The Cost of Facility Development:

A Comparative Analysis of Public and Private Sector Facility Development Processes and Costs

Jeffery A. Lackney
Peter Park
Larry Witzling

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ABSTRACT

Due to the concerns of local, state and federal public officials over the cost and quality of facilities, interest in understanding why public university buildings appear to, and/or actually cost more than private sector buildings is high. This monograph responds to these concerns by comparing cost, quality and time factors of selected public and private sector facilities in the State of Wisconsin. Using a multiple case study method, several factors affecting project costs are investigated: (a) organizational context of design decision-making, (b) facility development process, (c) project scope, and (d) project outcomes. Five matched pairs of public institution/private commercial buildings are comparatively analyzed to determine if private sector project development is less expensive than public sector project development, and if so, why.

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EXECUTIVE SUMMARY

Within the context of tighter constraints on capital expenditures, building program administrators are increasingly criticized by those who perceive unjustifiable higher cost public buildings relative to comparable private buildings.

Due to the Department of Facility Development's (DFD) concerns over the cost and quality of facilities, the DFD is interested in understanding why public buildings appear to, and/or actually cost more than private sector buildings. The University of Wisconsin-Milwaukee School of Architecture and Urban Planning (SARUP) responded to a DFD request for a proposal to study these concerns of the state building program.

The study analyzed five matched pairs of public institution/private owner-occupied commercial buildings in the State of Wisconsin to determine if private sector project development is less expensive that public sector project development, and if so, why.

Using a multiple case study method, four primary factors affecting project development and associated costs were investigated: (a) organizational context of design decision-making, (b) facility development process, (c) project scope, and (d) project outcomes. After a lengthy search for comparable buildings, five matched pairs were chosen:

<table>
<thead>
<tr>
<th>Public Facility</th>
<th>Private Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DNR Building, Milwaukee, WI</td>
<td>Warzyn Building, Madison, WI</td>
</tr>
<tr>
<td>2 Waukesha State Office Building, Waukesha, WI</td>
<td>Flsere Building Brookfield, WI</td>
</tr>
<tr>
<td>3 Stores/Extension Services Facility, Madison, WI</td>
<td>Electromotive Facility</td>
</tr>
<tr>
<td></td>
<td>Milwaukee, WI</td>
</tr>
<tr>
<td>4 Allied Health Center UW-Eau Claire</td>
<td>Clark Hall Nursing School</td>
</tr>
<tr>
<td></td>
<td>Marquette University, Milwaukee, WI</td>
</tr>
<tr>
<td>5 McPhee Physical Education Facility, UW-Eau Claire</td>
<td>Beloit Physical Education Facility, Beloit College</td>
</tr>
</tbody>
</table>

Data collection included conducting individual and group interviews, and collecting relevant archival materials (organizational records, contract documents, specifications, and project records). Data analysis consisted of identifying similarities and differences across matched and comparison levels of analysis for each case pair. Three project outcomes were measured: time (project duration), facility development complexity, and several categories of project costs (building, construction and project costs, site development, design and supervision, and change order costs).

Once the project outcomes of time, complexity and cost were documented, a comparative analysis was undertaken. Factors of Complexity that differed between the paired cases were identified as possible reasons or potential contributors to differences in project duration (time) and costs. Specific examples from the case studies are highlighted to illustrate how these Factors of Complexity may have affected project duration and costs.
There are a large number of factors that influence the cost and time required to design and construct building projects. The research instrument used in this study analyzed issues of complexity relative to time and cost outcomes and identified primary factors that caused differences in project duration and cost for the cases sampled. The study identifies those factors that are particularly responsible for outcome differences between public and private buildings. There are two main conclusions of this study based on the findings:

**Conclusion #1**

*Operating within a complex process leads to a complex project that requires more time and higher costs.*

While this statement may seem to be obvious, the findings in this study provide supporting evidence and put forth case examples where the questions of *how much longer* and *how much more* are answered. Structures and Procedures and Methods of Contracting were identified as being more complex more often in the Public sector cases and resulted in longer project durations, and higher General, Mechanical/Plumbing, and Design & Supervision costs. While differences in Design & Supervision have small effect on the Total Project Cost, differences in General and Mechanical/Plumbing costs have significant effect as together they comprise the majority of a building’s Total Project Cost. All of the Public facilities followed a more complex development process resulting in generally more complex building projects that in 4 out of 5 cases took longer to build (on average, 80% longer to design and 101% longer to construct) and in 4 out of 5 cases cost more (on average, Total Project Cost/GSF was 11% more).

The simple summary statistic — public buildings cost 11% more — fails to identify several fundamental causes for wide variation in cost differentials. Fundamentally, there are significant qualitative differences in buildings — primarily evident in terms of project complexity — that result in cost differences. These complexities include, for example, public policies requirements that protect the public interest, more complex and unique building requirements, different time lines and life cycle goals, and the accepted level of probability for project failure.

**Conclusion #2**

*“Top-line factors” significantly influence Public Sector decision-making procedures resulting in a project that is more complex that requires more time and higher costs but has greater public accountability.*

A tension exists between so-called “bottom-line factors” and “top-line factors.” Bottom-line factors are those factors solely associated with costs, while top-line factors are those associated with social or community benefits and issues of public accountability. Bottom-line factors are more dominant in the motives of private sector development whereas top-line factors are more significant in the public sector. At one level, the objective or motive in both public and private sector owners is the same; getting a product of value. The criteria for what is value however, is clearly different between public and private sectors—a difference that must be considered when comparing public buildings to private buildings. Is the owner’s objective to build at the lowest possible cost, or to build at the best possible cost commensurate with good design, safety standards and long-term life cycles?
Knowing the motive for development is critical to understanding why these factors vary between public and private sectors. This study has looked at both issues, bottom-line and top-line, one is quantitative in nature, the other is qualitative. The exact linkages between differences in these two bodies of data are difficult to pinpoint, but critical in understanding why some buildings cost more than others. In examining complexity (in terms of both development process and physical form) and various components of cost and time simultaneously, the findings reveal the trade-offs between time and cost outcomes and public accountability. For example, while Public sector buildings generally took longer and had higher Total Project Costs/GSF, Change Orders/GSF were smaller (on average, 23% less) and in 3 out of 5 cases Change Orders constituted a significantly smaller percentage of Total Project Cost than its Private Sector match.

In 4 cases, the public buildings cost more. The important question is why these costs differences occurred and whether or not they are appropriate. That is, are these comparable projects providing the same level of environmental quality — or is the public paying for more (or less) relative to the private sector. In general, it appears that public sector building may pay a little more, but they also get more — in terms of durability and conformance to societal goals.

The standards for public and private buildings are different — and this allows private sector buildings to be built faster, with more compromises (albeit well-chosen trade-offs) and to accept a higher level of risk for failure. If public building programs had the same flexibility the costs would probably be comparable. Poor public buildings could be built for less money — but only if the public were willing to accept the same standards and risks as evident in the private sector. This is unlikely.

Consequently, future research should focus on what qualities are being purchased by the public and whether those qualities are worth the apparent additional premium. If not, the additional qualities (and the public policies that mandate them) should be reconsidered.

Several of the architects and contractors that were interviewed in this study indicated that state work did not offer them much opportunity for large profits but were "bread and butter" kinds of jobs that provided stability in a firm’s practice. Longer project durations (due to more structured procedures and policies) were identified as the primary reason for lower profit margins. This is simply indicative of the state getting more for each dollar that it spends on buildings. The public sector should not be a "cash cow" for the private sector to make great profits from—this is simply not in the public interest. Providing a stable foundation for firms to depend on in leaner construction periods and making use of each public dollar going to those firms, however, is acting responsibly.