Factors Impacting Selection of Construction Subcontractors

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Background and Problem Statement

- Subcontractors do a considerable portion of construction work.

- Selecting appropriate subcontractors contributes to a project's success (Hartmann et al. 2009).

- Choice of subcontractor affects other project stakeholders (owners & consultants)
Objective

- Identify subcontractor selection factors important for construction professionals

- Influence of professional background on importance associated with the factors
Methodology

- Survey questionnaire
- 137 experts (Alberta)
  - Owners: (34.3%)
  - Consultants: (62%)
  - General contractors: (3.6%)
- Data analysis & Statistical tests
  - t-test
  - ANOVA & post hoc
Survey questionnaire

Professional background

Factors to be considered in Selecting Subcontractors in Alberta’s Construction Industry

Date: 

Mode of Communication

☑️ In-person ☑️ Email ☐ Mail ☑️ Phone

Please check from below which best represent you

Selection factors

Please identify the level of importance of following factors in the process of selecting subcontractors. Note: Your answers are based on your knowledge and experience, and regardless of the regulations.

<table>
<thead>
<tr>
<th>No.</th>
<th>Factors considered in the selection of Subcontractors</th>
<th>Very Unimportant</th>
<th>Unimportant</th>
<th>Good to have</th>
<th>Important</th>
<th>Very Important</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Subcontractor's Experience on similar type of projects</td>
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Likert scale definition

<table>
<thead>
<tr>
<th>Scale</th>
<th>Definition</th>
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<tbody>
<tr>
<td></td>
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<td>4</td>
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<tr>
<td>5</td>
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</tbody>
</table>

7. In how many projects have you been involved in the selection of the subcontractors? ☑️ 0-10 Projects ☐ More than 10 projects ☐ None
8. Do you have direct experience in working with subcontractors? ☑️ Yes ☐ No
Survey questionnaire

Independent variables

Industry sector
Organization type
Experience in construction
Experience in Alberta
Involve selecting subcontractor
Working with subcontractor

Independent variables

Experience in similar projects
Local market familiarity
Schedule compliance
Available resources
Reputation in market
Execution plan
QA / QC program
Safety record
Previous relationship
Survey summary

Industry sector
- Private: 67.2%
- Public: 32.8%

Organization type
- Contractor: 49.6%
- Consultant: 19.0%
- Owner: 31.4%
Survey summary

Construction segment

- Industrial: 65.0%
- Residential: 13.9%
- Non-residential: 18.3%
- Infrastructure: 26.3%
Survey summary

Experience in construction

- > 10 years: 38.7%
- 5-10 years: 31.4%
- 5< years: 29.9%

Experience in Alberta

- > 10 years: 22.6%
- 5-10 years: 32.8%
- <5 years: 44.5%
Survey summary

Involved in selecting subcontractor

- >10 project: 40%
- <=10 projects: 60%

Working experience with subcontractor

- No direct work experience: 21.2%
- Direct work experience: 78.8%
Descriptive statistics

Mean score of factors impacting the selection of subcon.
Examining statistically significant relations between professional background and selection factor

Number of choices in Professional background

- 2 → t-test
- > 2 → ANOVA & ad hoc
Inferential statistics

Industry sector
- Public
- Private

Organization type
- Owners
- Consultants
- General contractors

ANOVA & ad hoc

Low bid price

t-test
### Inferential statistics

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>experience in similar proj.</th>
<th>local market familiarity</th>
<th>lowest price bid</th>
<th>schedule compliance</th>
<th>financial strength</th>
<th>available resources</th>
<th>reputation</th>
<th>execution plan</th>
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<th>safety record</th>
<th>qualification of personnel</th>
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Conclusion

Low bid price valued more by the following professionals

- Private sector
- Construction contractor segment
- 5-10 years of experience in Alberta’s construction industry
- Selecting subcontractor in more than 10 project
- Have direct working experience with subcontractor