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Report on
The University of Melbourne's
Survey of Tendering Practices in the
Heavy Civil Engineering Construction Industry

The University of Melbourne
Department of Civil and Environmental Engineering

The Engineering Project Management Group
Ms. Aminah Fayek, Professor David Young, Mr. Colin Duffield
December 1995



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We would sincerely like to thank all of the participating companies for their time, for their cooperation, and for the valuable information they provided. This survey would not have been possible without the contribution of these leading members of the Australian construction industry.

Amongst the participating companies and people are the following:

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Clough Engineering Pty. Ltd., Brisbane
Concrete Constructions (Victoria), Melbourne
Davy John Brown Pty. Ltd., Melbourne
Fletcher Construction Australia Ltd., Melbourne
Hoare Brothers, Geelong
John Holland Construction & Engineering Pty. Ltd., Melbourne
John Holland Construction & Engineering Pty. Ltd., Brisbane
Leighton Contractors Pty. Ltd., Melbourne
Minenco Pty. Limited, Melbourne
Moggill Constructions Pty. Ltd., Brisbane
Queensland Transport - Metropolitan South, Brisbane
Roche Bros. Pty. Ltd., Melbourne
Seymour Whyte Constructions Pty. Ltd., Brisbane
Mr. Jim Slattery, Melbourne
Thiess Contractors Pty. Ltd., Melbourne
Mr. Glen Townsley, Brisbane
Transfield Construction Pty. Ltd. - Victoria, Melbourne
VicRoads, Melbourne
Walker Civil Engineering Pty. Ltd., Sydney



Report on The University of Melbourne's Survey of Tendering Practices in the Heavy Civil Engineering Construction Industry

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Report on
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Introduction

The following report is a compilation and analysis of the data collected from The University of Melbourne's Survey of Tendering Practices in the Heavy Civil Engineering Construction Industry. This survey was conducted between October of 1994 and November of 1995, in Melbourne, Sydney, and Brisbane. The goal of the survey is to examine the estimating and tendering practices of Australian civil engineering contractors involved in competitive tendering. It's focus is on methods of risk and opportunity assessment and margin setting practices. Although the survey was aimed at construction contractors, a number of client organisations and consultants to client organisations in the construction industry were included. These organisations provided insight into tender evaluation practices.

This report is divided into two sections: a background information survey of tendering practices, and a detailed survey of margin allocation practices. The former section provides background information on the companies involved in the survey and on the tendering practices of their civil divisions. The latter section is based on case studies of actual projects tendered by the companies. It provides information on margin sizes, risk and opportunity factors, objectives in tendering, and factors considered in setting margin. Common trends and relationships arising out of the analysis of the data are presented.

This report has the following objectives:

- To identify the characteristics and tendering practices of Australian civil engineering construction contractors.
- To identify the range of margins considered on construction tenders.
- To identify the most common factors considered in risk and opportunity assessment.
- To identify the most common objectives in tendering, and their relationship to margin size.
- To identify the most common factors affecting margin size.

This report forms part of the Ph.D. research of Ms. Fayek.

Success Rate of the Survey

The success rate of this survey of the Australian civil engineering construction industry's tendering practices was 81.1%. A total of 37 companies were approached, and 30 companies participated. Of those 30 companies, two were client organisations and two were project management and engineering consultants to client organisations. One was a client organisation that also competitively bid for work. The remaining companies were civil engineering contractors. The names of some of the participating companies are listed on the acknowledgments page of this report.

Twenty-seven companies responded to the background information survey of tendering practices. Twenty-four companies responded to the detailed survey of margin allocation practices, providing 36 case studies (actual projects tendered). The remaining companies responded to custom-tailored interview questions, to suit their organisation's practices.

Some of the reasons that the other 7 companies that were approached did not participate in the survey are:

1. The company did not follow through with the survey procedure (2 companies).
2. The company lacked the time necessary to complete the survey (2 companies).
3. The company is not a civil engineering organisation, and therefore the survey is not relevant to their organisation (2 companies).
4. The company did not wish to divulge the information requested in the survey (1 company).

Background Information Survey of Tendering Practices

This survey was administered by mail. Its purpose was to collect background information on companies involved in the civil engineering construction industry and on their tendering practices.

Title of Respondent

Number of Respondents: 27

Title of Respondent	Percentage of Respondents
(Chief) Civil Engineering Estimator	41
Estimating Manager	26
General Manager/Director	19
Project Manager/Engineer	7
Other	7

The largest group of respondents to the background information survey were (Chief) Civil Engineering Estimators. Estimating Managers and General Managers or Directors of the company formed the next two largest groups of respondents.

Other titles of respondents, in addition to those listed in the table, included: corporate contracts manager (consultant to a client organisation), and manager of contract services (client organisation).

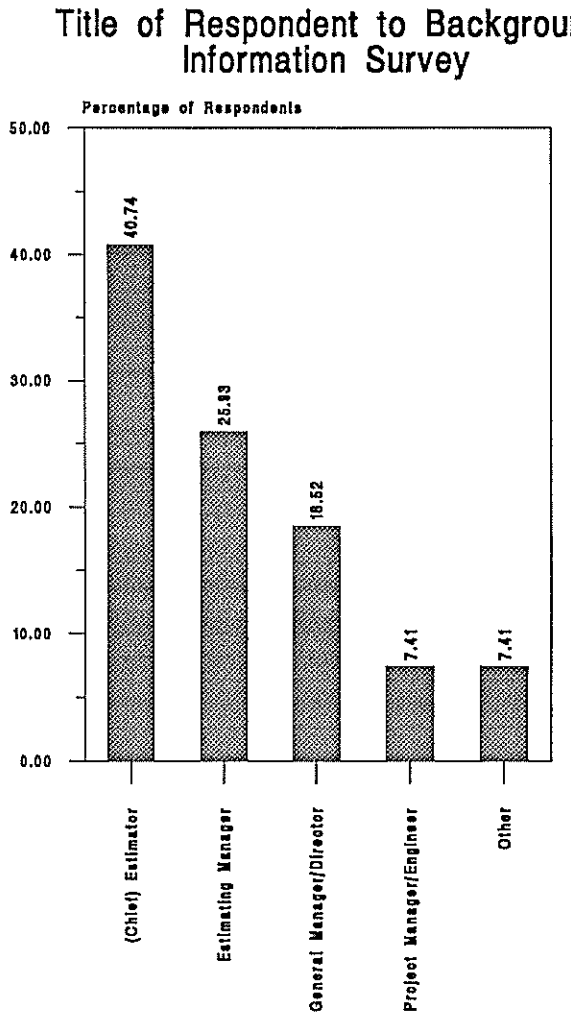


Figure 1. Title of Respondent to Background Information Survey

Part A. Company Characteristics

1. *Type of contractor*

Number of Responses: 27

Type of Contractor	Percentage of Respondents
Civil engineering	93
Building	41
Mining	41
Industrial facilities	48
Other	33

The majority of companies surveyed were civil engineering contractors. Almost half of them performed work on industrial facilities, and a large number of them performed building and mining projects.

Other types of contracting performed by these companies included: rail; land servicing subdivisions; environmental services; marine facilities (including wharves and pipelines); civil underground construction; shipbuilding; oil and gas pipelines; offshore oil and gas work; tunnelling; dams; and, iron and steel, non-ferrous metals, and pulp and paper projects.

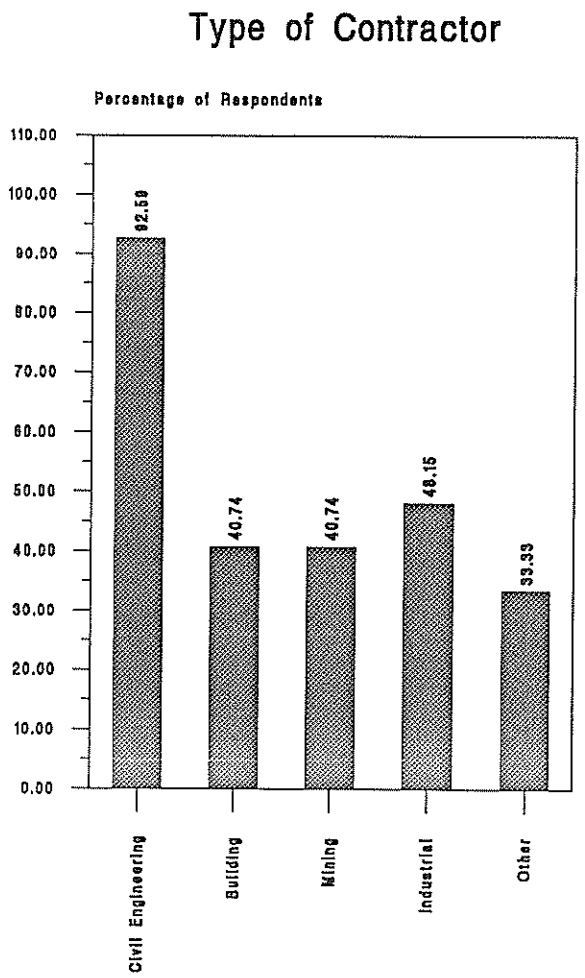


Figure 2. Type of Contractor

2. *Company's annual sales*

Number of Responses: 27

Company's Annual Sales	Percentage of Respondents
Under 50 million dollars	41
50 to 199 million dollars	7
200 to 499 million dollars	19
500 million dollars or over	33

The largest group of companies surveyed had annual sales under 50 million dollars. The second largest category of companies were those having annual sales of 500 million dollars or over. Thus, most companies fell into either the small or the very large categories, in terms of annual sales.

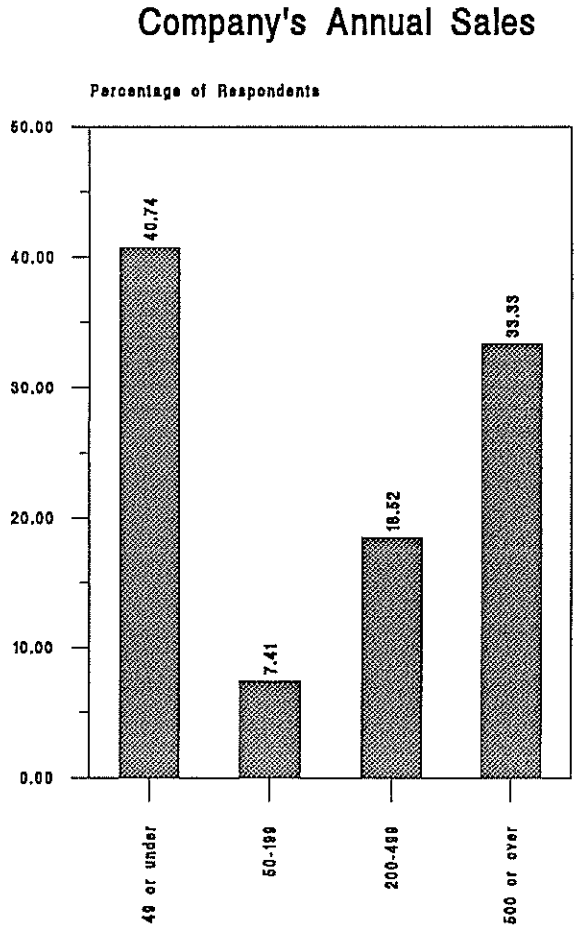


Figure 3. Company's Annual Sales

3. *Number of branch offices, excluding Head Office*

Number of Responses: 26

Number of Offices Excluding Head Office	Percentage of Respondents
0 to 5	65.4
6 to 10	19.2
Greater than 10	15.4

The majority of companies had under 6 branch offices, excluding their Head Office.

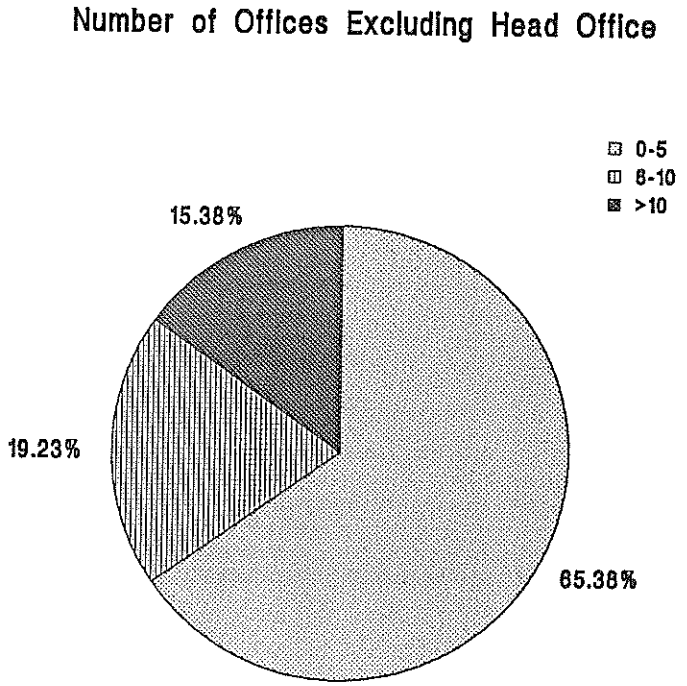


Figure 4. Number of Offices Excluding Head Office

4. *Regions in which company tenders*

Number of Responses: 27

Regions in which Company Tenders	Percentage of Respondents
Victoria/Tasmania	78
NSW/ACT	74
Queensland	89
South Australia/Northern Territory	59
Western Australia	63
South-East Asia	63
Pacific	41
Other	11

The majority of companies surveyed tendered for work in Queensland, followed by Victoria/Tasmania and NSW/ACT. Overseas work in South-East Asia was common amongst more than half of the companies surveyed.

Other regions in which companies tendered, in addition to those listed in the table, included: South Asia (i.e. Pakistan, India, Sri Lanka), and the Middle East.

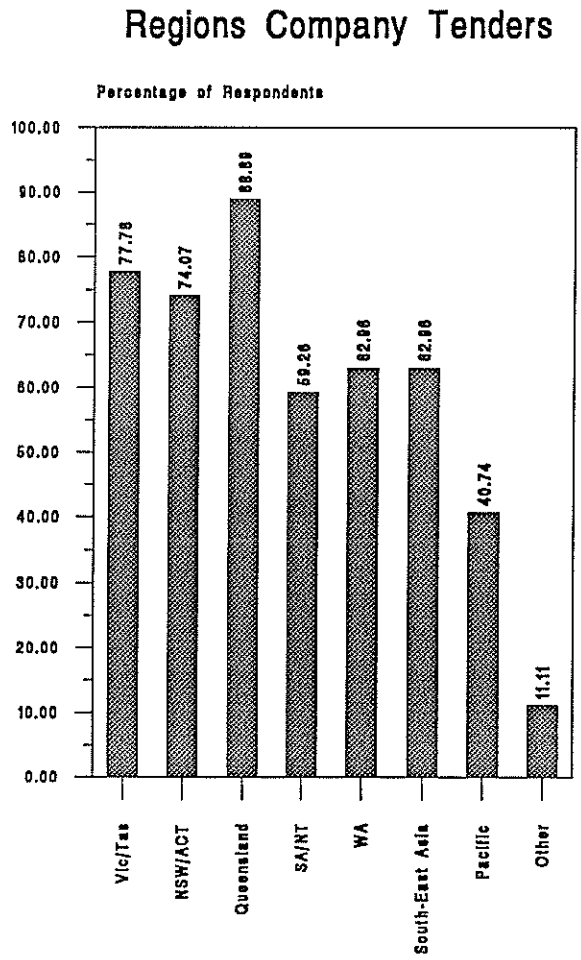


Figure 5. Regions Company Tenders

Part B. Characteristics of the Civil Group or Division

5. *Types of projects estimated by civil division*

Number of Responses: 27

Types of Projects Estimated by Civil Division	Percentage of Respondents
Roadworks	74
Bridgeworks	74
Mining facilities	41
Industrial facilities	63
Other	44

The majority of companies estimated both roadworks and bridgeworks projects. Industrial facilities were also common, and mining facilities were less common.

Other types of projects estimated by civil divisions included: oil and gas pipelines; subdivisions; marine construction (including harbours and wharves); underground construction; underground mine development; earthworks; tunnelling; (custom-built) car parks; drains; boat ramps; railways; rail electrification; grain silos; dams; service contracts (client organisation); and, supply contracts (client organisation).

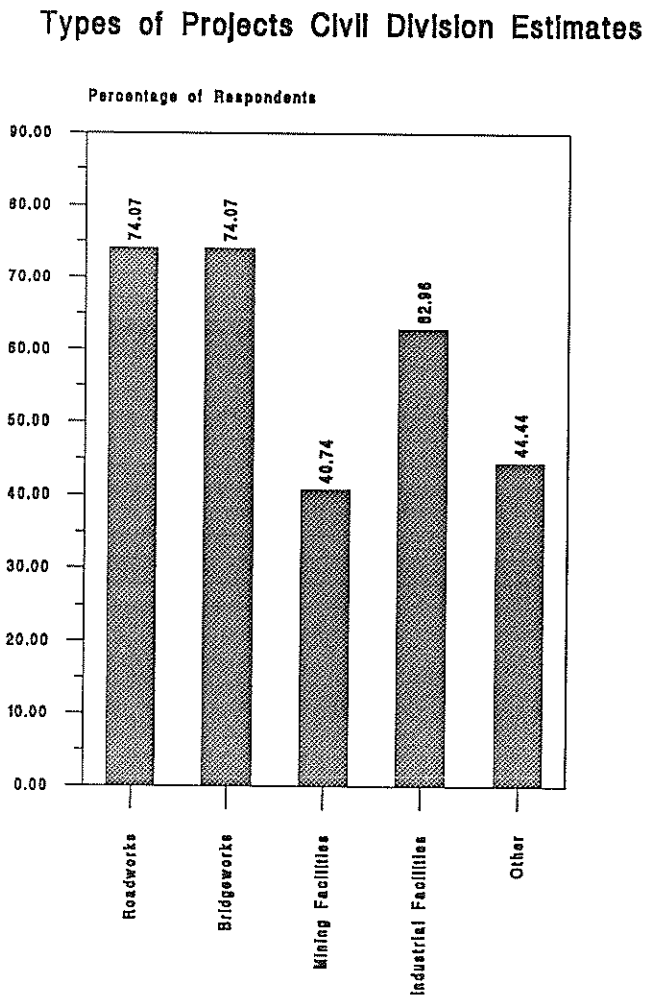


Figure 6. Types of Projects Civil Division Estimates

6. *Regions in which civil division tenders*

Number of Responses: 27

Regions in which Civil Division Tenders	Percentage of Respondents
Victoria/Tasmania	74
NSW/ACT	52
Queensland	67
South Australia/Northern Territory	56
Western Australia	41
South-East Asia	37
Pacific	22
Other	4

The civil division of most companies surveyed tendered in Victoria/Tasmania, followed by Queensland, South Australia/Northern Territory, and NSW/ACT. Overseas work by civil divisions was secondary to Australian projects, with South-East Asia being the most popular overseas location for projects.

Another region in which a civil division tendered, in addition to those listed in the table, was the Middle East.

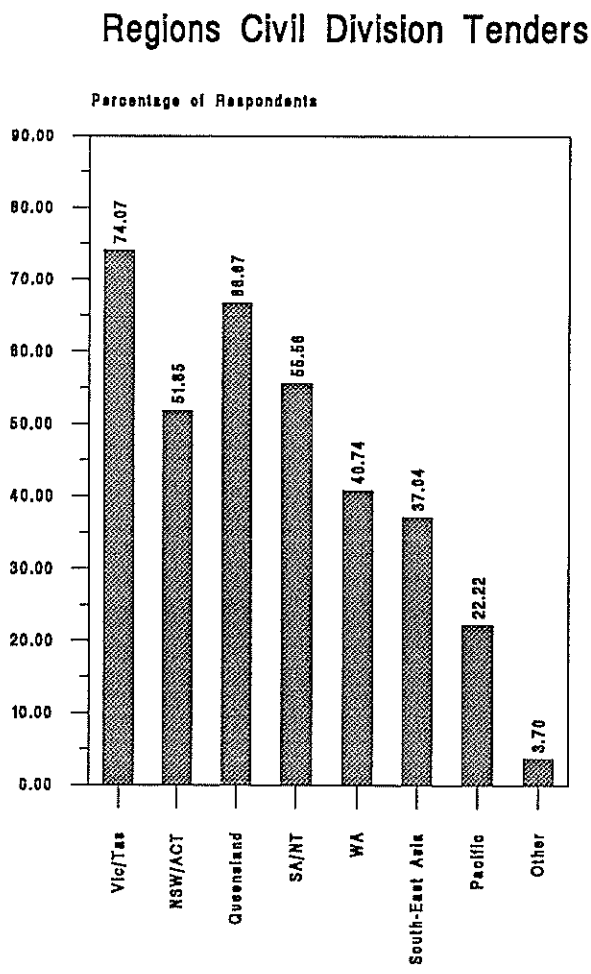


Figure 7. Regions Civil Division Tenders

7. *Civil division's range of job sizes*

Number of Responses: 26

Civil Division's Range of Job Sizes	Percentage of Respondents
Up to 10 million dollars	27
Up to 50 million dollars	27
Up to 200 million dollars	38
Up to 500 million dollars	4
Over 500 million dollars	4

The most common range of job sizes was up to 200 million dollars. Job sizes below 10 million dollars and below 50 million dollars were also common. Very few companies had a range of job sizes in the civil division greater than 200 million dollars.

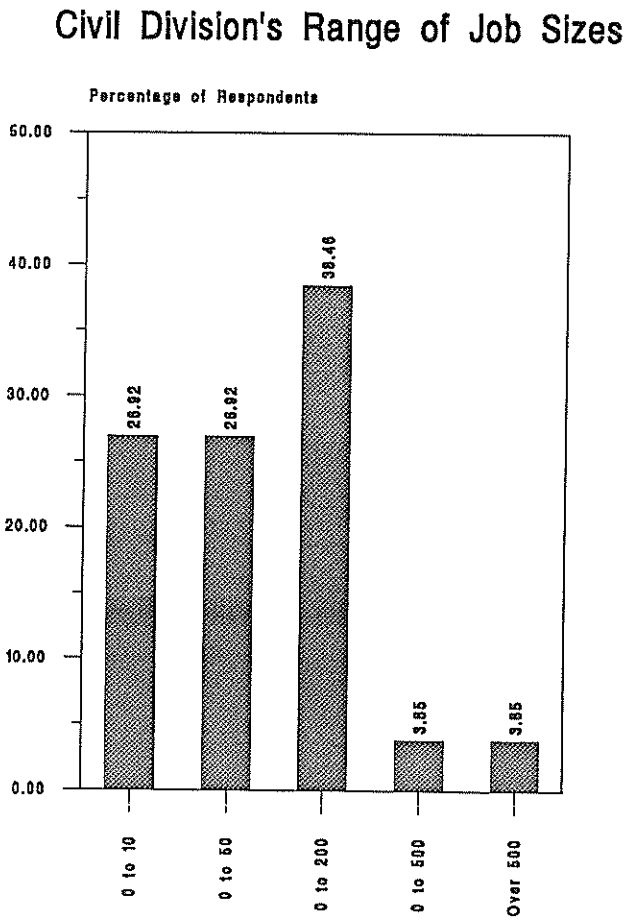


Figure 8. Civil Division's Range of Job Sizes

8. *Civil division's range of job durations*

Number of Responses: 26

Civil Division's Range of Job Durations	Percentage of Respondents
Up to 6 months	8
Up to 2 years	54
Up to 5 years	38
Over 5 years	0

The most common duration of companies' civil division jobs was up to two years. A large number of companies had jobs lasting up to five years. Jobs lasting up to six months were not common, and none of the companies reported jobs lasting over five years.

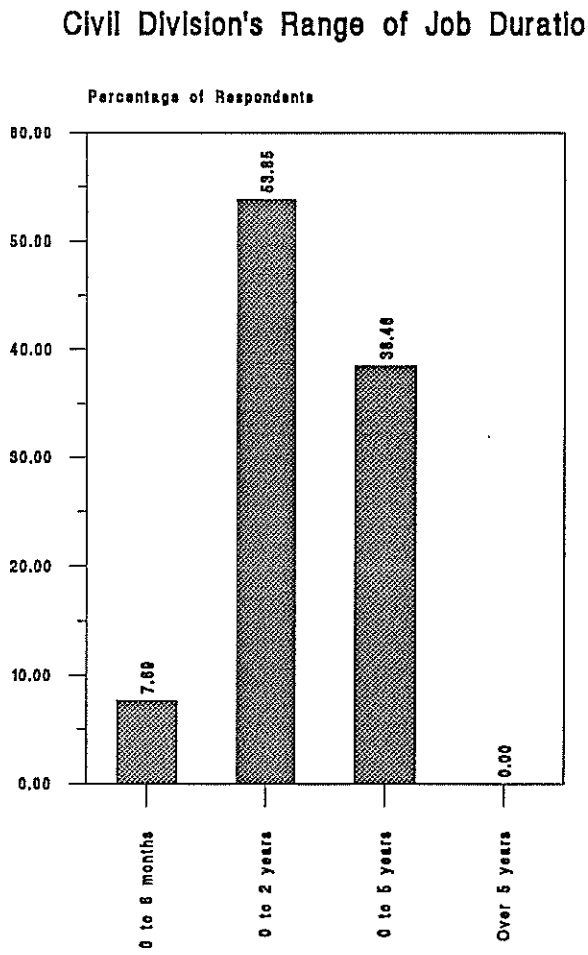


Figure 9. Civil Division's Range of Job Durations

9. *Types of contracts civil division undertakes*

Number of Responses: 26

Types of Contracts Civil Division Undertakes	Percentage of Respondents
Schedule of rates	96
Lump sum	92
Lump sum with bill of quantities	65
Cost plus percentage fee	27
Cost plus lump sum fee	27
Other	19

The majority of companies' civil divisions undertook schedule of rates contracts. Lump sum contracts were also very common, followed by lump sum with a bill of quantities.

Other types of contracts civil divisions undertook, in addition to those listed in the table, were: lump sum management fee with a schedule of rates; contract finance; design and construct; guaranteed maximum price (negotiated); and, build own operate transfer (BOOT).

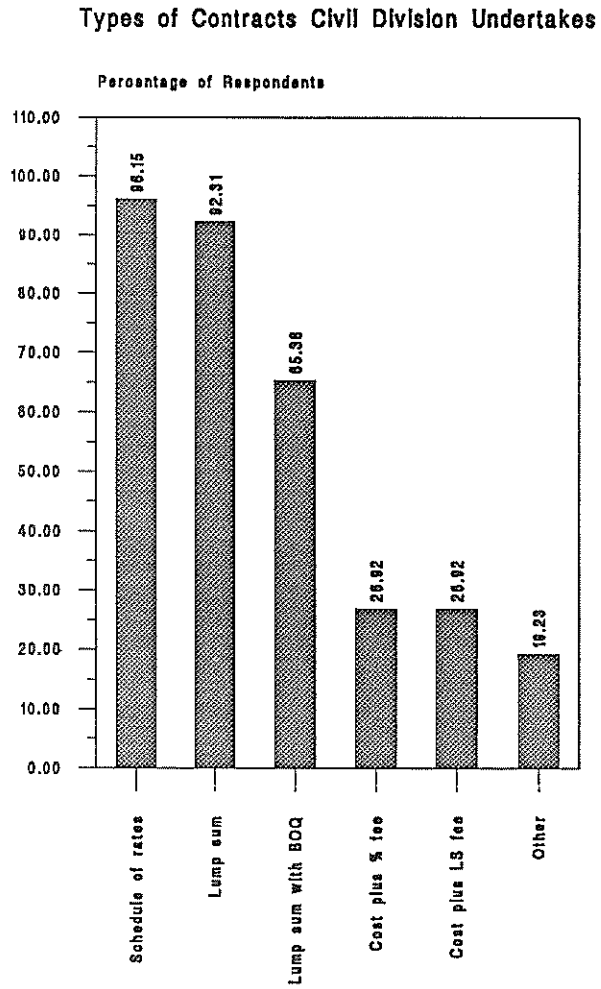


Figure 10. Types of Contracts Civil Division Undertakes

10. ***Percentage of work obtained through competitive bidding***

Number of Responses: 26

Percentage of Work Obtained Through Competitive Bidding	Percentage of Respondents
None	0
Less than 25%	8
25% to 49%	0
50% to 74%	19
75% to 100%	73

The majority of civil divisions obtained more than 75% of their work through competitive bidding. Some obtained between 50% and 74% through competitive bidding, and very few obtained less than 25% of their work through competitive bidding. Thus, the results of this survey are most relevant to construction contractors who primarily obtain their work through competitive bidding.

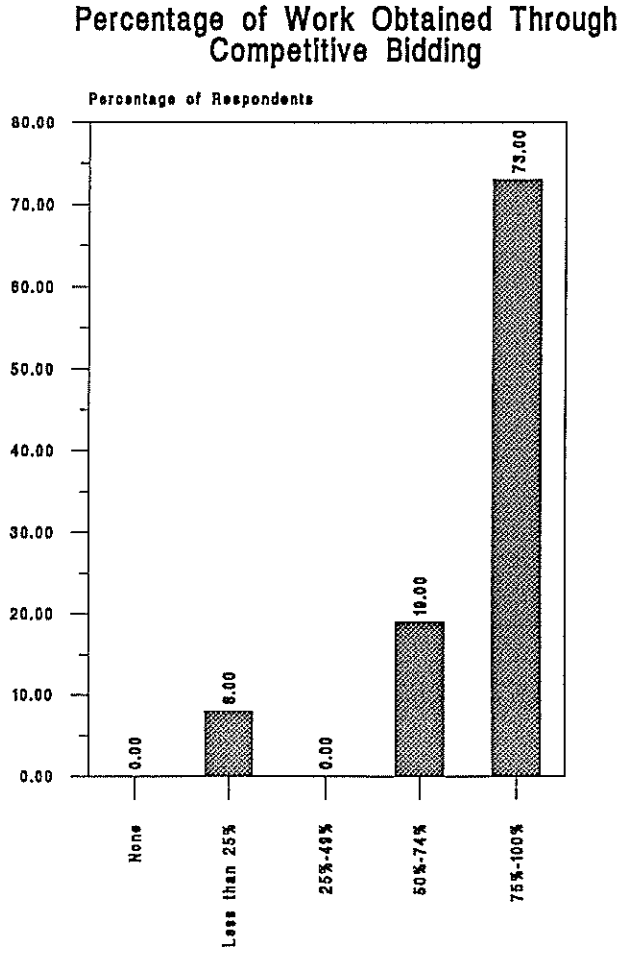


Figure 11. Percentage of Work Obtained Through Competitive Bidding

11. ***On a typical job, percentage of work subcontracted***

Number of Responses: 25

Percentage of Work Subcontracted on Typical Job	Percentage of Respondents
None	4
Less than 25%	24
25% to 49%	56
50% to 74%	16
75% to 100%	0

The majority of civil divisions subcontracted between 25% and 49% of the work on a typical job. Very few companies subcontracted none of the work, and none of the companies subcontracted more than 74% of the work.

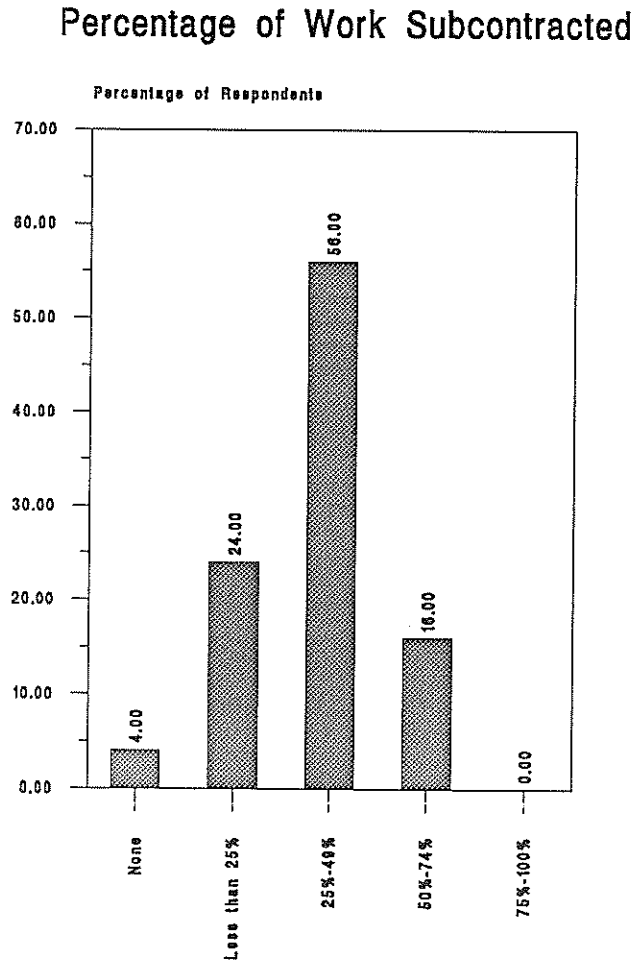


Figure 12. Percentage of Work Subcontracted

12. ***On a typical job, proportion of trade work force that is in the form of direct labour***

Number of Responses: 25

Percentage of Trade Work Force in Form of Direct Labour	Percentage of Respondents
Less than 25%	32
25% to 49%	40
50% to 74%	4
75% to 100%	24

Most civil divisions employed either 25% to 49% of their trade work force as direct labour, or less than 25% as direct labour.

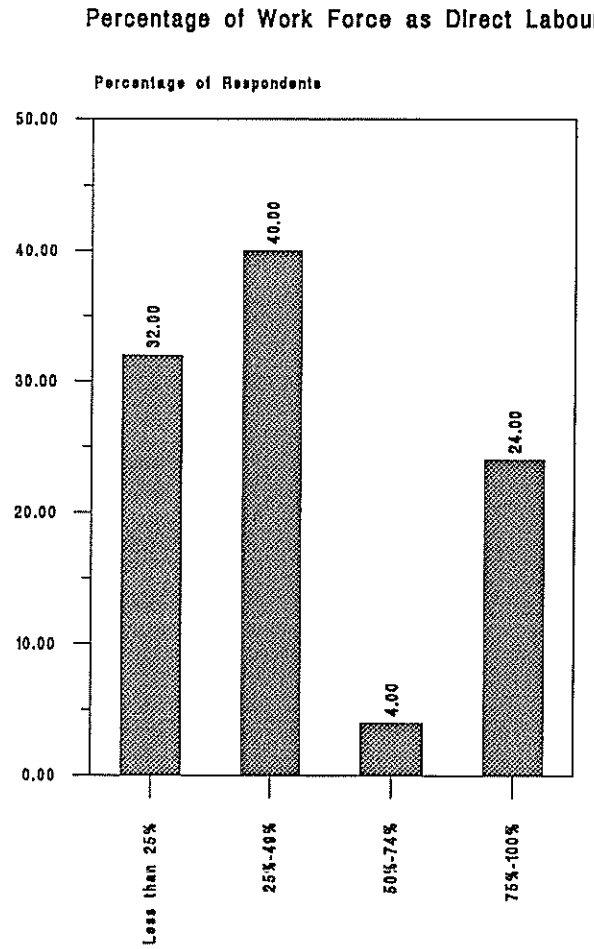


Figure 13. Percentage of Work Force as Direct Labour

13. *On a typical job, proportion of management and supervisory personnel that is in the form of direct employees*

Number of Responses: 26

Percentage of Management Personnel in Form of Direct Employees	Percentage of Respondents
Less than 25%	0
25% to 49%	0
50% to 74%	0
75% to 100%	100

All companies surveyed employed 75% to 100% of their management and supervisory personnel as direct employees.

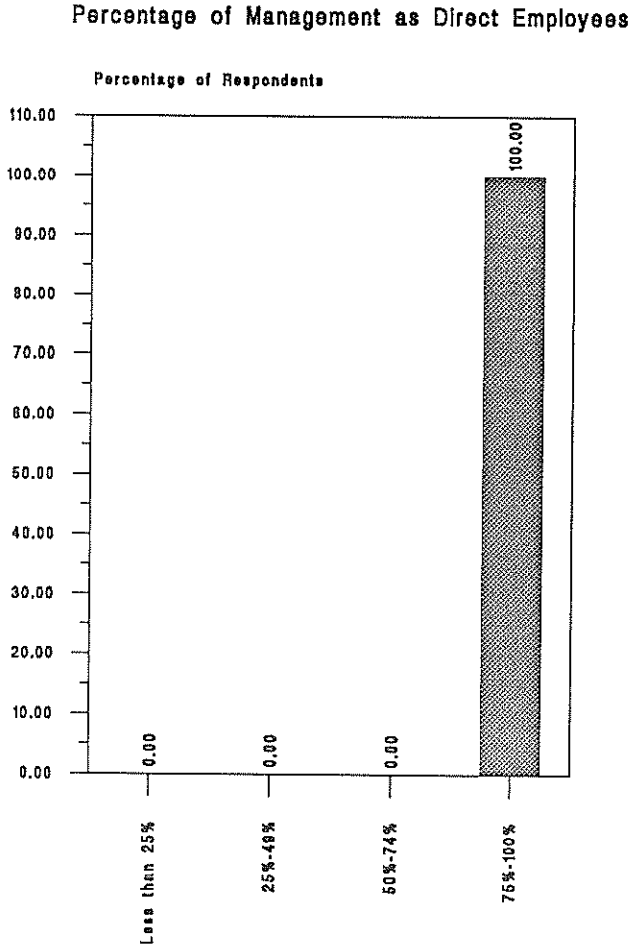


Figure 14. Percentage of Management as Direct Employees

14. ***On a typical job, proportion of construction plant and equipment that is externally hired***

Number of Responses: 26

Percentage of Construction Plant Externally Hired	Percentage of Respondents
Less than 25%	27
25% to 49%	27
50% to 74%	8
75% to 100%	38

The largest group of companies externally hired between 75% to 100% of their construction plant and equipment. Most other companies externally hired less than 50% of their construction plant and equipment.

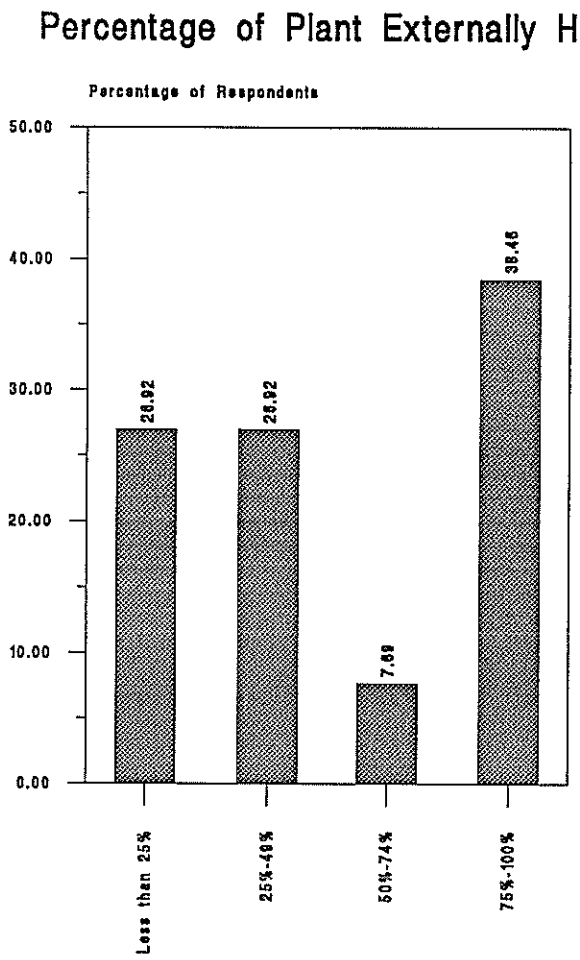


Figure 15. Percentage of Plant Externally Hired

Part C. The Civil Group's or Division's Policy Regarding Tendering

15. *Method of accounting for project overheads*

Number of Responses: 26

Method of Accounting for Project Overheads	Percentage of Respondents
Charged as a separate cost item in the estimate	96
Other	4

Most civil divisions accounted for project overheads as a separate cost item in the estimate.

Another method of accounting for project overheads was to spread them as a percentage over the estimated items.

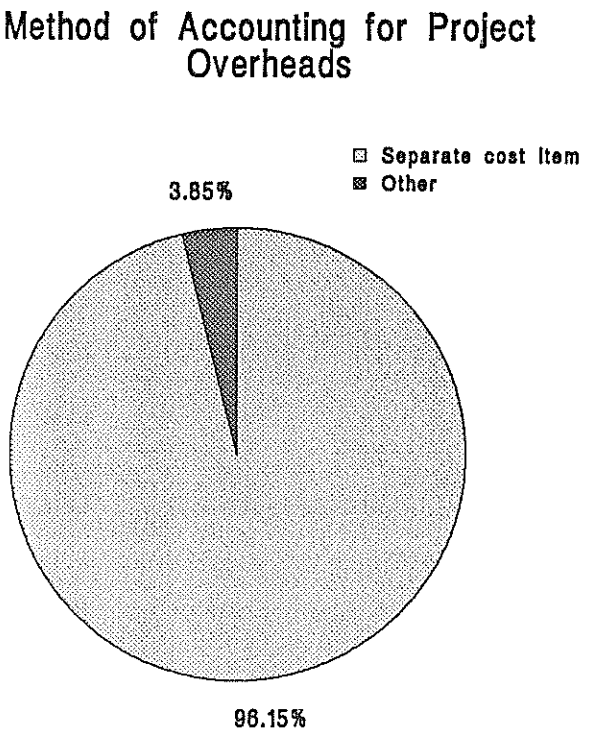


Figure 16. Method of Accounting for Project Overheads

16. *Method of accounting for project risks and opportunities*

Number of Responses: 26

Method of Accounting for Project Risks and Opportunities	Percentage of Respondents
Included in the direct cost items in the estimate	19
Charged as a separate cost item in the estimate	54
Included in the margin	46
Not considered	8
Other	4

In the majority of cases, civil divisions accounted for project risks and opportunities either by charging for them as a separate cost item in the estimate, or by including them in the margin. In some cases, they were included in the direct cost items in the estimate. Very rarely were risks and opportunities not considered.

Another method of accounting for project risks and opportunities was the use of a contingency.

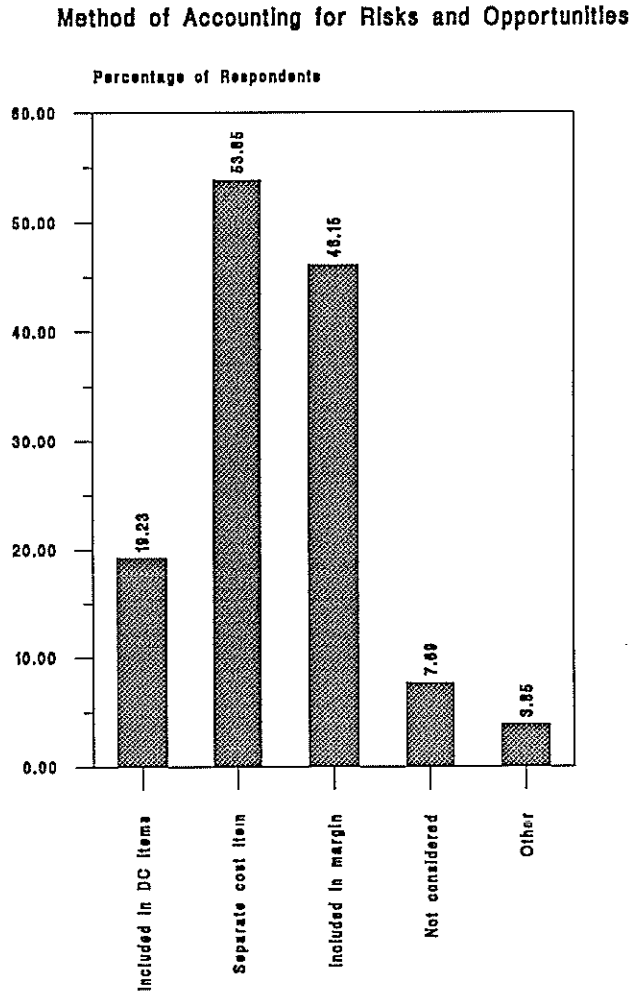


Figure 17. Method of Accounting for Risks and Opportunities

17. ***Items on a project covered by margin***

Number of Responses: 26

Items on a Project Covered by Margin	Percentage of Respondents
Risk and opportunity (i.e. contingency) allowance	50
Corporate overheads (divisional and head office)	96
Pretax profit	92
Other	0

The majority of civil divisions included both corporate overheads and pretax profit in the margin on a project tender. In half of the cases, the risk and opportunity allowance was also included in the margin.

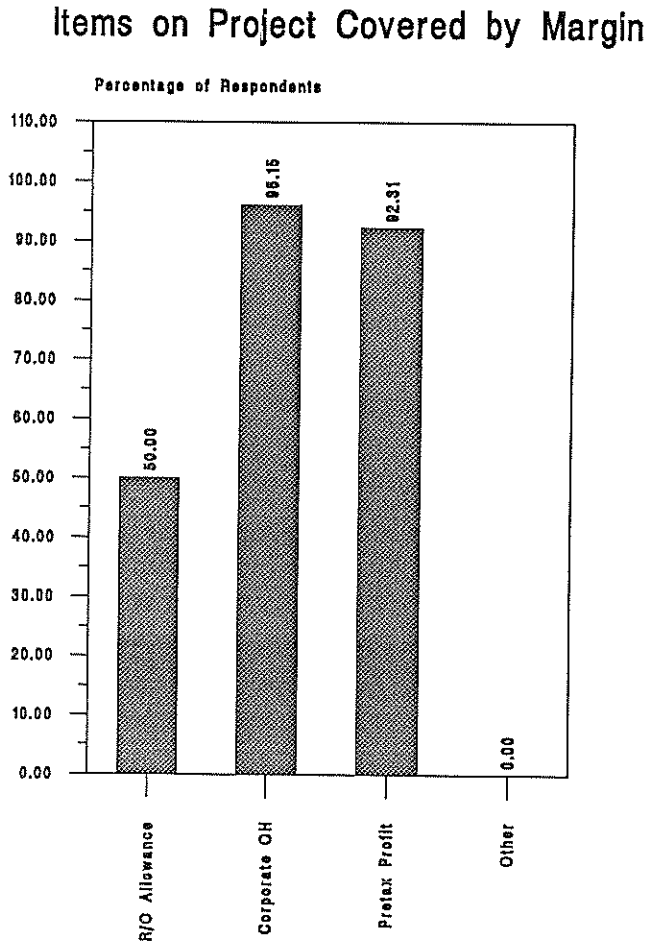


Figure 18. Items on Project Covered by Margin

18. ***Formal techniques for risk and opportunity assessment***

Number of Responses: 26

Formal Techniques to Assess Risks and Opportunities	Percentage of Respondents
Yes	46
No	54

The majority of civil divisions did not use any formal techniques to assess the risks and opportunities on a project. Less than half of the companies surveyed used formal techniques for risk and opportunity assessment. These techniques included: detailed risk and opportunity analysis; risk analysis modelling; margin on individual cost centres; and, a dollar value for each risk and opportunity item, multiplied by its probability of occurrence.

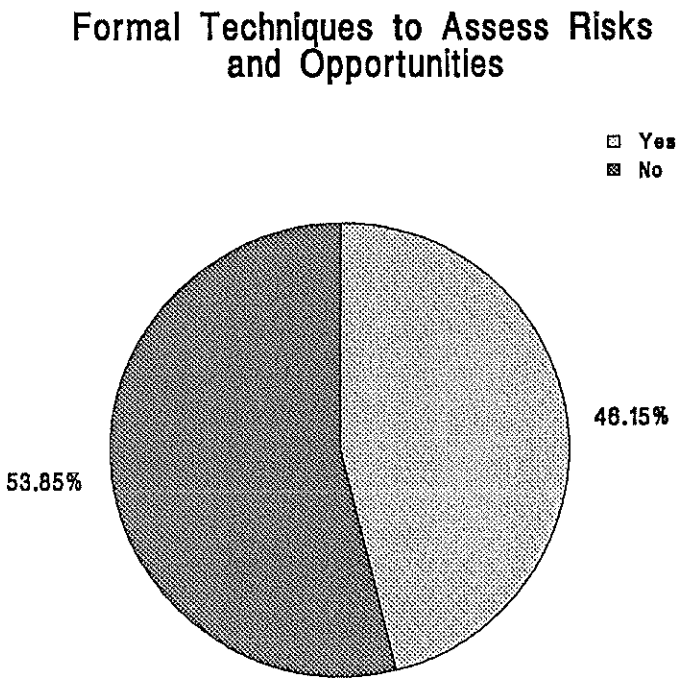


Figure 19. Formal Techniques to Assess Risks and Opportunities

19. ***Formal techniques to assess the competitive situation***

Number of Responses: 26

Formal Techniques to Assess Competitive Situation	Percentage of Respondents
Yes	15
No	85

The majority of civil divisions did not use any formal techniques to assess the competitive situation. Only 15% of all companies surveyed used a formal technique to assess the competitive situation. One such technique was a minimal review of the competition made before the decision to bid.

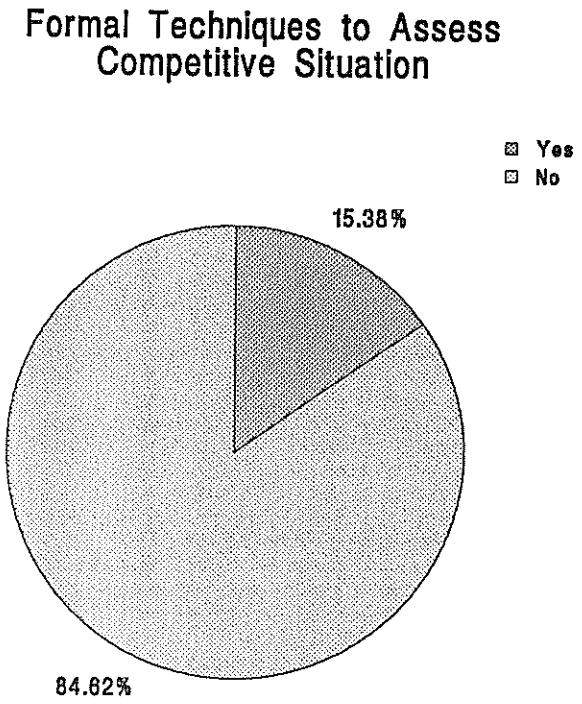


Figure 20. Formal Techniques to Assess Competitive Situation

20. ***Factors that make you feel that "there is a good chance of winning this project"***

Number of Responses: 26

Factors that Make a Company Feel that "There is a good chance of winning this project"	Percentage of Respondents
The quality of your cost estimate	81
Innovations in your design or construction methods	96
The type of project	81
The client	50
Your competitors	42
Your strength in the industry	58
Your experience	88
The overall economy	12
Other	15

Innovations in the design or construction methods was the most frequently cited factor that made a company feel that there is a good chance of winning a project. Other factors that frequently contributed to this feeling were: the company's experience; the quality of their cost estimate; and, the type of project. The overall economy was the factor least frequently cited as contributing to the feeling of a successful tender outcome.

Other factors that made a company feel that there is a good chance of winning a project, in addition to those listed in the table, included: competitive price; careful planning prebid; and, specialist skills.

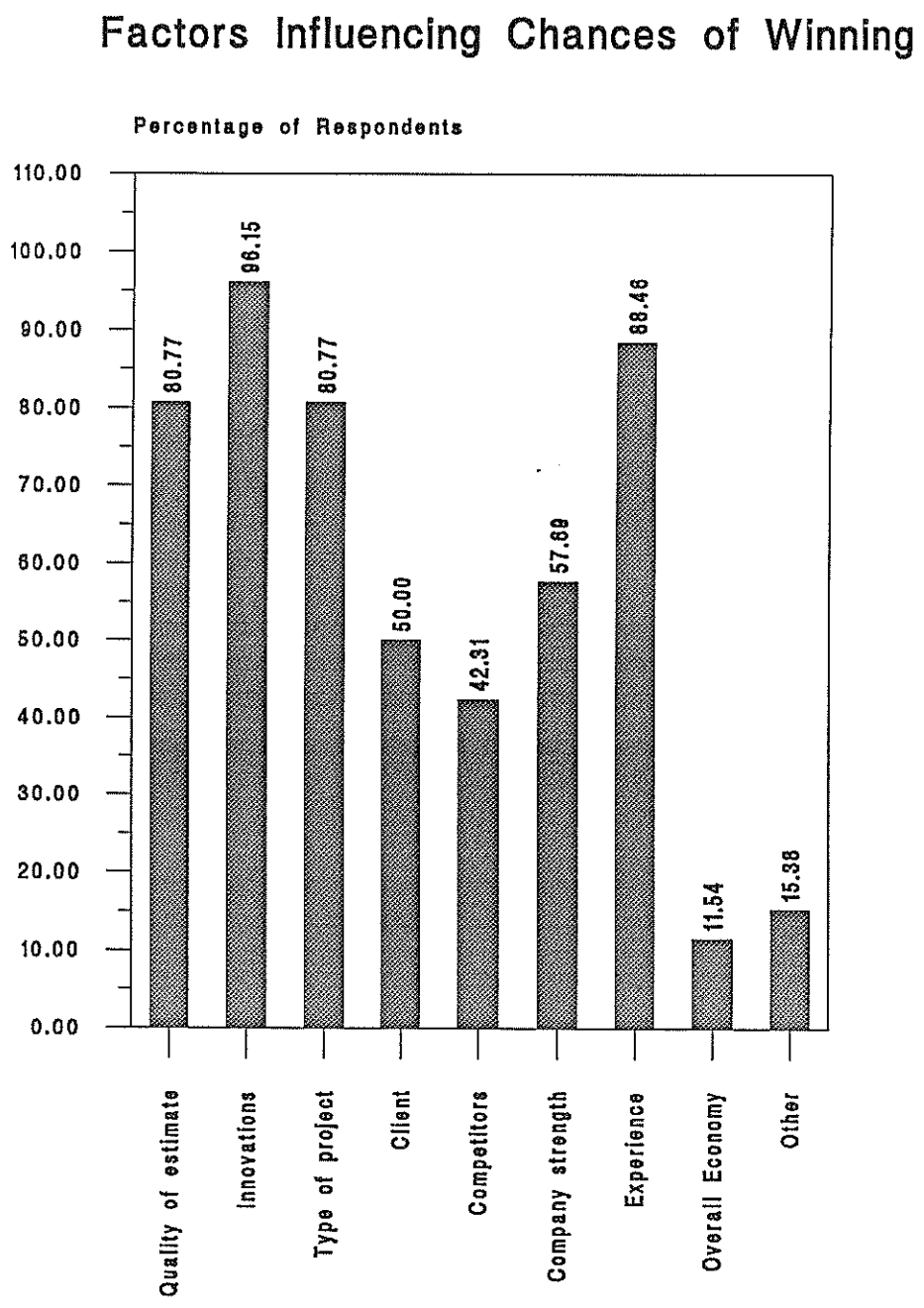


Figure 21. Factors Influencing Chances of Winning

21. ***Factors which influence your decision to bid or not to bid***

Number of Responses: 26

Factors that Influence a Company's Decision to Bid or Not to Bid	Percentage of Respondents
Your need for work	77
The availability of resources and people in your company	88
The type of project	96
The contract value of the project	65
The location of the project	73
Your strength in the industry	62
Your experience	85
The overall economy	19
Corporate overhead requirement	27
Corporate turnover requirement	31
Corporate profit requirement	35
Strategic value of the project	42
Future opportunity with the client	69
Your likelihood of winning the project	69
Other	8

The type of project is the factor that influenced most companies' decision to bid or not to bid. Other factors that influenced a large number of companies in their decision to bid or not to bid were: the availability of resources and people in the company; the company's experience; the company's need for work; and, the location of the project. The overall economy was the factor that influenced the least number of companies in their decision to bid or not to bid.

Other factors that influenced a company's decision to bid or not to bid, in addition to those listed in the table, included: client relationship, and other companies on the bid list.

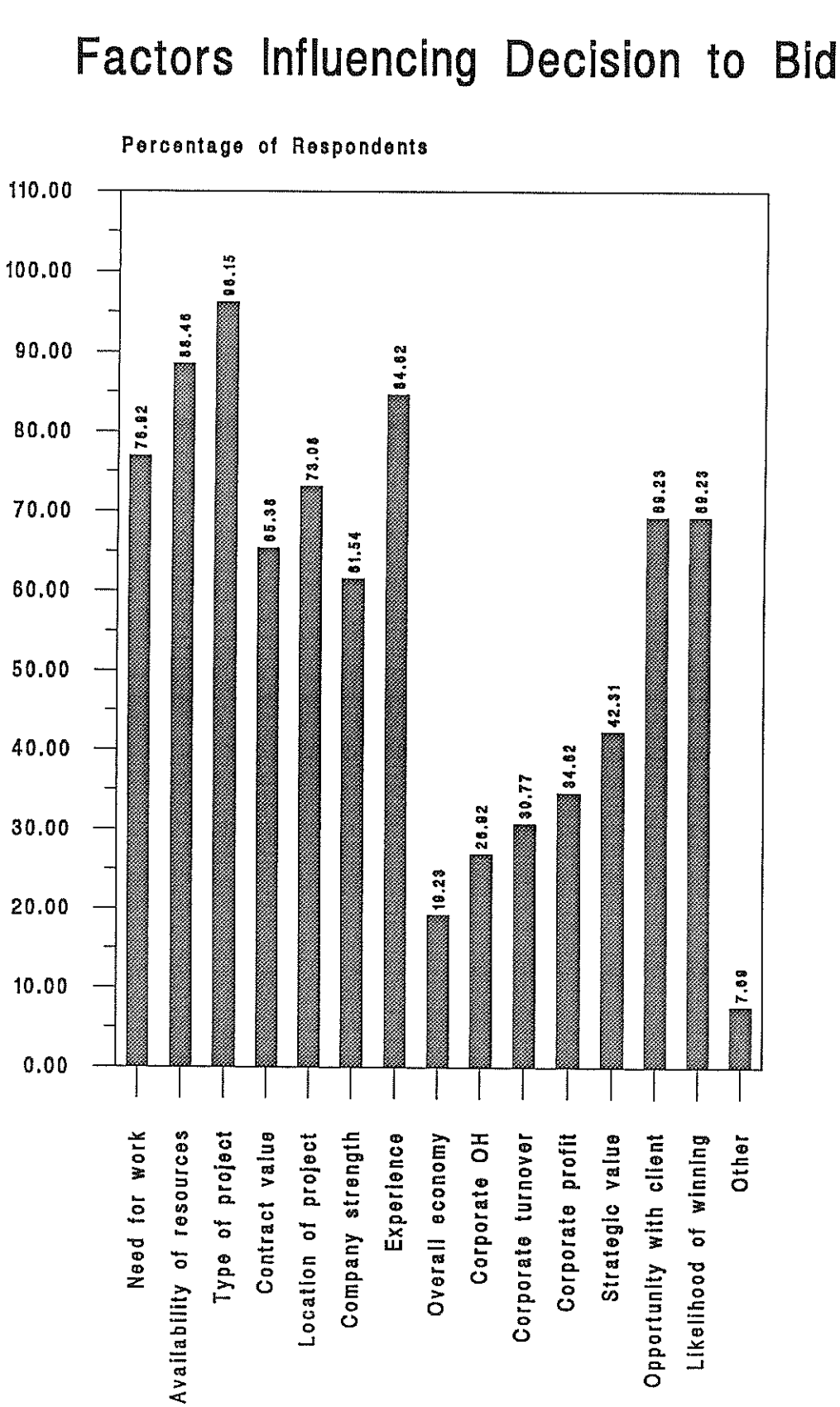


Figure 22. Factors Influencing Decision To Bid

Detailed Survey of Margin Allocation Practices

This survey was administered on an interview basis with the civil engineering division of construction contractors. It involved an examination of actual projects tendered by a company, as case studies. These projects were examined in an effort to understand the decision-making process used in setting the risk and opportunity allowance and the margin on a tender.

Title of Respondent

Number of Respondents: 26

Title of Respondent	Percentage of Respondents
(Chief) Civil Engineering Estimator	38
Estimating Manager	31
General Manager/Director	19
Project Manager/Engineer	12

The majority of respondents to the detailed survey of margin allocation practices were either (Chief) Civil Engineering Estimators or Estimating Managers. Note that the number of respondents (26) exceeds the number of companies who responded to this survey (24), since in some companies, two people responded to the survey, either simultaneously or by providing two case studies.

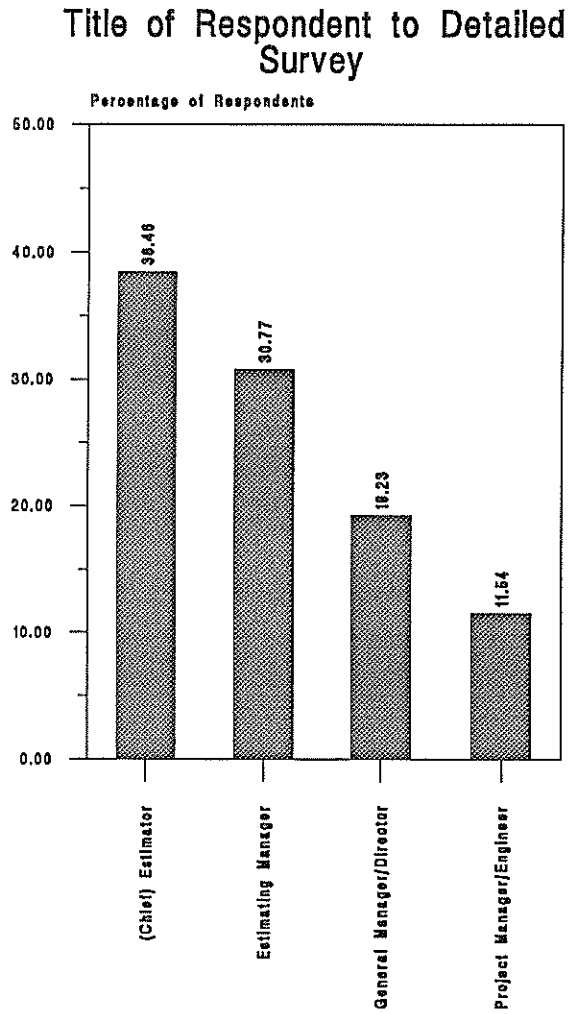


Figure 23. Title of Respondent to Detailed Survey

Part A. Project Details

1. *Submission date*

Number of Projects: 36

Tender Submission Date	Percentage of Projects
1993	6
1994	44
1995	50

The majority of projects reviewed in the survey had a tender submission date in 1995. Only a few tenders were submitted in 1993. The earliest tender submission date was in October of 1993, and the latest was in April of 1995.

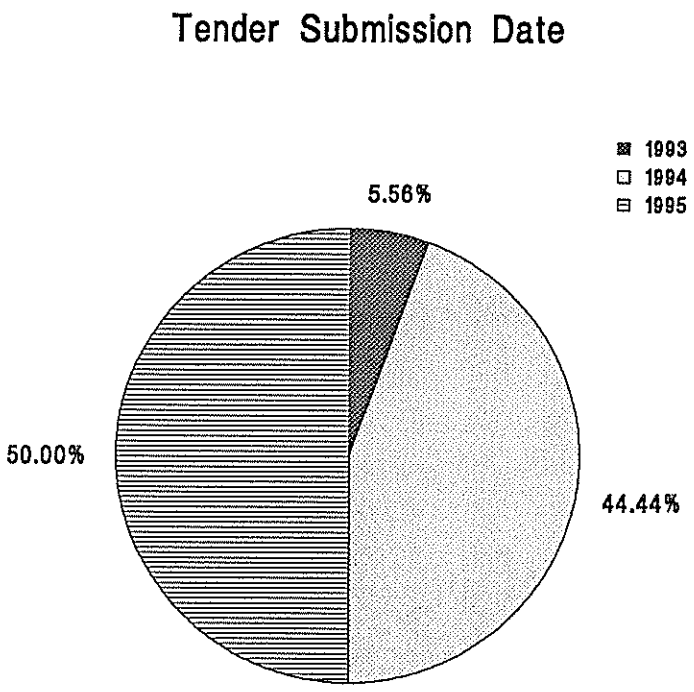


Figure 24. Tender Submission Date

2. *Contract value*

Number of Projects: 36

Contract Value (in millions of dollars)	Percentage of Projects
< 0.5	11
0.5 - 0.999	11
1.0 - 4.999	22
5.0 - 9.999	14
10.0 - 14.999	14
15.0 - 24.999	17
25.0 - 49.999	8
50.0 - 99.999	0
> 99.999	3

The most common contract value of the projects reviewed was between 1.0 million dollars and 4.999 million dollars. The 15.0 million to 24.999 million dollar range was the next most common category of contract values. Very few projects were greater than 25 million dollars.

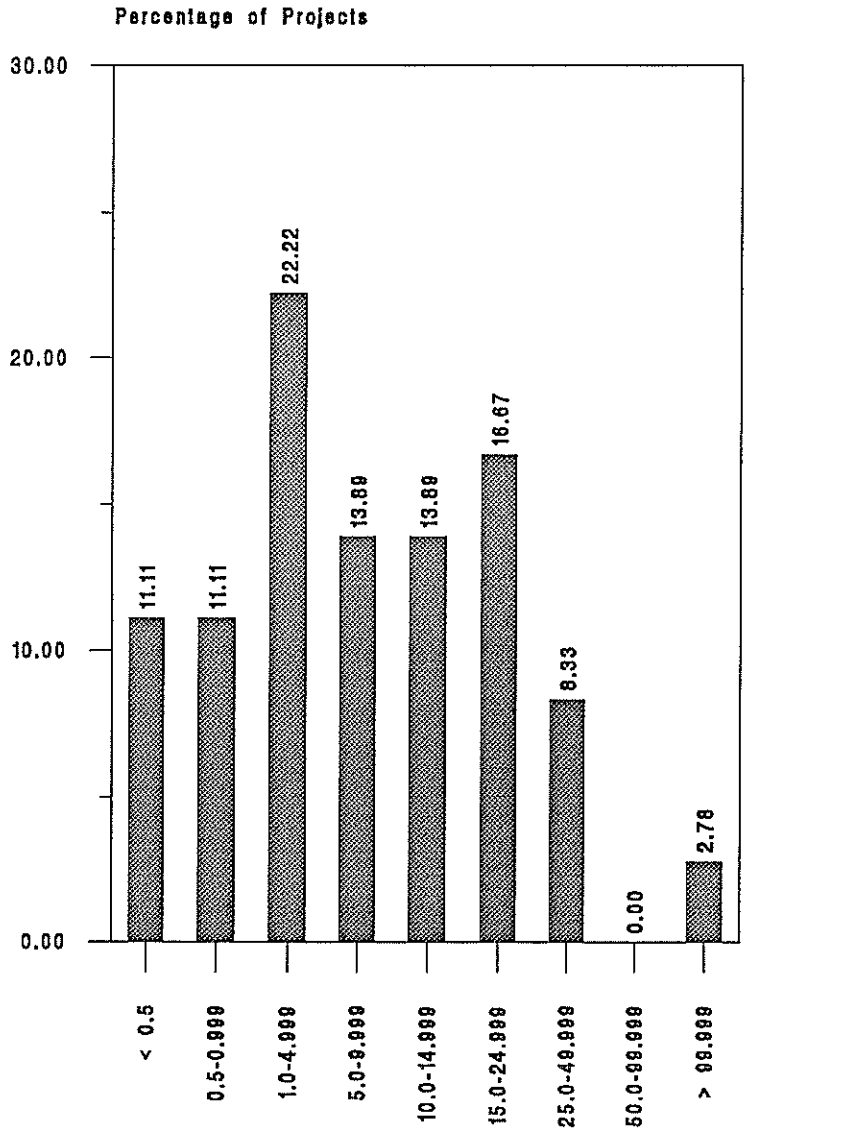


Figure 25. Contract Value

3. *Type of project*

Number of Projects: 36

Type of Project	Percentage of Projects
Roadworks	53
Bridgeworks	25
Tunnelling	3
Marine	6
Mining	6
Industrial facilities	6
Other	33

The majority of projects surveyed were roadworks projects. A quarter of the projects surveyed involved bridgeworks. Note that some projects involved more than one category of project type.

Other types of projects surveyed, in addition to those listed in the table, included: tram tracks; (concrete-faced) dams; pipeline; weir on a major river; bulk earthworks; bulk earthworks, drainage, and pavements; bulk earthworks and construction of a car park; subdivisions (roadworks, civil works, and storm drainage); lighting towers for a sports oval; floodlighting towers with lights for a sports grounds; and, a multi disciplinary gas plant.

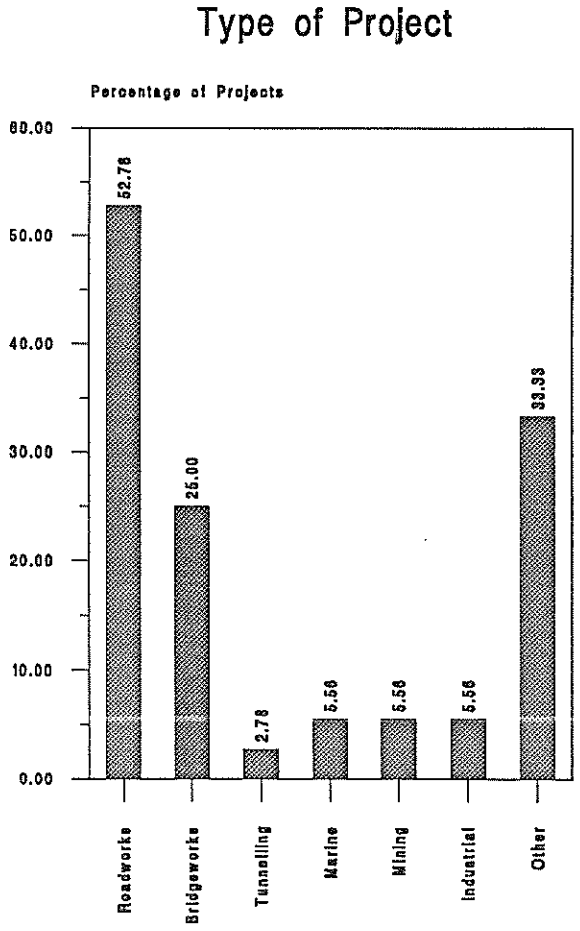


Figure 26. Type of Project

4. *Scope of contract*

Number of Projects: 36

Scope of Contract	Percentage of Projects
Construct only	75
Design and construct	28
Turnkey	0
Management (construction or project management)	0
Other	0

The majority of projects surveyed were construct only contracts. Just over a quarter of the projects were design and construct contracts. Note that some projects involved both construct only and design and construct portions. None of the projects were turnkey, management, or other contract scopes.

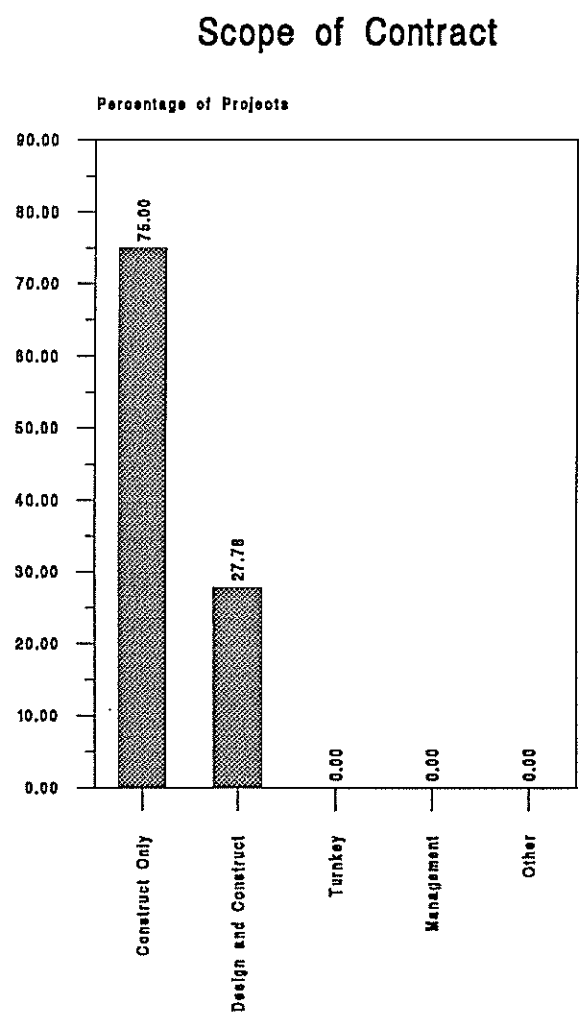


Figure 27. Scope of Contract

5. *Type of contract*

Number of Projects: 36

Type of Contract	Percentage of Projects
Schedule of rates	28
Lump sum	69
Lump sum with bill of quantities	3
Cost plus percentage fee	0
Cost plus lump sum fee	0
Other	0

The majority of projects surveyed were lump sum contracts. Just over a quarter of the projects were schedule of rates contracts. A very small proportion were lump sum with a bill of quantities contracts. None of the projects were cost plus percentage fee, cost plus lump sum fee, or other contract types.

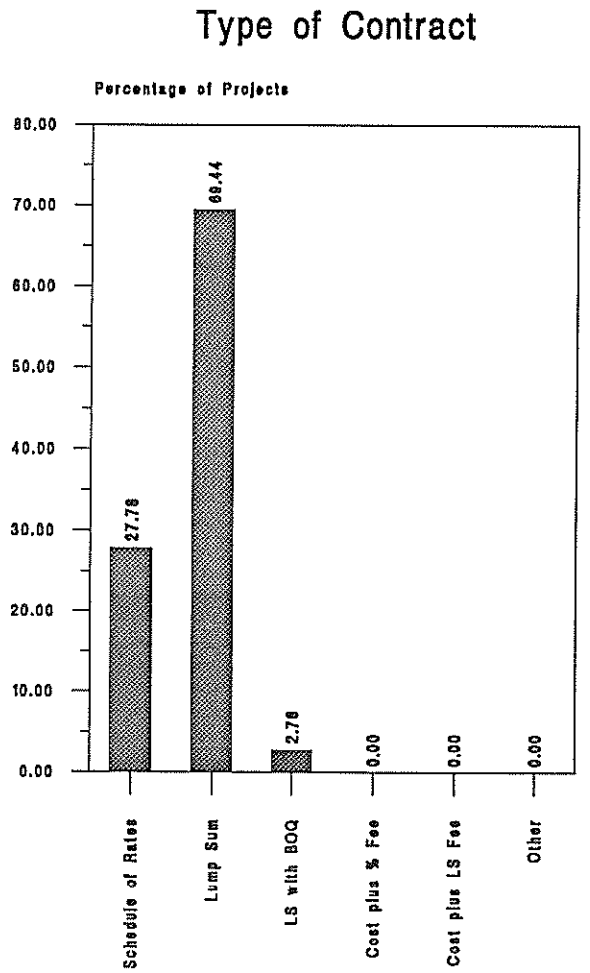


Figure 28. Type of Contract

6. *Method of tendering*

Number of Projects: 36

Method of Tendering	Percentage of Projects
Open competitive	28
Prequalified	55
Invited	14
Negotiated	3
Other	0

The majority of projects required prequalification. Just over a quarter of them were open competitive. Invited and negotiated tenders were rare, and other methods of tendering did not exist in the projects surveyed.

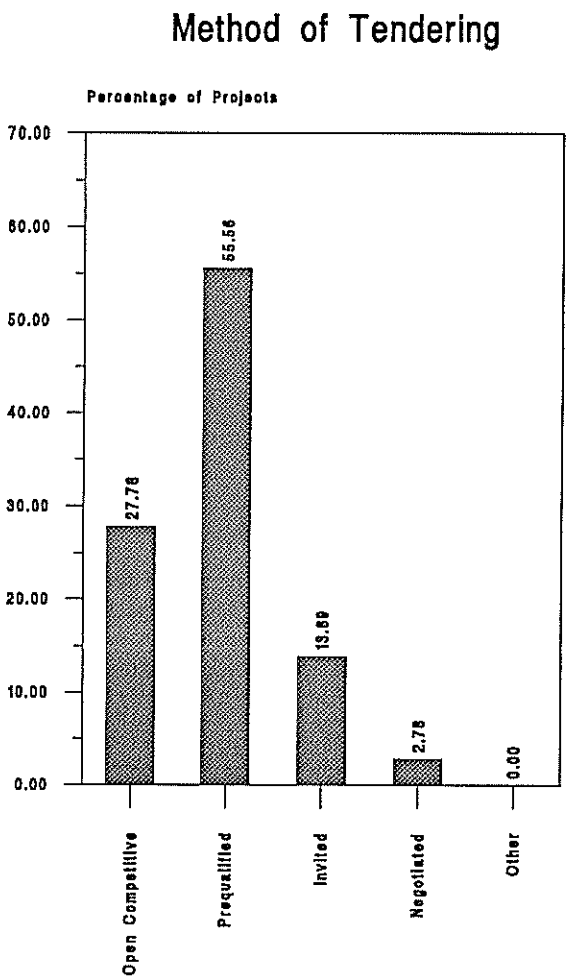


Figure 29. Method of Tendering

7. *Joint venture*

Number of Projects: 36

Joint Venture	Percentage of Projects
Yes	8
No	92

Most of the projects surveyed did not involve the company in a joint venture.

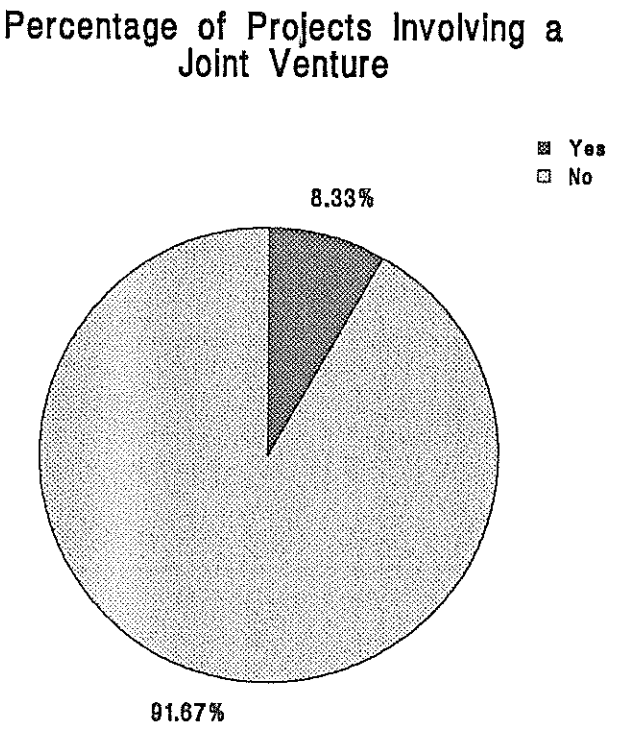


Figure 30. Percentage of Projects Involving a Joint Venture

Part B. Margin Details

8. *Items included in the margin allowance on the tender*

Number of Projects: 36

Items Included in Margin Allowance	Percentage of Projects
Risk and opportunity (i.e. contingency) allowance	64
Corporate overheads (divisional and head office)	97
Pretax profit	94
Other	3

In the majority of cases, the margin on a tender covered both the corporate overheads (divisional and head office) and the pretax profit. In over half of the cases, the margin also covered the risk and opportunity allowance. In only one case did the margin cover another item, which was a design contingency. It should be noted that in one case, a company expressed the margin as a percentage on the contract selling price, rather than as a percentage of the estimated costs.

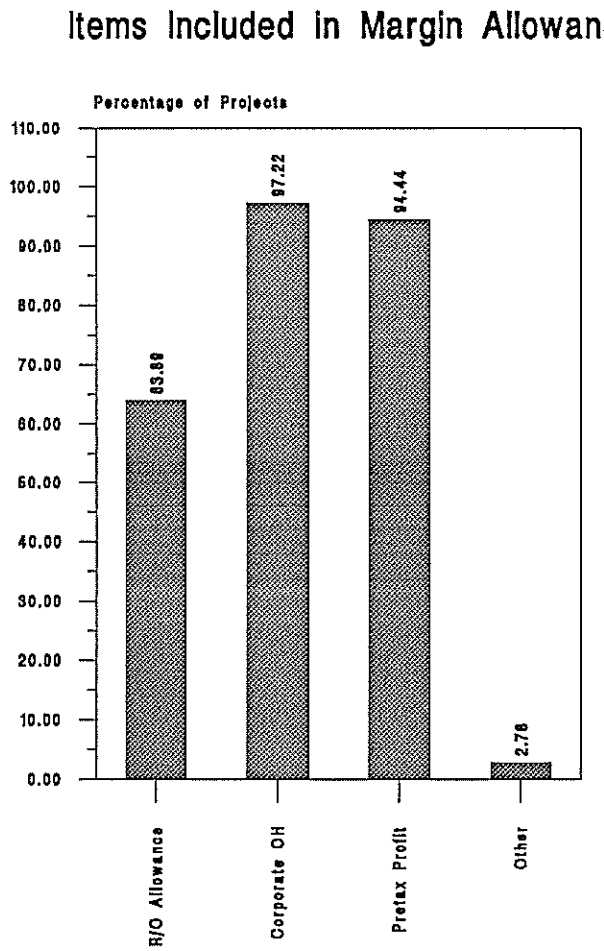


Figure 31. Items Included in Margin Allowance

9. *Range of margin being considered at the time of tendering:*

Number of Projects: 36

Minimum Margin Considered (%)	Percentage of Projects
0 - 3.9	5.5
4.0 - 5.9	33
6.0 - 7.9	42
8.0 - 9.9	5.5
10.0 - 11.9	8
12.0 - 13.9	3
14.0 - 15.9	3
> 15.9	0

The most common minimum margin considered on the tenders reviewed in the survey was between 6.0% and 7.9%. The second most common minimum margin was between 4.0% and 5.9%. These two categories of minimum margins combined made up 75% of all cases. Thus, the minimum margin most commonly lay between 4% and 8%. No margin greater than 15.9% was considered as the minimum margin on a tender.

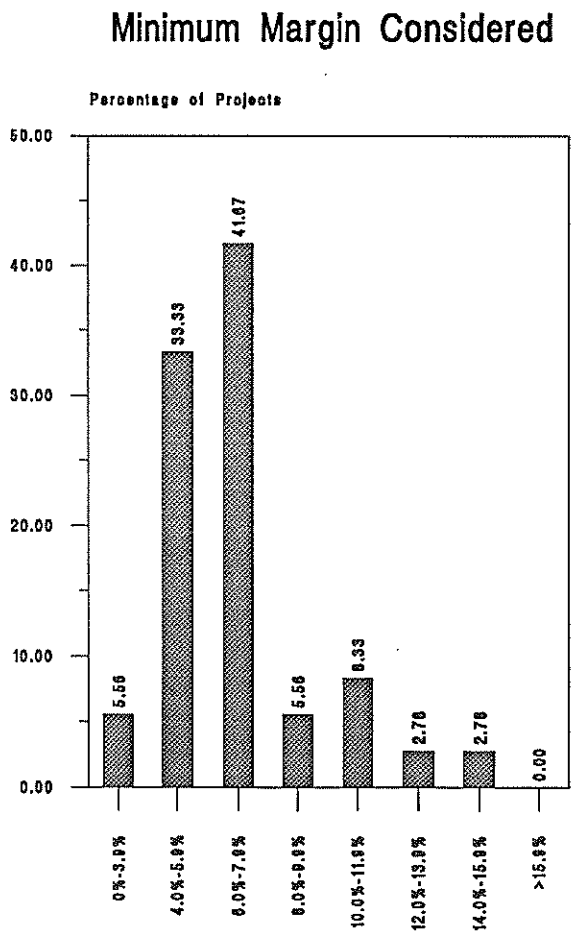


Figure 32. Minimum Margin Considered

Maximum Margin Considered (%)	Percentage of Projects
0 - 3.9	0
4.0 - 5.9	3
6.0 - 7.9	11
8.0 - 9.9	19.5
10.0 - 11.9	31
12.0 - 13.9	8
14.0 - 15.9	19.5
16.0 - 17.9	0
18.0 - 19.9	0
> 19.9	8

The most common maximum margin considered on the tenders reviewed in the survey was between 10.0% and 11.9%. The second most common maximum margin was between 8.0% and 9.9% and between 14.0% and 15.9%. In half of the cases, the maximum margin lay between 8% and 12%. No margin less than 4.0% was considered as the maximum margin on the tender.

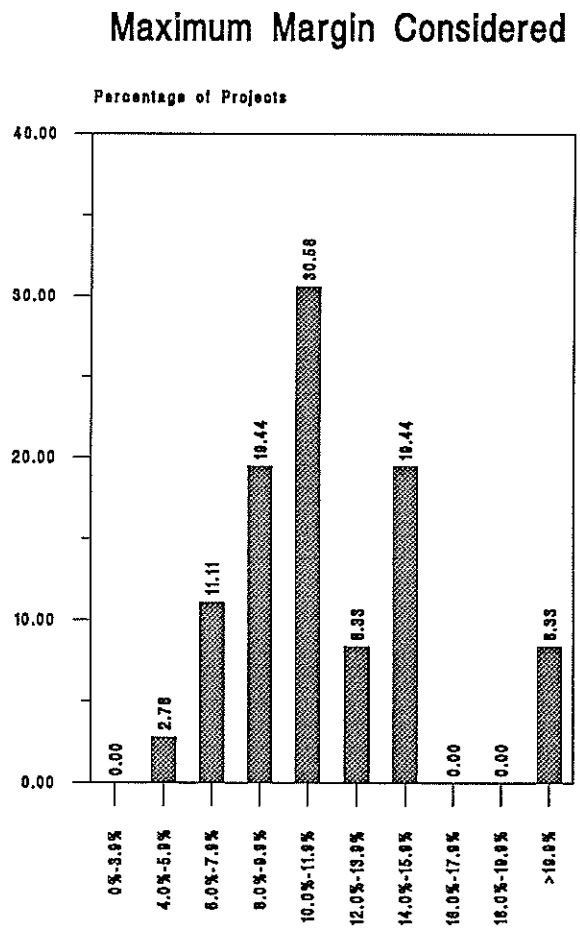


Figure 33. Maximum Margin Considered

Range of Margin Considered (%)	Percentage of Projects
0 - 1.9	14
2.0 - 3.9	28
4.0 - 5.9	33
6.0 - 7.9	8
8.0 - 9.9	3
10.0 - 11.9	11
12.0 - 13.9	3
> 13.9	0

The most common range of margin considered on the tenders reviewed in the survey was between 4.0% and 5.9%. The second most common range of margin was between 2.0% and 3.9%. No range of margin greater than 13.9% was considered on any of the tenders reviewed. In 75% of the cases, the margin size did not range by more than 6%. These results indicate that the decision regarding margin size is usually made within a small range of margin sizes. Note that the range of margin is defined as the difference between the maximum and the minimum margin considered for a tender. If the range of margin falls between, for example, 4.0% and 5.9%, this does not mean that the margin under consideration ranged from 4.0% to 5.9%, but rather that the difference between the upper and lower limits on margin fell between 4.0% and 5.9%.

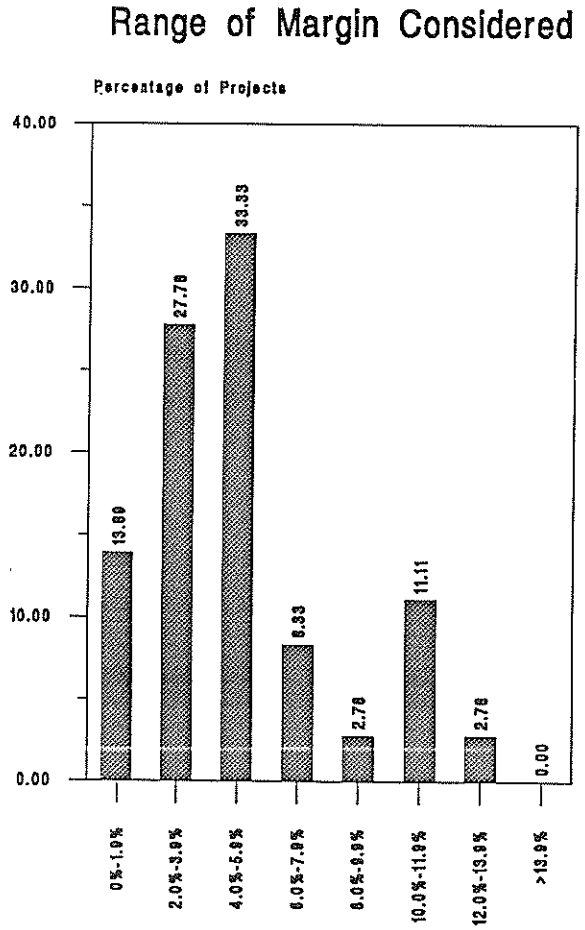


Figure 34. Range of Margin Considered

10. *Margin chosen for the tender*

Number of Projects: 36

Actual Margin Chosen (%)	Percentage of Projects
0 - 3.9	0
4.0 - 5.9	11
6.0 - 7.9	37
8.0 - 9.9	26
10.0 - 11.9	9
12.0 - 13.9	11
14.0 - 15.9	6
> 15.9	0

The most common margin size chosen on the tenders reviewed in the survey was between 6.0% and 7.9%. The second most common margin was between 8.0% and 9.9%. No margin less than 4% or greater than 15.9% was chosen on any of the tenders reviewed. 63% of all margins chosen lay between 6% and 10%.

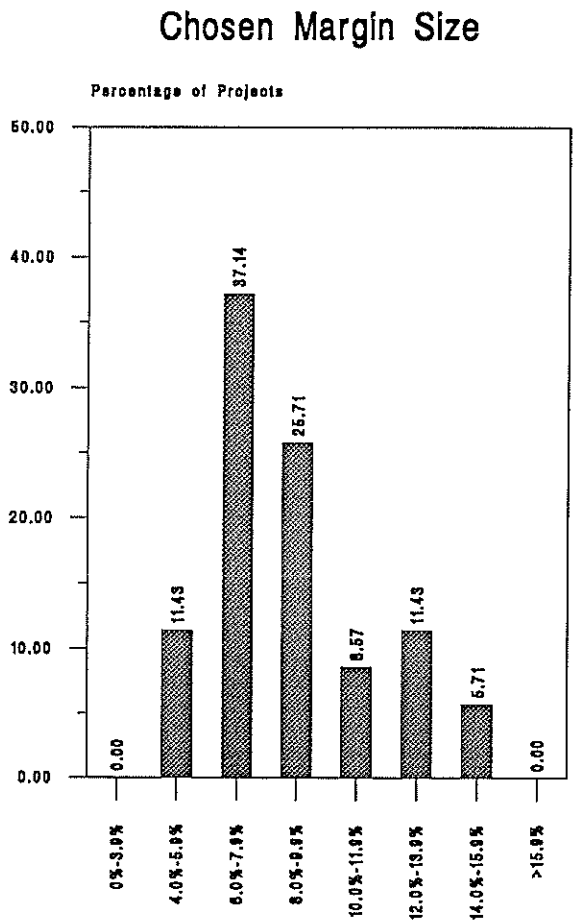


Figure 35. Chosen Margin Size

The relationship between the actual margin size chosen on a tender and the magnitude of the contract value is approximately increasing. This relationship indicates that the general trend is a larger margin size on a project with a larger contract value. The slope of this relationship is large, indicating a small increase in margin size for a large increase in contract value.

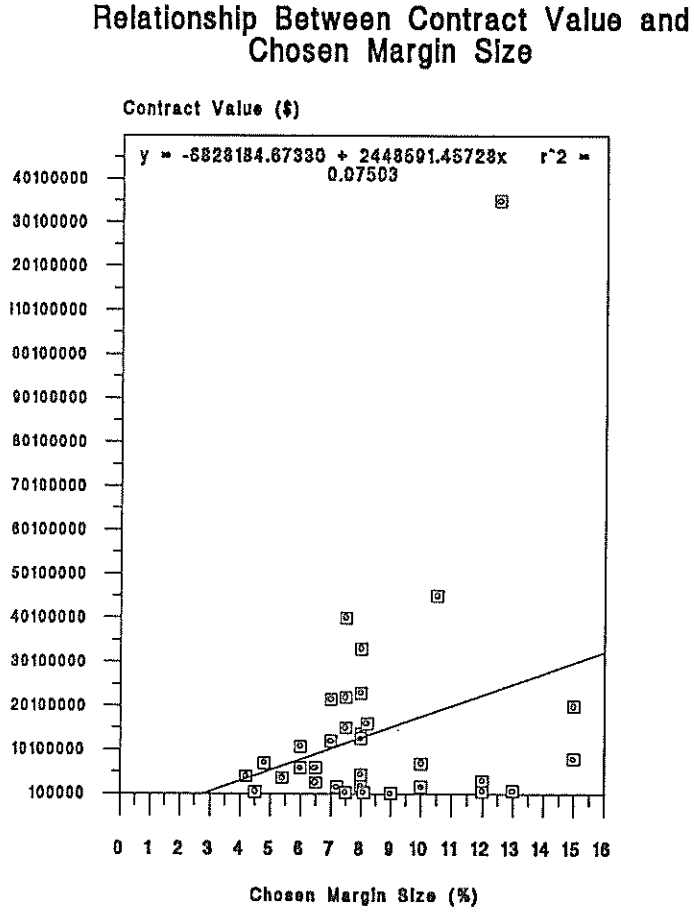


Figure 36. Relationship Between Contract Value and Chosen Margin Size

Part C. Factors Affecting Risk and Opportunity Allowance

11. ***Factors considered in the risk and opportunity assessment.***

Number of Projects: 36

Factors Contributing to the Risk Allowance

See Table 1

The following factors were the top ten factors most frequently contributing to the risk allowance on a tender, listed in decreasing order of frequency:

Likelihood of unexpected job site conditions
Likelihood of unexpected climatic conditions
Likelihood of a schedule delay
Uncertainty in estimated quantities, productivity, and/or price rates for materials
Amount of contractor coverage (e.g. latent conditions clause)
Uncertainty in estimated quantities, productivity, and/or price rates for labour
Duration of contract period
Degree of safety hazard on project
Complexity in construction methods
Uncertainty in estimated quantities, productivity, and/or price rates for plant

Factors Contributing to Opportunity Allowance

See Table 2

The following factors were the top ten factors most frequently contributing to the opportunity allowance on a tender, listed in decreasing order of frequency:

Likelihood of negotiating lower price on supply/subcontracts
Innovation in construction methods
Company's relationship with subcontractors/suppliers
Innovation in design
Company's quoted prices from subcontractors/suppliers with respect to competitors:
Commercial advantages
Number of major supply and/or subcontracts on project
Likelihood of changes in contract scope
Degree of contractor involvement in design phase
Proportion of work ($) subcontracted to total contract value
Likelihood of unexpected job site conditions

The likelihood of unexpected job site conditions is the only factor that frequently contributed to both the risk and the opportunity allowance. This result indicates that this factor could be viewed as either a risk or an opportunity, most likely depending on the conditions of the contract and the provisions for unexpected job site or ground conditions. If the contractor is expected to bear the risk of this factor, then its occurrence may add to the estimated cost and therefore require a risk allowance. If the owner bears the risk for this factor, then its occurrence may lead to extra work for the contractor which could be negotiated at a good price, thereby contributing to the opportunity allowance. All of the other factors listed as contributing to either the risk or the opportunity allowance did not contribute to both categories.

Factors Contributing to Risk Allowance

FACTOR	# of Resp.	% of Resp.
Likelihood of unexpected job site conditions	21	58.33
Likelihood of unexpected climatic conditions	20	55.56
Likelihood of a schedule delay	18	50.00
Uncertainty in estimate for materials	16	44.44
Amount of contractor coverage (e.g. latent conditions clause)	15	41.67
Uncertainty in estimate for labour	15	41.67
Duration of contract period	14	38.89
Degree of safety hazard on project	13	36.11
Complexity in construction methods	13	36.11
Uncertainty in estimate for plant	12	33.33
Amount of liquidated damages	11	30.56
Confidence in design	10	27.78
Completeness and clarity of tender documents and specifications	10	27.78
Likelihood of regulatory restrictions causing delays	9	25.00
Proportion of design complete at time of tendering	8	22.22
Likelihood of escalation and/or rise and fall	8	22.22
Complexity in project design	8	22.22
Material delivery reliability	8	22.22
Lack of guaranteed price over duration of supply/subcontracts	7	19.44
Size of project (dollar value)	6	16.67
Location with respect to head or branch office	6	16.67
Company relationship with design team and consultants	6	16.67
Amount of negative cashflow on project	6	16.67
Quality of work and credit worthiness of subcontractors/suppliers	6	16.67
Current workload of subcontractors and/or suppliers	6	16.67
Degree of contractor involvement in design phase	5	13.89
Likelihood of changes in labour market supply	5	13.89
Proportion of work ($) subcontracted to total contract value	5	13.89
Proportion of labour cost to total project cost	5	13.89
Number of major supply and/or subcontracts on project	4	11.11
Company's relationship with subcontractors/suppliers	4	11.11
Commercial disadvantages in quoted prices from subcontractors/suppliers	4	11.11
Proportion of hired to owned plant on project	4	11.11
Time allowed for submitting bids	3	8.33
Proportion of time-based overheads to contract value	3	8.33
Likelihood of changes in contract quantities	3	8.33
Amount of external financing required for project	2	5.56
Likelihood of changes in contract conditions	2	5.56
Likelihood of increase in foreign exchange rates	1	2.78
Likelihood of negotiating lower price on supply/subcontracts	1	2.78
Amount of contract bonuses	1	2.78
Likelihood of changes in contract scope	1	2.78
Likelihood of changes in contract rates	1	2.78
Commercial advantages in quoted prices from subcontractors/suppliers	0	0.00
Innovation in design	0	0.00
Innovation in construction methods	0	0.00
Likelihood of an acceleration in schedule	0	0.00

Table 1

Factors Contributing to Opportunity Analysis

FACTOR	# of Resp.	% of Resp.
Likelihood of negotiating lower price on supply/subcontracts	17	47.22
Innovation in construction methods	16	44.44
Company's relationship with subcontractors/suppliers	11	30.56
Innovation in design	11	30.56
Commercial advantages in quoted prices from subcontractors/suppliers	10	27.78
Number of major supply and/or subcontracts on project	8	22.22
Likelihood of changes in contract scope	7	19.44
Degree of contractor involvement in design phase	6	16.67
Proportion of work ($) subcontracted to total contract value	6	16.67
Likelihood of unexpected job site conditions	6	16.67
Complexity in construction methods	6	16.67
Likelihood of an acceleration in schedule	6	16.67
Duration of contract period	5	13.89
Current workload of subcontractors and/or suppliers	5	13.89
Likelihood of changes in contract quantities	5	13.89
Size of project (dollar value)	4	11.11
Location with respect to head or branch office	4	11.11
Company relationship with design team and consultants	4	11.11
Proportion of time-based overheads to contract value	4	11.11
Completeness and clarity of tender documents and specifications	4	11.11
Complexity in project design	4	11.11
Quality of work and credit worthiness of subcontractors/suppliers	3	8.33
Likelihood of a schedule delay	3	8.33
Material delivery reliability	3	8.33
Confidence in design	2	5.56
Time allowed for submitting bids	2	5.56
Amount of negative cashflow on project	2	5.56
Lack of guaranteed price over duration of supply/subcontracts	2	5.56
Likelihood of unexpected climatic conditions	2	5.56
Degree of safety hazard on project	2	5.56
Amount of contractor coverage (e.g. latent conditions clause)	2	5.56
Amount of liquidated damages	2	5.56
Likelihood of regulatory restrictions causing delays	2	5.56
Uncertainty in estimate for labour	2	5.56
Uncertainty in estimate for plant	2	5.56
Uncertainty in estimate for materials	2	5.56
Proportion of labour cost to total project cost	2	5.56
Proportion of hired to owned plant on project	2	5.56
Likelihood of changes in contract conditions	2	5.56
Likelihood of changes in contract rates	2	5.56
Proportion of design complete at time of tendering	1	2.78
Likelihood of escalation and/or rise and fall	1	2.78
Amount of external financing required for project	0	0.00
Likelihood of changes in labour market supply	0	0.00
Likelihood of increase in foreign exchange rates	0	0.00
Commercial disadvantages in quoted prices from subcontractors/suppliers	0	0.00
Amount of contract bonuses	0	0.00

Table 2

Factors Considered in Setting Margin

See Table 3

The following factors were the top ten factors most frequently considered in setting margin on a tender, listed in decreasing order of frequency:

Size of project (dollar value)
Proportion of work ($) subcontracted to total contract value
Proportion of time-based overheads to contract value
Number of major supply and/or subcontract on project
Location of project with respect to head or branch office
Duration of contract period
Likelihood of escalation and/or rise and fall
Proportion of labour cost to total project cost
Uncertainty in estimated quantities, productivity, and/or price rates for labour
Proportion of hired to owned plant on project

Other Factors Considered in Setting the Risk and Opportunity Allowance

The following is a list of other factors considered in setting the risk and opportunity allowance on a tender, as indicated by respondents in the survey:

Pricing
Ground conditions
Weather
Materials

Risk Factors:
Incomplete nature of the design
Estimated quantities in error
Flooding
Flooding to cut off access
Industrial relations
Traffic management

Opportunity Factors:
Internal plant
Staff in new market area
Design

Factors Considered in Setting Margin

FACTOR	# of Resp.	% of Resp.
Size of project (dollar value)	13	36.11
Proportion of work ($) subcontracted to total contract value	13	36.11
Proportion of time-based overheads to contract value	12	33.33
Number of major supply and/or subcontracts on project	10	27.78
Location with respect to head or branch office	9	25.00
Duration of contract period	8	22.22
Likelihood of escalation and/or rise and fall	7	19.44
Proportion of labour cost to total project cost	7	19.44
Uncertainty in estimate for labour	6	16.67
Proportion of hired to owned plant on project	6	16.67
Lack of guaranteed price over duration of supply/subcontracts	5	13.89
Amount of liquidated damages	5	13.89
Uncertainty in estimate for plant	5	13.89
Uncertainty in estimate for materials	5	13.89
Likelihood of changes in contract scope	5	13.89
Likelihood of unexpected climatic conditions	4	11.11
Complexity in construction methods	4	11.11
Likelihood of a schedule delay	4	11.11
Likelihood of changes in contract quantities	4	11.11
Confidence in design	3	8.33
Likelihood of negotiating lower price on supply/subcontracts	3	8.33
Commercial advantages in quoted prices from subcontractors/suppliers	3	8.33
Likelihood of changes in contract rates	3	8.33
Proportion of design complete at time of tendering	2	5.56
Time allowed for submitting bids	2	5.56
Amount of negative cashflow on project	2	5.56
Likelihood of changes in labour market supply	2	5.56
Quality of work and credit worthiness of subcontractors/suppliers	2	5.56
Current workload of subcontractors and/or suppliers	2	5.56
Company's relationship with subcontractors/suppliers	2	5.56
Commercial disadvantages in quoted prices from subcontractors/suppliers	2	5.56
Degree of safety hazard on project	2	5.56
Completeness and clarity of tender documents and specifications	2	5.56
Amount of contract bonuses	2	5.56
Likelihood of changes in contract conditions	2	5.56
Degree of contractor involvement in design phase	1	2.78
Amount of external financing required for project	1	2.78
Likelihood of unexpected job site conditions	1	2.78
Amount of contractor coverage (e.g. latent conditions clause)	1	2.78
Material delivery reliability	1	2.78
Likelihood of an acceleration in schedule	1	2.78
Company relationship with design team and consultants	0	0.00
Likelihood of increase in foreign exchange rates	0	0.00
Likelihood of regulatory restrictions causing delays	0	0.00
Complexity in project design	0	0.00
Innovation in design	0	0.00
Innovation in construction methods	0	0.00

Table 3

Factors Not Applicable

See Table 4

The following factors were the top ten factors most frequently not applicable in setting the risk and opportunity allowance, listed in decreasing order of frequency:

Amount of contract bonuses
Likelihood of changes in contract conditions
Likelihood of changes in contract rates
Likelihood of increase in foreign exchange rates
Amount of external financing required for project
Likelihood of an acceleration in schedule
Complexity in project design
Time allowed for submitting bids
Company's quoted prices from subcontractors/suppliers with respect to competitors:
Commercial disadvantages
Likelihood of regulatory restrictions causing delays

Factors Never Considered

See Table 5

The following factors were the top ten factors most frequently never considered in setting the risk and opportunity allowance, listed in decreasing order of frequency:

Size of project (dollar value)
Company relationship with design team and consultants
Likelihood of increase in foreign exchange rates
Duration of contract period
Location of project with respect to head or branch office
Amount of external financing required for project
Quality of work and credit worthiness of subcontractors/suppliers
Proportion of hired to owned plant on project
Degree of contractor involvement in design phase
Proportion of design complete at time of tendering

Risk and Opportunity Factors Not Applicable

FACTOR	# of Resp.	% of Resp.
Amount of contract bonuses	30	83.33
Likelihood of changes in contract conditions	29	80.56
Likelihood of changes in contract rates	29	80.56
Likelihood of increase in foreign exchange rates	28	77.78
Amount of external financing required for project	27	75.00
Likelihood of an acceleration in schedule	27	75.00
Complexity in project design	26	72.22
Time allowed for submitting bids	25	69.44
Commercial disadvantages in quoted prices from subcontractor/suppliers	25	69.44
Likelihood of regulatory restrictions causing delays	25	69.44
Likelihood of changes in labour market supply	24	66.67
Likelihood of changes in contract quantities	24	66.67
Likelihood of changes in contract scope	23	63.89
Proportion of design complete at time of tendering	22	61.11
Amount of negative cashflow on project	22	61.11
Lack of guaranteed price over duration of supply/subcontracts	22	61.11
Degree of contractor involvement in design phase	21	58.33
Likelihood of escalation and/or rise and fall	21	58.33
Material delivery reliability	21	58.33
Company relationship with design team and consultants	20	55.56
Commercial advantages in quoted prices from subcontractors/suppliers	20	55.56
Completeness and clarity of tender documents and specifications	20	55.56
Proportion of hired to owned plant on project	20	55.56
Innovation in design	20	55.56
Quality of work and credit worthiness of subcontractors/suppliers	19	52.78
Current workload of subcontractors and/or suppliers	19	52.78
Proportion of labour cost to total project cost	19	52.78
Innovation in construction methods	19	52.78
Degree of safety hazard on project	18	50.00
Amount of liquidated damages	18	50.00
Uncertainty in estimate for plant	18	50.00
Confidence in design	17	47.22
Company's relationship with subcontractors/suppliers	16	44.44
Complexity in construction methods	16	44.44
Location with respect to head or branch office	15	41.67
Uncertainty in estimate for materials	15	41.67
Proportion of time-based overheads to contract value	14	38.89
Number of major supply and/or subcontracts on project	14	38.89
Amount of contractor coverage (e.g. latent conditions clause)	14	38.89
Uncertainty in estimate for labour	14	38.89
Size of project (dollar value)	13	36.11
Proportion of work ($) subcontracted to total contract value	13	36.11
Likelihood of a schedule delay	13	36.11
Likelihood of unexpected climatic conditions	12	33.33
Likelihood of negotiating lower price on supply/subcontracts	11	30.56
Likelihood of unexpected job site conditions	10	27.78
Duration of contract period	8	22.22

Table 4

Risk and Opportunity Factors Never Considered

FACTOR	# of Resp.	% of Resp.
Size of project (dollar value)	7	19.44
Company relationship with design team and consultants	7	19.44
Likelihood of increase in foreign exchange rates	7	19.44
Duration of contract period	6	16.67
Location with respect to head or branch office	6	16.67
Amount of external financing required for project	6	16.67
Quality of work and credit worthiness of subcontractors/suppliers	6	16.67
Proportion of hired to owned plant on project	6	16.67
Degree of contractor involvement in design phase	5	13.89
Proportion of design complete at time of tendering	5	13.89
Confidence in design	5	13.89
Time allowed for submitting bids	5	13.89
Amount of negative cashflow on project	5	13.89
Likelihood of changes in labour market supply	5	13.89
Current workload of subcontractors and/or suppliers	5	13.89
Company's relationship with subcontractors/suppliers	5	13.89
Commercial advantages in quoted prices from subcontractors/suppliers	5	13.89
Commercial disadvantages in quoted prices from subcontractors/suppliers	5	13.89
Innovation in design	5	13.89
Proportion of time-based overheads to contract value	4	11.11
Likelihood of negotiating lower price on supply/subcontracts	4	11.11
Proportion of labour cost to total project cost	4	11.11
Material delivery reliability	4	11.11
Number of major supply and/or subcontracts on project	3	8.33
Degree of safety hazard on project	3	8.33
Amount of contractor coverage (e.g. latent conditions clause)	3	8.33
Amount of contract bonuses	3	8.33
Likelihood of escalation and/or rise and fall	2	5.56
Lack of guaranteed price over duration of supply/subcontracts	2	5.56
Completeness and clarity of tender documents and specifications	2	5.56
Amount of liquidated damages	2	5.56
Likelihood of regulatory restrictions causing delays	2	5.56
Likelihood of an acceleration in schedule	2	5.56
Proportion of work ($) subcontracted to total contract value	1	2.78
Likelihood of unexpected job site conditions	1	2.78
Complexity in project design	1	2.78
Likelihood of a schedule delay	1	2.78
Uncertainty in estimate for labour	1	2.78
Uncertainty in estimate for plant	1	2.78
Innovation in construction methods	1	2.78
Likelihood of changes in contract scope	1	2.78
Likelihood of changes in contract conditions	1	2.78
Likelihood of changes in contract quantities	1	2.78
Likelihood of changes in contract rates	1	2.78
Likelihood of unexpected climatic conditions	0	0.00
Complexity in construction methods	0	0.00
Uncertainty in estimate for materials	0	0.00

Table 5

Risk and Opportunity Factors Listed in Survey

The following is a list of all of the risk and opportunity factors provided in the survey, from which respondents could choose:

Project Characteristics
Size of project (dollar value)
Duration of contract period
Location with respect to head or branch office

Design Characteristics
Degree of contractor involvement in design phase
Proportion of design complete at time of tendering
Confidence in design
Company relationship with design team and consultants

Cost Estimate Characteristics
Time allowed for submitting bids
Proportion of time-based overheads to contract value
Amount of negative cashflow on project
Amount of external financing required for project
Likelihood of escalation and/or rise and fall
Likelihood of changes in labour market supply
Likelihood of increase in foreign exchange rates

Subcontractors and Suppliers
Proportion of work subcontracted to total contract value
Number of major supply and/or subcontracts on project
Lack of guaranteed price over duration of supply/subcontracts
Likelihood of negotiating lower price on supply/subcontracts
Quality of work and credit worthiness of subcontractors/suppliers
Current workload of subcontractors and/or suppliers
Company's relationship with subcontractors/suppliers
Company's quoted prices from subcontractors/suppliers with respect to competitors:
    Commercial advantages
    Commercial disadvantages

Project-Related Risks

Likelihood of unexpected climatic conditions
Likelihood of unexpected job site conditions
Degree of safety hazard on project
Completeness and clarity of tender documents and specifications
Amount of contractor coverage (e.g. latent conditions clause)
Amount of liquidated damages
Likelihood of regulatory restrictions causing delays
Complexity in project design
Complexity in construction methods
Likelihood of a schedule delay
Uncertainty in estimated quantities, productivity, and/or price rates for:
- Labour
- Plant
- Materials

Proportion of labour cost to total project cost
Proportion of hired to owned plant on project
Material delivery reliability

Project-Related Opportunities

Innovation in design
Innovation in construction methods
Amount of contract bonuses
Likelihood of an acceleration in schedule
Likelihood of changes in contract:
- Scope
- Conditions
- Quantities
- Rates

Part D. Objectives of the Tender

12. *Objectives of the company in tendering, at the time of tendering*

Number of projects: 36
Sample size: 36 for objectives 1, 3, and 6.
Sample size: 34 for objectives 2, 4, and 5.
Objectives 2, 4, and 5 have a sample size of only 34, because they were not included in the projects reviewed in the pilot study for this survey.

Objectives in Tendering

The following is a list of the objectives in tendering provided in the survey:

1. To win the project.
2. To meet budgeted turnover requirements and/or to deploy idle resources.
3. To be seen as competitive and/or to build a reputation with the client and/or with consultants.
4. To break into a new market, or to win for the strategic value of the project.
5. To test a new geographical area, and to give the estimating team experience in the new area.
6. To maximise the project's contribution to profit.

Analysis of Results

The following steps were taken in analysing the degree of desire in achieving the objectives in tendering:

See Table 6, Table 7, and Table 8

1. The frequency of the responses for each degree of desire (ranging from 0 for not applicable to 5 for a strong desire) were totalled for each objective.
2. It was decided that a score of 4 or greater for the degree of desire indicated a strong desire to achieve the objective, and a score of 3 or less a weak desire. The total number of respondents scoring each objective as having a degree of desire of 4 or greater, and the total respondents scoring a degree of desire of 3 or less were determined. The percentage of total respondents that each figure represented was calculated, by dividing the number of responses by the sample size (36 for objectives 1, 3, and 6, and 34 for objectives 2, 4, and 5).

3. An importance index was calculated for each objective, based on the degrees of desire. The importance index indicates the level of importance of each objective in tendering. It is a weighted average of each objective divided by the upper scale of the measurement (of the degree of desire). It is calculated using the following formula (Shash, 1993):

$$I = \sum w \cdot \frac{n}{N} \cdot \frac{100}{5}$$

where

I = importance index

w = constant expressing the weighting given to each response. The weighting ranges from 1 to 5 where 1 is the least degree of desire, and 5 is the greatest degree of desire. A weighting of zero yields a zero term in the importance index equation. It also indicates that the objective was not applicable on the tender in question.

n = the frequency of the responses, for each weighting.

N = total number of responses = total sample size for the survey = 36 for objectives 1, 3, and 6, and 34 for objectives 2, 4, and 5.

$\frac{100}{5}$ = a factor to convert the weighting into a degree of 100; for example, a weighting of 1 corresponds to 20%, which is equal to 1*(100/5); a weighting of 5 corresponds to 100%, which is equal to 5*(100/5).

4. The objectives were ranked according to the importance index. This ranking is termed RANK1.
5. The objectives were also ranked according to the percentage of respondents scoring a degree of desire for the objective of 4 or greater. This ranking is termed RANK2.
6. The ranking of the objectives in tendering according to each ranking method were compared.

See Table 7 and Table 8

The ranking of the objectives in tendering was the same based on both ranking methods. This result indicates that there is a consistency between the number of respondents that indicated a desire to achieve an objective and the strength of that desire. In other words, those objectives that were most frequently cited as being desired were also given the largest number of strong ratings.

The objective that was most frequently desired and desired to the strongest degree was "to win the project". The least frequent and weakest objective was "to test a new geographical area, and to give the estimating team experience in the new area".

The second highest ranked objective was "to be seen as competitive and/or to build a reputation with the client and/or with consultants", followed by "to meet budgeted turnover requirements and/or to deploy idle resources"; "to maximise the project's contribution to profit"; and, "to break into a new market, or for the strategic value of the project".

Analysis of Objectives in Tendering

OBJECTIVE	Frequency of Response (n) for Each Degree of Desire for Achieving Objective (w)						Total # of Resp. (excl. 0 rating)	IMPORT INDEX	% Resp. Scoring	
	0	1	2	3	4	5			<=3	>=4
To win the project	0	0	1	7	9	19	36	85.56	22.22	77.78
To meet budgeted turnover / to deploy resources	4	1	3	11	9	6	30	62.35	55.88	44.12
To be seen as competitive / to build reputation	7	1	3	4	11	10	29	62.78	41.67	58.33
To break into new market / strategic value of proje	10	0	6	5	7	6	24	50.00	61.76	38.24
To test new geographical area / for experience	21	4	3	5	0	1	13	17.65	97.06	2.94
To maximise project's contribution to profit	5	5	3	9	6	8	31	56.67	61.11	38.89

IMPORT INDEX =
IMPORTANCE INDEX (I) =
SUM (w*(n/N)*(100/5))

Where N = total number of responses = sample size for survey
= 36 for Objectives 1,3,6
= 34 for Objectives 2,4,5

Table 6

Ranking of Objectives in Tendering (RANK1 and RANK2)

OBJECTIVE	IMPORT INDEX (I)	RANK1	RANK2
To win the project	85.56	1	1
To be seen as competitive / to build reputation	62.78	2	2
To meet budgeted turnover / to deploy resources	62.35	3	3
To maximise project's contribution to profit	56.67	4	4
To break into new market / strategic value of project	50.00	5	5
To test new geographical area / for experience	17.65	6	6

RANK1 based on importance index
RANK2 based on % of respondents scoring >=4

Table 7

Ranking of Objectives in Tendering (RANK2)

OBJECTIVE	% Resp. Scoring >=4	RANK2
To win the project	77.78	1
To be seen as competitive / to build reputation	58.33	2
To meet budgeted turnover / to deploy resources	44.12	3
To maximise project's contribution to profit	38.89	4
To break into new market / strategic value of project	38.24	5
To test new geographical area / for experience	2.94	6

Table 8

Other Objectives in Tendering

Other objectives in tendering indicated in the survey were:

1. To satisfy the client.
2. To gain a reputation in the field of work.
3. To obtain a project because it suits the company's operations.
4. To build a relationship with a major subcontractor.
5. To improve the company morale by winning a competitive bid.
6. To test a new project area.

Relationship Between Margin Size and the Desire to Achieve Each Objective

The relationship between the actual margin size chosen on a tender and the strength of the objective "to win the project" is approximately decreasing. This relationship indicates that as the desire to win the project increases, the margin size chosen for the tender decreases. This relationship corresponds to the intuitive one in which the margin size is decreased in order to increase the chances of winning the project. The slope of this relationship is large, indicating a large decrease in margin size for an increase in the desire to win the project.

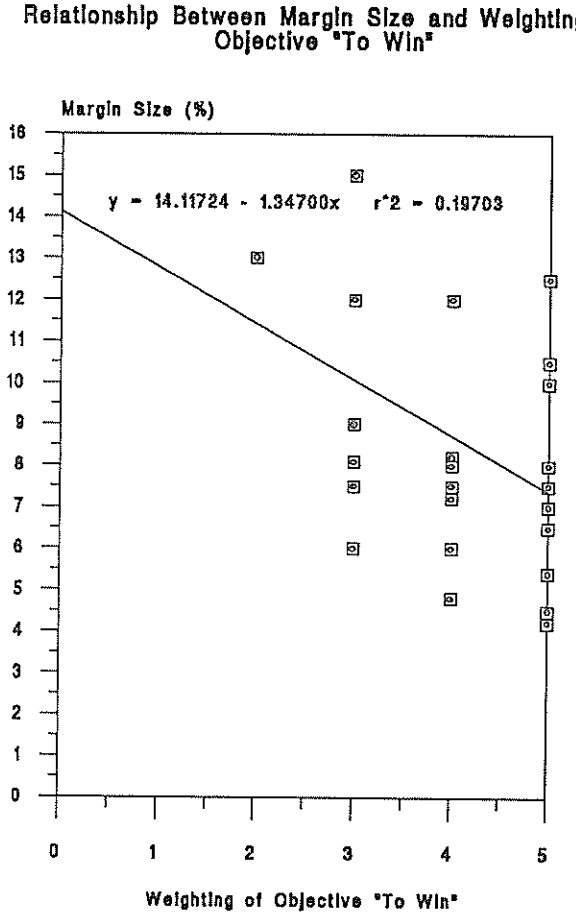


Figure 37. Relationship Between Margin Size and Weighting of Objective "To Win"

The relationship between the actual margin size chosen on a tender and the strength of the objective "to meet budgeted turnover requirements and/or to deploy idle resources" is approximately decreasing. This relationship indicates that as the desire to meet budgeted turnover requirements and/or to deploy idle resources increases, the margin size chosen for the tender decreases. This relationship corresponds to the intuitive one in which the margin size is decreased in order to increase the chances of winning the project and thus meeting the required turnover levels and deploying idle resources. The slope of this relationship is large, indicating a large decrease in margin size for an increase in the desire to meet budgeted turnover requirements and/or to deploy idle resources.

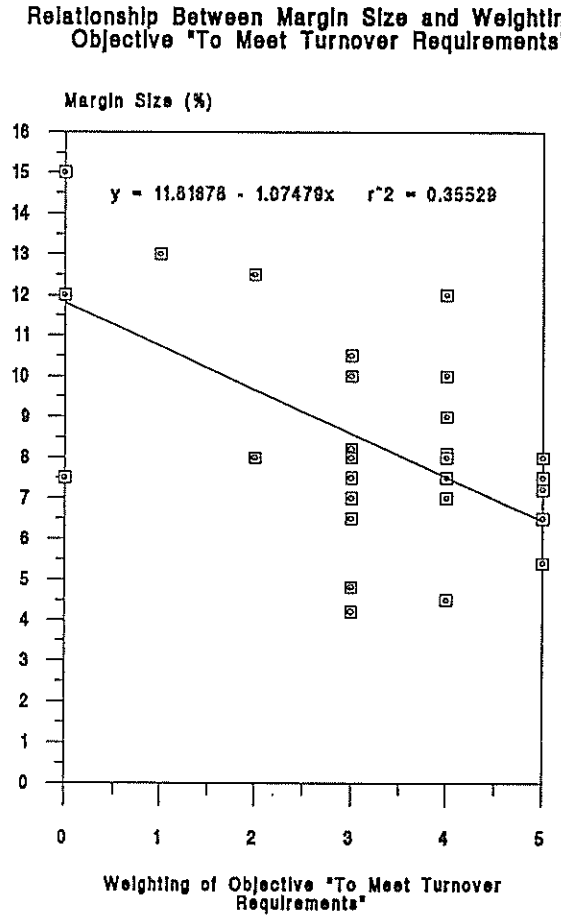


Figure 38. Relationship Between Margin Size and Weighting of Objective "To Meet Turnover Requirements"

The relationship between the actual margin size chosen on a tender and the strength of the objective "to be seen as competitive and/or to build a reputation with the client and/or with consultants" is approximately decreasing. This relationship indicates that as the desire to be seen as competitive and/or to build a reputation increases, the margin size chosen for the tender decreases. This relationship corresponds to the intuitive one in which the margin size is decreased in order to increase the chances of being the low bidder and thus improving the company's position on the tender rankings, thereby appearing competitive. The slope of this relationship is medium, indicating a moderate decrease in margin size for an increase in the desire to be seen as competitive and/or to build a reputation.

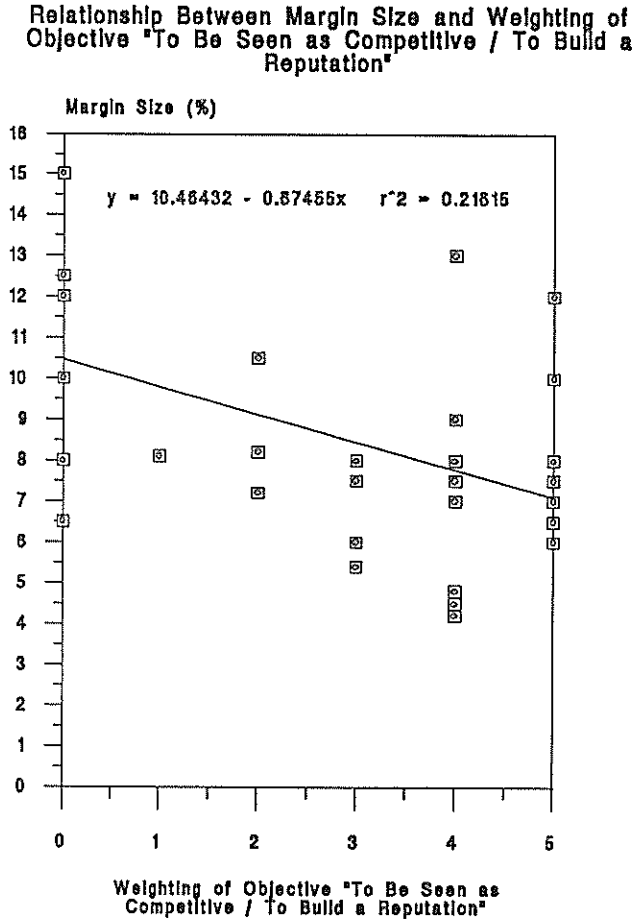


Figure 39. Relationship Between Margin Size and Weighting of Objective "To Be Seen as Competitive / To Build a Reputation"

The relationship between the actual margin size chosen on a tender and the strength of the objective "to break into a new market, or for the strategic value of the project" is approximately decreasing. This relationship indicates that as the desire to break into a new market or to win for strategic reasons increases, the margin size chosen for the tender decreases. This relationship corresponds to the intuitive one in which the margin size is decreased in order to increase the chances of winning the project for strategic reasons or to break into a new market. The slope of this relationship is small, indicating a small decrease in margin size for an increase in the desire to break into a new market, or to win for strategic reasons.

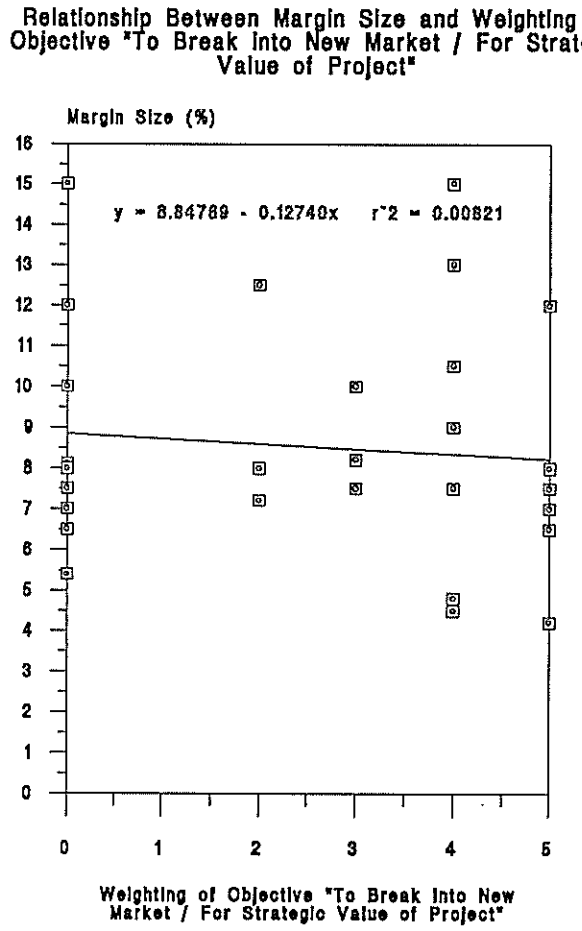


Figure 40. Relationship Between Margin Size and Weighting of Objective "To Break into New Market / For Strategic Value of Project"

The relationship between the actual margin size chosen on a tender and the strength of the objective "to test a new geographical area, and to give the estimating team experience in the new area" is approximately decreasing. This relationship indicates that as the desire to test a new geographical area and to give the estimating team experience increases, the margin size chosen for the tender decreases. The slope of this relationship is medium, indicating a moderate decrease in margin size for an increase in the desire to test a new geographical, area and to give the estimating team experience in the new area.

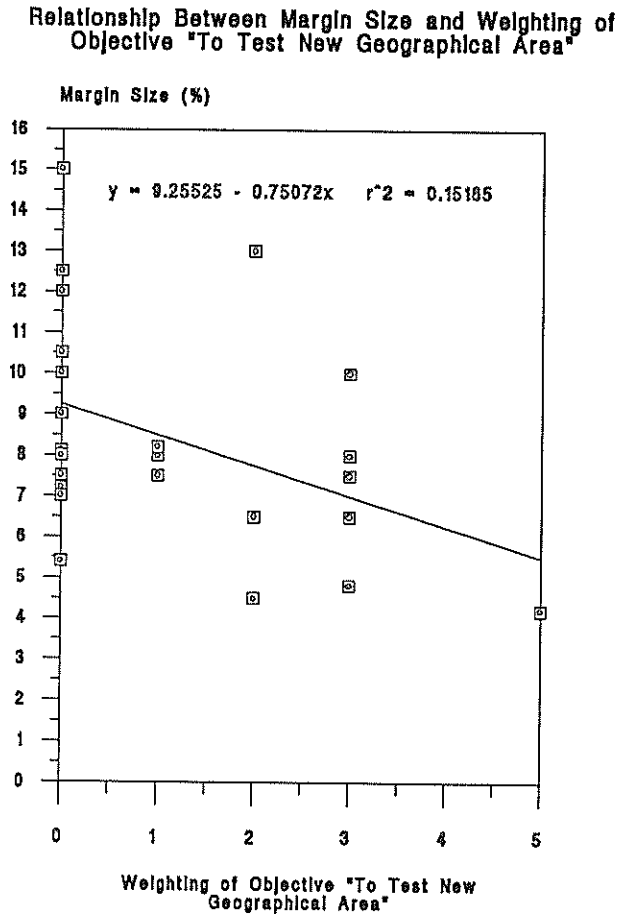


Figure 41. Relationship Between Margin Size and Weighting of Objective "To Test New Geographical Area"

The relationship between the actual margin size chosen on a tender and the strength of the objective "to maximise the project's contribution to profit" is approximately decreasing. This relationship indicates that as the desire to maximise the project's contribution to company profit increases, the margin size chosen for the tender decreases, but only very slightly. The slope of this relationship is very small, indicating a very small decrease in margin size for an increase in the desire to maximise the project's contribution to profit. This relationship can be explained by the fact that if the company's desire is to maximise profit, then they are in a situation in which they have sufficient work on hand and they want to win projects at high margins. Thus, as their desire to maximise profit increases, the margin size decreases by very little. The margin size does, however, decrease slightly, since a lower margin increases the company's chances of winning and therefore of maximising profit.

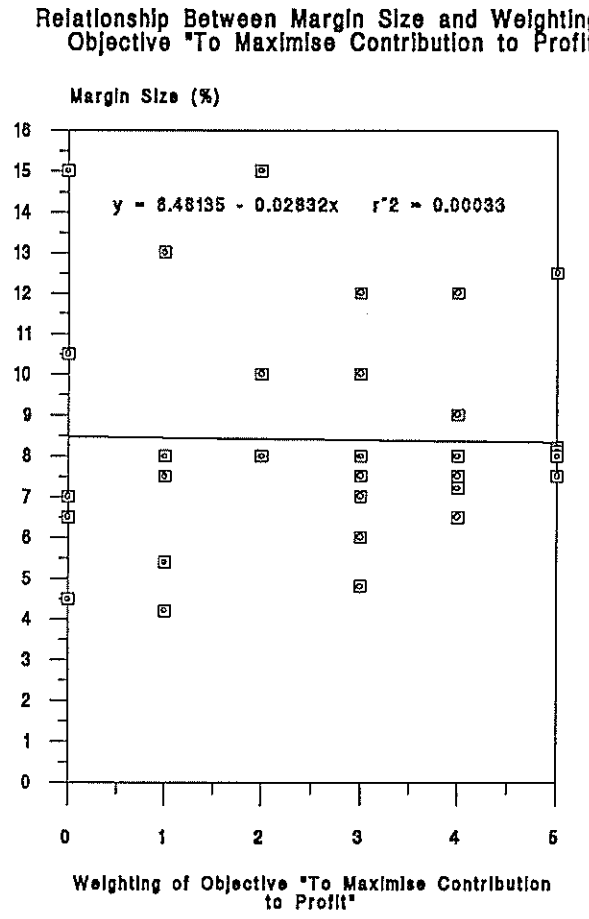


Figure 42. Relationship Between Margin Size and Weighting of Objective "To Maximise Contribution to Profit"

Comparing slopes of relationships between margin size and the various objectives in tendering, the slope of the relationship between the margin size and the objective of maximising profit is the smallest. As already explained, this objective is the one most likely to lead to larger margin sizes; therefore, an increase in this objective leads to the least amount of decrease in margin size. The slope of the relationship between the margin size and the objective of winning the project is the largest. This indicates that an increase in the desire to win the project leads to the greatest decrease in margin size, as would be expected to increase the chances of winning. An increase in the desire to meet budgeted turnover requirements and/or to deploy idle resources also leads to a large decrease in margin size, again to increase the chances of winning. In order of decreasing slope size, the remaining objectives are: to test a new geographical area, and to give the estimating team experience in the new area; to be seen as competitive and/or to build a reputation; and, to break into a new market, or for the strategic value of the project.

Most of the relationships follow expected trends with the exception of two: to test a new geographical area; and, to break into a new market. It would not be expected that an increase in the desire to test a new geographical area would lead to much decrease in margin size, since in this case the objective is not to win; however, the slope of this relationship indicates a medium decrease in margin size. Secondly, it would be expected that an increase in the desire to break into a new market would lead to a significant decrease in margin size, in order to maximise the chances of winning; however, the slope of this relationship indicates only a slight decrease in margin size. This relationship may be explained by the fact that the desire to break into a new market may be approached with caution for the unknown, thereby leading to more modest decreases in margin size.

Part E. Factors Affecting Margin Size

13. *Factors affecting the choice of margin size, at the time of tendering*

Analysis of Results

Number of Projects: 36

The following steps were taken in analysing the degree of influence of the factors affecting the choice of margin size:

See Table 9, Table 10, and Table 11

1. The frequency of the responses for each degree of influence (ranging from 0 for no influence to 5 for a large degree of influence) were totalled for each factor.
2. It was decided that a score of 4 or greater for the degree of influence indicated a strong influence of the factor on the margin size decision, and a score of 3 or less a weak influence. The total number of respondents scoring each factor as having an influence of 4 or greater, and the total respondents scoring an influence of 3 or less were determined. The percentage of total respondents that each figure represented was calculated, by dividing the number of responses by the total sample size (36).
3. An importance index was calculated for each factor, based on its degree of influence. The importance index indicates the level of importance of each factor. It is a weighted average of each factor divided by the upper scale of the measurement (of the degree of influence). It is calculated using the following formula (Shash, 1993):

$$I = \sum w \cdot \frac{n}{N} \cdot \frac{100}{5}$$

where

I = importance index

w = constant expressing the weighting given to each response. The weighting ranges from 1 to 5 where 1 is the least degree of influence, and 5 is the greatest degree of influence. A weighting of zero yields a zero term in the importance index equation. It also indicates that the factor had no influence on the margin size; thus, this weighting is equivalent to the factor being not applicable. If a factor is not applicable or never considered, it is given a zero weighting, so that all factors are included in the importance index calculation.

n = the frequency of the responses, for each weighting.

N = total number of responses = total sample size for the survey = 36.

$\frac{100}{5}$ = a factor to convert the weighting into a degree of 100; for example, a weighting of 1 corresponds to 20%, which is equal to 1*(100/5); a weighting of 5 corresponds to 100%, which is equal to 5*(100/5).

4. The factors were ranked according to the importance index. This ranking is termed RANK1.
5. The factors were also ranked according to the percentage of respondents scoring their influence as 4 or greater. This ranking is termed RANK2.
6. RANK1 and RANK2 were converted to RELR1 and RELR2, which are relative rankings, so that the two rankings can be compared. This conversion was necessary since there are more ranking levels in RANK1 (40) than in RANK2 (14), due to fewer occurrences of importance indices of equal value than of equal percentages of respondents scoring 4 or greater for factors. The relative rankings were calculated by

dividing the ranking of each factor, ranked according to RANK1 and RANK2, by the number of ranking categories, for each of RANK1 and RANK2 respectively.

7. The difference between the relative rankings, DIFF, was calculated by subtracting RELR2 from RELR1. The larger the value of DIFF, the greater the discrepancy between the two ranking methods. A positive value of DIFF indicates that RELR1 is greater than RELR2; in this case, a large number of respondents indicated this factor as having a degree of influence on the margin size decision, but few of them indicated a strong degree of influence. A negative value of DIFF indicates that RELR2 is greater than RELR1; in this case, a small number of respondents indicated this factor as having a degree of influence on the margin size decision, but most of them indicated a strong degree of influence. The larger the magnitude of DIFF, the more pronounced are the trends indicated by the sign of DIFF.

See Table 10 and Table 11

Ranking Based on the Importance Index (RANK1)

See Table 10

The top six ranked factors, based on the importance index, are all categorised under company characteristics. These factors are, in decreasing order of importance:

Desire for project
Need for work
Amount of contingency (risk/opportunity allowance) in estimate
Experience on similar projects
Likelihood of winning project
Availability of other projects over remainder of fiscal year

The seventh most important factor is the number of competitors for the project, which is categorised with factors relating to the competition. This factor is the only significant factor in the category of competition, in terms of the degree of influence on margin size.

The eighth ranked factor is the margin required of the project by the corporate budget, under the category of corporate and budgetary considerations. This factor is the only significant factor in this category.

The most significant factor amongst the client-related factors is the company's relationship with the client. This is the tenth most significant factor.

Under economic and political conditions, the most highly ranked factor is the amount of work available to contractors in this sector of industry. This factor is ranked as eighteenth in importance, indicating that this entire category of factors is not significant in terms of its influence on the margin size decision.

The five lowest ranked factors, in decreasing rank order, are: the capacity to supply resources for financing; current interest rates; current unemployment rate; the likelihood of changes in tax laws; and, the tax liabilities of the project.

The most significant category of factors is company characteristics (average rank of 11.2), followed by client-related factors (average rank of 17.7), corporate and budgetary considerations (average rank of 22.1), competition (average rank of 25.1), and economic and political conditions (average rank of 31.3).

Analysis of Factors Affecting Margin Size

FACTOR	Frequency of Response (n) for Each Degree of Influence Factor Had on Setting Margin (w) 0	1	2	3	4	5	Total # of Resp. (excl. 0 rating)	IMPORT INDEX	% Resp. Scoring <=3	>=4
Company Characteristics										
Need for work	0	3	4	9	14	3	33	60.56	52.78	47.22
Desire for project	0	3	2	12	10	7	34	65.56	52.78	47.22
Likelihood of winning project	0	4	4	11	9	1	29	47.78	72.22	27.78
Availability of other projects	2	2	2	10	6	4	24	44.44	72.22	27.78
Likelihood of winning future tenders	3	3	3	10	4	3	23	38.89	80.56	19.44
Targeting of more desirable projects	3	2	0	7	4	2	15	27.22	83.33	16.67
Capacity to supply resources for construction	4	0	4	7	5	4	20	38.33	75.00	25.00
Availability of key personnel in company	4	0	3	5	5	4	17	33.89	75.00	25.00
Capacity to supply resources for financing	5	2	0	1	0	1	4	5.56	97.22	2.78
Company's strength in the industry	4	1	2	6	4	2	15	27.22	83.33	16.67
Experience on similar projects	2	1	1	8	12	3	25	50.00	58.33	41.67
Past profit on similar projects	3	1	6	3	6	4	20	36.67	72.22	27.78
Familiarity with geographical area	3	1	1	8	5	2	17	31.67	80.56	19.44
Familiarity with market	4	2	0	6	3	6	17	34.44	75.00	25.00
Amount of contingency in estimate	0	1	1	8	9	6	25	51.67	58.33	41.67
Corporate and Budgetary Considerations										
Margin required of project by corporate budget	2	0	3	8	9	1	21	39.44	72.22	27.78
Rate of return required from investment in project	2	3	1	2	3	1	10	15.56	88.89	11.11
Tax liabilities of project	6	0	0	0	0	0	0	0.00	100.00	0.00
Proportion of fiscal year already over	2	2	0	3	1	2	8	13.89	91.67	8.33
Actual versus budgeted turnover to date	3	2	2	4	1	6	15	28.89	80.56	19.44
Actual versus budgeted corporate overheads to d	3	1	3	5	1	3	13	22.78	88.89	11.11
Actual versus projected amount of work won to dc	3	1	2	7	2	5	17	32.78	80.56	19.44
Corporate strategy or business plan for this market	3	3	0	6	6	3	18	33.33	75.00	25.00
The Client										
Company's relationship with the client	3	4	2	7	5	4	22	38.33	75.00	25.00
Major competitors' relationship with the client	3	2	2	5	1	2	12	19.44	91.67	8.33
Credit worthiness and fairness of the client	3	2	2	1	8	3	16	31.11	69.44	30.56

Table 9

Analysis of Factors Affecting Margin Size

FACTOR	Frequency of Response (n) for Each Degree of Influence Factor Had on Setting Margin (w) 0	1	2	3	4	5	Total # of Resp. (excl. 0 rating)	IMPORT INDEX	% Resp. Scoring <=3	>=4
Competition										
Number of competitors for the project	2	3	2	5	7	5	22	41.67	66.67	33.33
Competitors' current workload in this market	3	2	3	4	6	0	15	24.44	83.33	16.67
Number of competitors with strong desire for proje	3	4	0	4	5	3	16	28.33	77.78	22.22
Likelihood of any of competitors having advantage in:										
Design	5	2	0	2	1	0	5	6.67	97.22	2.78
Construction methods	3	3	1	4	1	0	9	11.67	97.22	2.78
Labour productivity	3	3	1	4	0	1	9	12.22	97.22	2.78
Plant	2	4	1	4	2	2	13	20.00	88.89	11.11
Materials	5	2	0	4	2	1	9	15.00	91.67	8.33
Previous experience of competitors similar projects	3	1	3	7	2	0	13	20.00	94.44	5.56
Competitors' performance on past projects in mar	2	0	2	8	1	1	12	20.56	94.44	5.56
Competitors' ranking in past bids in this market	3	0	2	5	1	3	11	21.11	88.89	11.11
Competitors' current workload in other markets	3	0	1	6	1	1	9	16.11	94.44	5.56
Economic and Political Conditions										
Current state of the economy	2	1	2	4	2	1	10	16.67	91.67	8.33
Current unemployment rate	4	2	0	1	0	0	3	2.78	100.00	0.00
Current interest rates	3	2	1	1	0	0	4	3.89	100.00	0.00
Likelihood of increase in interest rates	2	1	2	2	0	0	5	6.11	100.00	0.00
Likelihood of changes in tax laws	5	1	0	0	0	0	1	0.56	100.00	0.00
Expected market trend in this sector of industry	2	1	1	5	3	0	10	16.67	91.67	8.33
Amount of work available to contractors	3	3	1	6	6	1	17	28.89	80.56	19.44
Amount of other work available to subs/suppliers	2	2	2	3	2	1	10	15.56	91.67	8.33

IMPORT INDEX =
IMPORTANCE INDEX (I) =
SUM (w*(n/N)*(100/5))
Where N = total number of responses = sample size for survey = 36

Table 9

Ranking of Factors Affecting Margin Size (RANK1 and RANK2)

FACTOR	IMPORT INDEX	RANK1	RANK2	RELR1	RELR2	DIFF
Desire for project	65.56	1	1	100.00	100.00	0.00
Need for work	60.56	2	1	97.50	100.00	-2.50
Amount of contingency in estimate	51.67	3	2	95.00	92.86	2.14
Experience on similar projects	50.00	4	2	92.50	92.86	-0.36
Likelihood of winning project	47.78	5	5	90.00	71.43	18.57
Availability of other projects	44.44	6	5	87.50	71.43	16.07
Number of competitors for the project	41.67	7	3	85.00	85.71	-0.71
Margin required of project by corporate budget	39.44	8	5	82.50	71.43	11.07
Likelihood of winning future tenders	38.89	9	8	80.00	50.00	30.00
Capacity to supply resources for construction	38.33	10	6	77.50	64.29	13.21
Company's relationship with the client	38.33	10	6	77.50	64.29	13.21
Past profit on similar projects	36.67	11	5	75.00	71.43	3.57
Familiarity with market	34.44	12	6	72.50	64.29	8.21
Availability of key personnel in company	33.89	13	6	70.00	64.29	5.71
Corporate strategy or business plan for this market	33.33	14	6	67.50	64.29	3.21
Actual versus projected amount of work won to dc	32.78	15	8	65.00	50.00	15.00
Familiarity with geographical area	31.67	16	8	62.50	50.00	12.50
Credit worthiness and fairness of the client	31.11	17	4	60.00	78.57	-18.57
Actual versus budgeted turnover to date	28.89	18	8	57.50	50.00	7.50
Amount of work available to contractors	28.89	18	8	57.50	50.00	7.50
Number of competitors with strong desire for proje	28.33	19	7	55.00	57.14	-2.14
Targeting of more desirable projects	27.22	20	9	52.50	42.86	9.64
Company's strength in the industry	27.22	20	9	52.50	42.86	9.64
Competitors' current workload in this market	24.44	21	9	50.00	42.86	7.14
Actual versus budgeted corporate overheads to d	22.78	22	10	47.50	35.71	11.79
Competitors' ranking in past bids in this market	21.11	23	10	45.00	35.71	9.29
Competitors' performance on past projects in mar	20.56	24	12	42.50	21.43	21.07
Likelihood of competitors having advantage in pla	20.00	25	10	40.00	35.71	4.29
Previous experience of competitors similar projects	20.00	25	12	40.00	21.43	18.57
Major competitors' relationship with the client	19.44	26	11	37.50	28.57	8.93
Current state of the economy	16.67	27	11	35.00	28.57	6.43
Expected market trend in this sector of industry	16.67	27	11	35.00	28.57	6.43
Competitors' current workload in other markets	16.11	28	12	32.50	21.43	11.07
Rate of return required from investment in project	15.56	29	10	30.00	35.71	-5.71
Amount of other work available to subs/suppliers	15.56	29	11	30.00	28.57	1.43
Likelihood of competitors having advantage mate	15.00	30	11	27.50	28.57	-1.07
Proportion of fiscal year already over	13.89	31	11	25.00	28.57	-3.57
Competitors having advantage labour productivity	12.22	32	13	22.50	14.29	8.21
Competitors having advantage construction meth	11.67	33	13	20.00	14.29	5.71
Likelihood of competitors having advantage in des	6.67	34	13	17.50	14.29	3.21
Likelihood of increase in interest rates	6.11	35	14	15.00	7.14	7.86
Capacity to supply resources for financing	5.56	36	13	12.50	14.29	-1.79
Current interest rates	3.89	37	14	10.00	7.14	2.86
Current unemployment rate	2.78	38	14	7.50	7.14	0.36
Likelihood of changes in tax laws	0.56	39	14	5.00	7.14	-2.14
Tax liabilities of project	0.00	40	14	2.50	7.14	-4.64

RANK1 based on importance index
RANK2 based on % of respondents scoring >=4
RELR1 = ((41-RANK1)/40)*100
RELR2 = ((15-RANK2)/14)*100
DIFF = RELR1 - RELR2

Table 10

Ranking of Factors Affecting Margin Size (RANK2)

FACTOR	% Resp. Scoring >=4	RANK2
Need for work	47.22	1
Desire for project	47.22	1
Experience on similar projects	41.67	2
Amount of contingency in estimate	41.67	2
Number of competitors for the project	33.33	3
Credit worthiness and fairness of the client	30.56	4
Likelihood of winning project	27.78	5
Availability of other projects	27.78	5
Past profit on similar projects	27.78	5
Margin required of project by corporate budget	27.78	5
Capacity to supply resources for construction	25.00	6
Availability of key personnel in company	25.00	6
Familiarity with market	25.00	6
Corporate strategy or business plan for this market	25.00	6
Company's relationship with the client	25.00	6
Number of competitors with strong desire for project	22.22	7
Likelihood of winning future tenders	19.44	8
Familiarity with geographical area	19.44	8
Actual versus budgeted turnover to date	19.44	8
Actual versus projected amount of work won to date	19.44	8
Amount of work available to contractors	19.44	8
Targeting of more desirable projects	16.67	9
Company's strength in the industry	16.67	9
Competitors' current workload in this market	16.67	9
Rate of return required from investment in project	11.11	10
Actual versus budgeted corporate overheads to date	11.11	10
Likelihood of competitors having advantage in plant	11.11	10
Competitors' ranking in past bids in this market	11.11	10
Proportion of fiscal year already over	8.33	11
Major competitors' relationship with the client	8.33	11
Likelihood of competitors having advantage materials	8.33	11
Current state of the economy	8.33	11
Expected market trend in this sector of industry	8.33	11
Amount of other work available to subs/suppliers	8.33	11
Previous experience of competitors similar projects	5.56	12
Competitors' performance on past projects in market	5.56	12
Competitors' current workload in other markets	5.56	12
Capacity to supply resources for financing	2.78	13
Likelihood of competitors having advantage in design	2.78	13
Competitors having advantage construction methods	2.78	13
Competitors having advantage labour productivity	2.78	13
Tax liabilities of project	0.00	14
Current unemployment rate	0.00	14
Current interest rates	0.00	14
Likelihood of increase in interest rates	0.00	14
Likelihood of changes in tax laws	0.00	14

Table 11

Ranking Based on the Percentage of Respondents Scoring 4 or Greater (RANK2)

See Table 11

The four most highly ranked factors, based on the percentage of respondents scoring the factor's degree of influence as 4 or greater, were the same as those ranked as the top four based on the importance index. These factors are, in decreasing order based on the percentage of respondents scoring 4 or greater:

Desire for project
Need for work
Amount of contingency (risk/opportunity allowance) in estimate
Experience on similar projects

The desire for the project and the need for work shared the number one ranking, and the amount of contingency and the company's experience on similar projects shared the number two ranking.

The next most highly ranked factor was the number of competitors for the project, followed by the credit worthiness and fairness of the client. The next ranked factors were: the likelihood of winning the project; the availability of other projects over the remainder of the fiscal year; past profit on similar projects; and, the margin required of the project by the corporate budget.

The five lowest ranked factors, in decreasing rank order, are: the tax liabilities of the project; current unemployment rate; current interest rates; the likelihood of an increase in interest rates; and, the likelihood of changes in tax laws.

Comparison of the Two Ranking Methods

See Table 10

Comparing the top ten factors based on each ranking method, eight of them are found in both groups. These factors are:

Desire for project
Need for work
Amount of contingency (risk/opportunity allowance) in estimate
Experience on similar projects
Likelihood of winning project
Availability of other projects over remainder of fiscal year
Number of competitors for the project
Margin required of project by corporate budget

Thus, for the top eight factors, a large number of respondents indicated them as having an influence on the margin size, and those that did gave them a large degree of influence.

The likelihood of winning future tenders over the remainder of the fiscal year, and the capacity to supply resources for construction were in the top ten factors ranked according to the importance index (RANK1), but not in the top ten ranked according to the percentage of respondents scoring them as 4 or greater (RANK2). The credit worthiness

and fairness of the client, and past profit on similar projects were in the top ten according to RANK2, but not in the top ten according to RANK1.

Comparing the bottom five factors based on each ranking method, four of them are found in both groups. These factors are:

Current interest rates
Current unemployment rate
Likelihood of changes in tax laws
Tax liabilities of the project

The capacity to supply resources for financing is in the bottom five factors according to RANK1, but not according to RANK2. The likelihood of an increase in interest rates is in the bottom five according to RANK2, but not according to RANK1. Nevertheless, both of these factors are within the bottom ten factors according to both rankings. Thus, for the bottom five factors, few respondents indicated them as having an influence on the margin size, and those that did gave them a small degree of influence.

The factors that showed a large value (greater than 10) of DIFF, which indicates a large discrepancy in the two ranking methods, are:

Likelihood of winning project
Availability of other projects over remainder of fiscal year
Margin required of project by corporate budget
Likelihood of winning future tenders over remainder of fiscal year
Capacity to supply resources for construction
Company's relationship with the client
Actual versus projected amount of work won to date
Familiarity with geographical area
Credit worthiness and fairness of the client
Actual versus budgeted corporate overheads to date
Competitors' performance on past projects in this market
Previous experience of competitors on similar projects
Competitors' current workload in other markets

In all cases except for one (the credit worthiness and fairness of the client), the sign of DIFF is positive, indicating that RELR1 is greater than RELR2. In these cases, a large number of respondents indicated these factors as having a degree of influence on the margin size decision, but few of them indicated a strong degree of influence. In the case of the credit worthiness and fairness of the client, the sign of DIFF is negative, indicating that RELR2 is greater than RELR1. In this case, a small number of respondents indicated this factor as having a degree of influence on the margin size decision, but most of them indicated a strong degree of influence. The factor with the largest value of DIFF (30) is the likelihood of winning future tenders over the remainder of the fiscal year. This large positive value of DIFF indicates that RELR1 is much larger than RELR2. A large number of respondents indicated this factor as having some influence on the margin size decision, but in most cases this degree of influence was small.

Other Factors Considered in Setting Margin

The following is a list of other factors considered in setting margin, as indicated by respondents in the survey:

Actual versus budgeted profit to date
Location of project from other existing projects
Market trends
Future workload
Future tender opportunities
What the market would bear
Calibre of the opposition
Quality of the estimate
Difficulty of the project
Attitude (level of keenness) of the estimator

Factors Not Applicable

See Table 12

The following factors were the top ten factors most frequently not applicable in setting margin, listed in decreasing order of frequency:

Capacity to supply resources for financing
Tax liabilities of project
Likelihood of any of competitors having an advantage in design
Likelihood of any of competitors having an advantage in construction methods
Likelihood of any of competitors having an advantage in labour productivity
Current interest rates
Proportion of fiscal year already over
Major competitors' relationship with the client
Likelihood of any of competitors having an advantage in plant
Competitors' performance on past projects in this market

Factors Never Considered

See Table 13

The following factors were the top ten factors most frequently never considered in setting margin, listed in decreasing order of frequency:

Current state of the economy
Current unemployment rate
Likelihood of changes in tax laws
Likelihood of increase in interest rates
Current interest rates
Expected market trend in this sector of industry
Rate of return required from investment in project
Tax liabilities of project
Proportion of fiscal year already over
Actual versus budgeted turnover to date

Margin Factors Not Applicable

FACTOR	# of Resp.	% of Resp.
Capacity to supply resources for financing	23	63.89
Tax liabilities of project	21	58.33
Likelihood of competitors having advantage in design	20	55.56
Competitors having advantage construction methods	19	52.78
Competitors having advantage labour productivity	19	52.78
Current interest rates	19	52.78
Proportion of fiscal year already over	18	50.00
Major competitors' relationship with the client	18	50.00
Likelihood of competitors having advantage in plant	18	50.00
Competitors' performance on past projects in market	18	50.00
Likelihood of increase in interest rates	18	50.00
Likelihood of changes in tax laws	18	50.00
Credit worthiness and fairness of the client	17	47.22
Likelihood of competitors having advantage materials	17	47.22
Competitors' current workload in other markets	17	47.22
Current unemployment rate	17	47.22
Familiarity with geographical area	16	44.44
Previous experience of competitors similar projects	16	44.44
Amount of other work available to subs/suppliers	16	44.44
Targeting of more desirable projects	15	41.67
Company's strength in the industry	15	41.67
Rate of return required from investment in project	15	41.67
Competitors' ranking in past bids in this market	15	41.67
Familiarity with market	14	38.89
Expected market trend in this sector of industry	14	38.89
Availability of key personnel in company	13	36.11
Competitors' current workload in this market	13	36.11
Capacity to supply resources for construction	12	33.33
Actual versus budgeted corporate overheads to date	12	33.33
Current state of the economy	12	33.33
Company's relationship with the client	11	30.56
Number of competitors with strong desire for project	11	30.56
Availability of other projects	10	27.78
Past profit on similar projects	10	27.78
Actual versus budgeted turnover to date	10	27.78
Number of competitors for the project	10	27.78
Amount of work available to contractors	10	27.78
Likelihood of winning future tenders	9	25.00
Actual versus projected amount of work won to date	9	25.00
Experience on similar projects	8	22.22
Amount of contingency in estimate	8	22.22
Margin required of project by corporate budget	8	22.22
Corporate strategy or business plan for this market	8	22.22
Likelihood of winning project	7	19.44
Need for work	2	5.56
Desire for project	2	5.56

Table 12

Margin Factors Never Considered

FACTOR	# of Resp.	% of Resp.
Current state of the economy	12	33.33
Current unemployment rate	12	33.33
Likelihood of changes in tax laws	12	33.33
Likelihood of increase in interest rates	11	30.56
Current interest rates	10	27.78
Expected market trend in this sector of industry	10	27.78
Rate of return required from investment in project	9	25.00
Tax liabilities of project	9	25.00
Proportion of fiscal year already over	8	22.22
Actual versus budgeted turnover to date	8	22.22
Actual versus budgeted corporate overheads to date	8	22.22
Amount of other work available to subs/suppliers	8	22.22
Actual versus projected amount of work won to date	7	19.44
Corporate strategy or business plan for this market	7	19.44
Competitors' ranking in past bids in this market	7	19.44
Competitors' current workload in other markets	7	19.44
Likelihood of competitors having advantage in design	6	16.67
Amount of work available to contractors	6	16.67
Margin required of project by corporate budget	5	13.89
Competitors' current workload in this market	5	13.89
Competitors having advantage construction methods	5	13.89
Competitors having advantage labour productivity	5	13.89
Likelihood of competitors having advantage materials	5	13.89
Capacity to supply resources for financing	4	11.11
Number of competitors with strong desire for project	4	11.11
Previous experience of competitors similar projects	4	11.11
Competitors' performance on past projects in market	4	11.11
Targeting of more desirable projects	3	8.33
Past profit on similar projects	3	8.33
Amount of contingency in estimate	3	8.33
Major competitors' relationship with the client	3	8.33
Number of competitors for the project	3	8.33
Likelihood of competitors having advantage in plant	3	8.33
Availability of key personnel in company	2	5.56
Company's strength in the industry	2	5.56
Need for work	1	2.78
Likelihood of winning future tenders	1	2.78
Experience on similar projects	1	2.78
Familiarity with market	1	2.78
Desire for project	0	0.00
Likelihood of winning project	0	0.00
Availability of other projects	0	0.00
Capacity to supply resources for construction	0	0.00
Familiarity with geographical area	0	0.00
Company's relationship with the client	0	0.00
Credit worthiness and fairness of the client	0	0.00

Table 13

Margin Factors Listed in Survey

The following is a list of all of the factors considered in setting margin provided in the survey, from which respondents could choose.

Company Characteristics
Need for work
Desire for the project
Likelihood of winning the project
Availability of other projects over the remainder of the fiscal year
Likelihood of winning future tenders over the remainder of the fiscal year
Targeting of more desirable projects over the remainder of the fiscal year
Capacity to supply resources for construction
Availability of key personnel (management) in the company
Capacity to supply resources for financing
Company's strength in the industry
Experience on similar projects
Past profit on similar projects
Familiarity with geographical area
Familiarity with market
Amount of contingency (risk/opportunity allowance) in estimate

Corporate and Budgetary Considerations
Margin required of project by corporate budget
Rate of return required from investment in project
Tax liabilities of project
Proportion of fiscal year already over
Actual versus budgeted turnover to date
Actual versus budgeted corporate overheads to date
Actual versus projected amount of work won to date
Corporate strategy or business plan for this market

The Client
Company's relationship with the client
Major competitors' relationship with the client
Credit worthiness and fairness of the client

Competition
Number of competitors for the project
Competitors' current workload in this market
Number of competitors with a strong desire for this project
Likelihood of any of competitors having an advantage in:
- Design
- Construction methods
- Labour productivity
- Plant
- Materials

Previous experience of competitors on similar projects
Competitors' performance on past projects in this market
Competitors' ranking in past bids in this market
Competitors' current workload in other markets

Economic and Political Conditions
Current state of the economy
Current unemployment rate
Current interest rates
Likelihood of increase in interest rates
Likelihood of changes in tax laws
Expected market trend in this sector of industry
Amount of work available to contractors in this sector of industry
Amount of other work available to subcontractors and/or suppliers on this project

Reference

Shash, Ali A. 1993. Factors considered in tendering decisions by top UK contractors. Construction Management and Economics Vol. 11: 111-118.