the projects analyzed, it was because the participants had worked together before on similar projects that communication was open and forthcoming. Problems tended to be resolved informally and team members knew what to expect from each other.

In all cases, participants considered both open and honest communication flow to be essential. However, there was some difference of opinion between project participants as to the need for and communication of job descriptions for all key team members. The owner and consultant felt that a formal communication was not important. The contractor felt it was critical because documented job descriptions made it clear "who is the boss and who makes the decisions."

On a fast-tracked project, effective and timely communication was perhaps the most critical success factor. Through the contract arrangement, communication flow was formalized. Daily communication sessions had been

established to make project-related decisions quickly. The team has a clear understanding of each other's roles and responsibilities on the project as well as information needs.

Resources.

The key constraint on all of the projects analyzed was budget. Accordingly, labor and material resources were limited by available project funds. On health care infrastructure projects, cost overruns are not acceptable and would only be considered if there were significant, unavoidable project scope changes that could not have been foreseen in the definition and planning stages of the project. This is the norm in publicly financed projects at this time of restrained government financing but typically does not prove to be a problem on such infrastructure projects where the parties have extensive experience and are able to make accurate cost and schedule estimates and stick to them. Arguably, sufficient contingency has been included and possibly hidden in the budget to accommodate the normal vagaries of such projects!

On one of the projects for fire and smoke detection upgrades, the selection of the appropriate technological resource was a key to project success. In this case it was the systems technology supplied by the vendor, which was particularly suited for fire/smoke detection, and controls in the hospital setting.

External Factors.

The main external factor critical to success and requiring effective management, was the assurance that there be as little disruption as possible in the normal work flow of the hospital, so that hospital staff, and patients would not be negatively impacted by the project during installation. It was not acceptable to shut down or hinder normal hospital operations to accommodate construction. This was understood and accepted at the beginning of the projects by all the contractors involved. The most successful projects are those where great care is taken to develop work procedures that reduce construction noise, vibration, fumes, dust etc. in order to maintain the highest standards of hygiene and comfort for hospital patients and staff.

An interesting finding was that the end users for health care infrastructure projects are considered to be the medical practitioners rather than the patients. The reason for this is that any complaints about the construction would come from the doctors and nurses who are there constantly. Most patients, it seems, are less concerned about the state of the health care facility as long as they receive the care they feel should be provided.

On publicly funded projects such as infrastructure projects in the health care industry there is also concern that

the project goes smoothly in order to avoid embarrassment or bad publicity due to construction problems or squabbles between the participants. As a result, problems tend to be ironed out quickly and efficiently through informal means by the participants.

On most of these projects, respondents indicated that avoiding change in corporate culture was not an important success factor. As a matter of fact, some respondents indicated that aspects of their own corporate culture in some cases changed or willingly compromised for the benefit of the project.

On one project, a primary external factor was community opposition to the project. Their concerns related to the anticipated increase in traffic volume and transfer of some of the wards from another hospital. These concerns had to be addressed by the architect through community surveys and participation in city council meetings.

Team/Organization.

For all of the projects analyzed, the focus was on using experienced people, with demonstrated know-how and familiarity with health care industry projects.

The consultants and vendor/contractor personnel were very much in tune with the clients' needs and committed to getting the job done according to the key constraints (cost, quality, safety, operability).

Career development or personnel training were considered to be secondary, and not key factors for consideration.

Contracting.

The contract arrangements on these projects were diverse. This is the likely consequence of government tendering procedures and policy. Typically, these make it more difficult to justify any deviation such as direct negotiation with a preferred general contractor, or consistent use of the same general terms and conditions if the issuing authority is different.

On one project, the owner (Calgary Regional Health Authority) had a contract with a prime contractor to act as the prime contractor/construction manager for the project. The subcontractors each had direct contracts with the owner, not with the prime contractor. This arrangement allowed the owner to maintain its standards and procedures throughout the project through its direct contracts and also made the owner ultimately accountable to make sure they were carried out.

On another project, a similar contracting arrangement was used where the owner had a cost-plus contract with a general contractor to do on-site construction management and then had lump-sum contracts with all of the sub-contractors.

Deliverables.

There were a number of factors that the respondents were asked to consider regarding project deliverables, including:

- project achieving its stated purpose,
- completion to specification,
- completion within budget,
- completion on time, and
- completion with minimal scope changes.

For the infrastructure projects in the health care industry, the primary concerns in terms of results were that the projects achieve stated purpose and were completed within budget. Completion on time, within specification, and with minimal scope changes were also important but will be compromised if necessary in order to remain on budget.

In some cases, the different participants placed varying degrees of value on different factors. For example, it is not unusual for the owner to be primarily concerned about budget, the construction manager to be more focused on schedule and for the architect to view quality and end-user satisfaction as the most important factor. On successful projects, strong communication and team-based approaches to solving problems will allow the team to appropriately balance these sometimes conflicting priorities.

In most cases, the execution of the project was left in the hands of the prime contractors or construction managers. The deliverables were specified in the contractor(s) and the way they were delivered was essentially left up to the doing work.

On the successful projects, scope definition was well addressed from the outset, and well controlled throughout the project life cycle. The project got off to the right start in the Definition phase, with a realistic assessment of the scope of the work, leading to a realistic budget estimate, and funding approvals.

On health industry software projects, like any other software projects, it is difficult at the outset to envision what the final system will look like. The clients typically, do not know what they want because they are not fully aware of what is available. What contributes significantly to success on such projects is a systems analyst with superior communication skills who can keep discussion with clients non-technical. On one such project, all three interviewees said the project was a success but each defined success differently. It was obvious that the deliverables had not been agreed to up-front.

Project Metrics

On most of the projects analyzed, project S-curves, earned value techniques, CPM tools, or Project Management Information Systems were typically not employed to any significant extent to track and manage progress, nor were

formalized progress reports typically used. Progress was informally monitored through regular meetings, and regular communications. The exception to this general observation was those projects in which Alberta Public Works was involved. On one such project, Alberta Public Works formally monitored and reported on budget and schedule progress supported by more extensive use of formal metrics such as S-curves.

Schedule progress was monitored against suggested milestones, but there was some degree of tolerance allowed, as the projects were not deemed 'schedule-driven'. The main focus was on cost, quality, and safety constraints. To preserve these, the schedule was permitted to slip if necessary.

Scope change procedures were in place, and scope changes were quickly scrutinized, if raised, since requests for additional funds required governmental approval.

On one of the projects, each of the three respondents used a different metric to measure economic success. The owner looked at payback on the project in terms of the number of years it would take for the revenues or cost savings generated by the project to pay back the investment. The consultant was a bit more sophisticated and took time value of money into consideration in a Return on Investment calculation. As is fairly typical, the contractor looked at the margin of profit earned on the project.

On another project, progress was tracked largely based on daily site walk-throughs where the senior project manager, the superintendent and the appropriate supervisor would walk through each area to assess progress against deliverables. A "percentage of completion" was assessed and recorded for items in which action had to be taken in order to stay on schedule. An opportunity existed on this project to develop simpler and less subjective metrics for "earned value." A simpler and more conservative approach would have been to use deliverables only, thereby reducing the estimating of progress to a binary problem.

Project Priorities

Project priorities observed were as follows, in order of importance:

- Cost—i.e. project within budget
- Continuation of hospital operations without disruption to services or jeopardizing building safety
- End-user (medical practitioners) satisfaction
- Performance/scope/quality
- Time—i.e. project on schedule

On the other hand, all career development and training for individuals on the project team was seen by all respondents to be relatively unimportant compared to other project priorities.

Conclusions

Based on our findings, key factors contributing to success of projects in the health care industry are the following:

Good scope definition at the front-end of the project, which under-pins the budget approval process and contracts, with alignment among owner, consultant, and vendor/contractor on what needs to be delivered, how, and by whom.

Selection of suitable resources, and in some cases the right kind of technology, and experienced manpower familiar with these types of projects is important.

There is a clear need to have the know-how to get the job done effectively so that the project can effectively be left in the hands of the people doing the work once the initial planning has been done.

Regular and effective project communications between owner, consultant, and vendor/contractor needs to take place throughout the execution of the project.

Effective cost and scope control maintained throughout the project through contractual obligations and scheduled signoffs by the owner once each major project milestone is reached.

It is important to pay attention to external factors, particularly the needs of the hospital staff and patients, by making sure that there are no major disruptions to services and operations.

Effective decision-making process (quick, efficient, non-bureaucratic) are important too.

The application of formal project planning and control methods varied from project to project and depended to some extent on the size of the project. In most cases, however, use of formal planning and control tools was rather limited, with the exception of the general contractor who typically employed the most structured approach, based on the need to ensure a profit and to meet client budgetary constraints.

Recommendations

The most significant finding from a look at this sector of industry was that the recognition of the need for open communication was clear. Open communication has been consistently found to be a significant factor in achieving success on projects.

Another noticeable trait of this small sample was the relative absence of formal project planning and control techniques. Given the real complexity of these projects, this was a bit of a surprise. The approach that stressed using experienced personnel and proven technologies helps

to mitigate the shortfall in effective planning and control. In the absence of this experience and if there is a need to use newer technology, projects managed as these were would likely be quite vulnerable.

Clearly, from this study, we can see that the sample projects fall into a pattern that is common to what is seen in other industry sectors, as reported in Hartman & Ashrafi (1996, 1997 & 1998). Specifically, only relatively small portions of the scope of project management covered by the PMI Guide to the PMBOK (Project Management Body Of Knowledge) are routinely used. Opportunities for improvement can really only be assessed on a project-by-project basis, but the following opportunities should be considered.

- Broaden the stakeholder base to include patients
- Plan projects more carefully, and disclose potential delivery risks
- Declare contingencies based on a set and agreed probability of success

What other industries can learn from this sector include the following.

- Work hard at open communication—it pays off!
- Involve stakeholders and coordinate their expectations at the outset of the project.
- Identify the priorities: Quality and scope, cost, time. This makes subsequent management of the project much easier.

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