

## *Appendix One – MSc Research Summary*

# MSc Research Summary

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## A1.1 INTRODUCTION

The research began after reading Egan's speech of May 2008, where he stated "In summary, I guess if I were giving marks out of 10 after 10 years I'd probably only give the industry about 4 out of 10 and that's basically for trying". He continued by saying "I have to say that I would introduce, as early as possible in every possible project, a gain share between the client and the industry, with a target based upon an agreed set of parameters, plus or minus I would say 15%" (Egan 2008). The MSc research examined if the use of incentivisation is a precursor to the achievement of successful partnered projects within infrastructure projects in South Wales. Furthermore examine whether the level that the gain / pain share is set at is significant.

The aim of the MSc research was to identify how to achieve a successful collaborative project. This began by examining the role of incentives in successful projects. The objectives for the preliminary research were:

1. Briefly defining partnering, incentivisation, motivation and success.
2. Research of secondary data on incentivisation and link where possible to successful or unsuccessful partnering.
3. Examination of secondary research to identify areas where data is scarce and / or missing.
4. Development of a questionnaire which addressed the scarce or missing data requirements. Then to identify a population and define a sample which can provide significant data.
5. Analysis of the data received and compare with data obtained from secondary sources.
6. Finally the hypothesis is addressed and a conclusion reached.

The aim of the MSc research was to test the hypothesis,

"The use of incentivisation with a gain share of about 15% is a precursor to the achievement of successful infrastructure partnering projects in South Wales".

The aim of the research was met by using the data obtained from secondary and primary sources to identify questions which will aid in answering the aim. These questions included the following for the MSc research:

- Should incentivisation be used on every project?
- Should the target cost and incentive be set as early as possible?
- Should the incentives be set at 15%?
- Should the incentives be the same for pain share and gain share?
- What makes a project successful?
- What factors are important in an incentive scheme?

In order to address the aim of the research it was important to understand what research had been carried out previously on incentivisation and specifically on incentivisation within construction partnering. From this literature review the research methodology was chosen as described next.

## **A1.2            METHODOLOGY**

### **A1.2.1        Preliminary Case Studies**

#### **A1.2.1.1     Introduction**

Research into secondary sources revealed they were primarily written by academics and generally did little more than provide a general background. To balance this, the research needed to gather the opinions of people involved in the partnering process and focus on the questions outlined in the introduction. The research methodology of this stage can be summarised as follows.

A single case study would not provide enough data to prove or disprove the theory. With the time restrictions interviewing enough people would not be possible. A questionnaire was considered the best way to collect sufficient data for this research (Naoum 1998). A mixture of secondary and primary sources have been used. Primary research gathered qualitative and quantitative data; this is because quantitative was easier to analyse in the restricted time available. Therefore the triangulation was used of both questionnaires with some interviews, to provide the breadth and depth of information from participants of two infrastructure projects in South Wales.

### A1.2.1.2 Case selection for primary research

Two case studies were used to investigate the hypothesis that incentivisation is a precursor to the achievement of successful partnered projects within infrastructure projects in South Wales and the level at which the gain/pain share is set at is significant in achieving a successful project.

### A1.2.1.3 Summary of case study alliance

Two infrastructure projects were chosen and both had or were using incentive contracts within a partnering arrangement. The two projects also allow a comparison to be made between the differing approaches to the use of partnering within projects.

	<b>Project A</b>	<b>Project B</b>
Type of project	Infrastructure  Ongoing maintenance, repair and updating of utilities.	Infrastructure  Dock side regeneration scheme, constructing road and services infrastructures for a mixed residential, commercial and leisure development.
Location	South Wales	South Wales
Client	Utilities Company	Government
Contract	NEC option C	NEC option C
Form of Partnering	Strategic	Tactical
Partnering Charter	Yes	No
Project Period	16+ years	2 years
Incentive Scheme	Yes	Yes

Target Cost	Set early	Set when design 90%
Pain / Gain Share	Varies, pain set higher than	20%
Value	£200m	£3m

*Table A1. Basic information of the two case projects*

## **A1.2.2 Data Collection and Analysis Technique**

Questionnaires and interviews were used to gather both a breadth and depth of data from within these two case projects.

### **A1.2.2.1 Questionnaires**

In order to test the hypothesis the questionnaire was designed to ask about four areas affecting the success of using incentives on partnering projects. These areas were: project success factors, aspects of incentives, key incentive issues and level of pain gain. The questions were written with both negative and positive statements so that the respondents found it difficult to guess the answer that the researcher wanted. A pilot study was conducted (see appendix 2 page 26) before the final questionnaire was sent out with only minor improvements to aid understanding (see appendix 3 page 31).

### **A1.2.2.2 Questionnaire respondent and interviewee sampling strategy**

Thirty questionnaires were sent out and twenty eight of the questionnaires were returned which gave an 85% return rate; 20 of the questionnaires were completed from people that worked on Project A while 8 were completed by people that worked on Project B. 80% of Project B personnel were questioned and 20% of Project A personnel were questioned. This was due to the relative sizes of the projects. An appropriate confidence level was necessary which required a minimum of an 18% sample. The majority of personnel targeted were cost and contract managers (see Table A2), and all were directly affected by incentivisation and were selected from both the client and the contractor in equal numbers. An experienced sample of people was approached. 71% of the respondents having at least 4 years involvement up to 25+ years within a partnering arrangement.

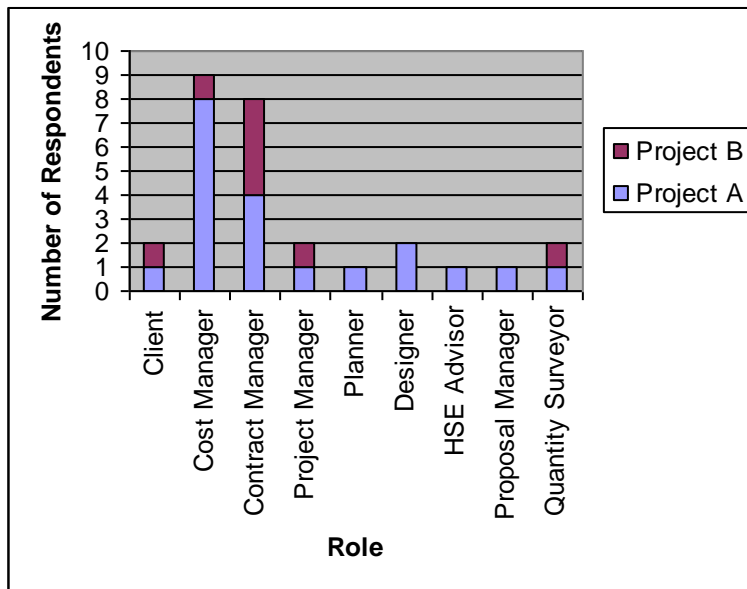


Fig. A1. Number and Role of Questionnaire Respondents

The responses to the questionnaires were analysed and then used to form the basis of the interview questions. The collected data was coded and analysed by using SPSS (Statistical Package for the Social Sciences). The statistical tests carried out on the resulting data were:

- Chi-square test
- Unrelated t-test
- Spearman’s Rho correlation

### A1.2.3 Interviews

Structured interviews were adopted so that analysis was made easier. The questions asked were designed to further explore their answers in the questionnaire (see appendix 4 page 37). For project A, four people were interviewed and for project B, two people were interviewed. This provided a range of views. The details of interviewees are shown in Table 2.

Project A	Project B
Contractor (Cost Manager), 8 years	Contractor (Cost Manager), 8 years
Client (Project Manager), 10+ years	Client (Project Manager), 6 years

Client (Cost Manager), 25+ years	
Contractor (Cost Manager), 9 years	

*Table A2. Interviewees.*

#### **A1.2.4 Summary**

Both qualitative and quantitative data had been collected through a triangulation of questionnaires and interviews. Both the questionnaires and the interviews were structured to make the analysis easier and to address the aims and objectives of the dissertation. Two infrastructure projects in South Wales were chosen and a selective sample of clients and consultants approached to complete the questionnaires.

Project A was a utilities company which used strategic partnering while project B was a dock side regeneration project that used tactical partnering. Project A still uses incentivisation within a partnering arrangement while project B no longer uses partnering. Project A has a formal partnering charter while project B used an informal one off partnering arrangement. Project A used different pain and gain share while project B used an equal percentage.

The data obtained from both the questionnaires and the interviews were analysed by hand and using SPSS to test the dissertation hypothesis. The results from both the questionnaire and interviews are summarised.

### **A1.3 FINDINGS**

Thirty questionnaires were distributed and twenty six of the questionnaires were returned which gave an 87% return rate. This was achieved by collecting the questionnaires in by hand. 20 of the questionnaires were completed from people that worked on Project A while only 6 were completed by people that worked on Project B. This was because Project B was smaller and complete, the personnel having moved on were working on other projects and therefore it was harder to trace them. A selection of personnel and experience was targeted.

The questionnaire produced a lot of data which has been summarised in Appendix 5 page 39 and 6 page 43. The data however is difficult to read in one table and therefore the findings are examined within this chapter question by question.

### A1.3.1 Questionnaire Results

#### A1.3.1.1 Project success factors

This questionnaire tried to gauge the degree of success seen in partnering projects. All the questions together aims to collect data which is scarce or missing from the literature on incentivisation and “success” from contract managers, cost managers, clients and project managers working on infrastructure projects within South Wales. The respondents were asked how many of the partnering projects, that they had been involved with, would they consider successful.

Figure A1 shows that most personnel asked, felt that the majority of the partnering projects they had been involved with had been successful. The respondents from Project A are more positive about partnering and felt that most of the projects were successful. However respondents from Project B felt that only some of the projects were successful and no one felt that all the projects had been successful.

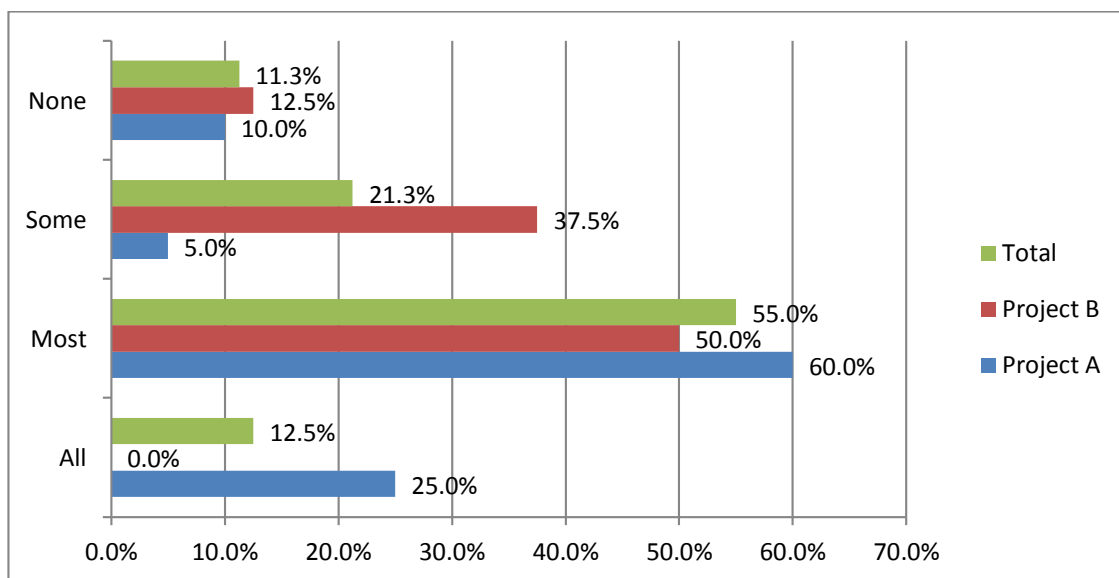


Fig. A2. Degree of ‘success’ in partnered project using incentivisation.

The respondents were then further asked how they define the success of a partnering project. This question indicated what project participants mostly expected. In other words, which incentives were most effective? A series of key factors were required to



be ranked. These key factors were taken from the literature but the questionnaire also gave them a chance to add their own. Table A3 illustrates the results. Not surprisingly, cost, quality, time and safety were ranked as the top four successful factors for partnering projects.

	Project A (%)	Project B (%)	Overall (%)	Rank
Project Brought in on Target	10.2	6.5	8.3	1
Project Built to a High Standard	10.5	9.5	10.0	2
Project on Schedule / Time	12.6	10.1	11.3	3
No Notifiable Accidents	9.4	13.1	11.3	4
Few Major Defects	16.6	17.4	17.0	5
No Major Disputes	19.7	20.8	20.3	6
Team Spirit	21.0	22.6	21.8	7

*Table A3. Key factors in a 'successful' project.*

### **A1.3.1.2 Aspects of incentives**

This component looked at aspects of incentives and tried to gauge the strength of feeling about some of the potential problems that had been identified by previous studies. Six statements (shown in the table below) were presented to the respondent and they were asked to indicate their opinion using the 7 point Likert scale.

The results shown in Table 4 indicate that most of the questionnaire respondents agreed that the target cost should be set early. Respondents also indicated that they felt, the use of incentives help make partnered projects successful.

		Statements					
Project	Opinion	Set target early (%)	Projects don't need incentives (%)	Performance informs target costs (%)	Incentives aligns objectives (%)	Target cost must be realistic (%)	Target cost is often set too high (%)
A	Agree	75	55	55	60	90	55
	Neutral	20	15	25	15	0	25
	Disagree	5	30	20	10	5	20
B	Agree	75	12.5	25	62.5	87.5	62.5
	Neutral	0	0	50	0	0	12.5
	Disagree	25	87.5	25	37.5	12.5	25
Overall	Agree	75	33.8	40	61.25	88.8	58.8
	Neutral	10	7.5	37.5	7.5	0	18.8
	Disagree	15	58.8	22.5	23.8	8.8	22.5

Table A4. Results for respondents feelings about incentivisation.

Most respondents were neutral to positive about how partnering arrangement performance measurement data has provided the establishment of accurate target costs. This neutrality probably arises because of a lack of actual cost data collection or utilisation being incorporated within target costs. Respondents generally agreed that the use of incentives provides an alignment of objectives. The client of Project B however did not agree that it provided alignment and the agreement was quite weak as it was only part of what was required to align objectives.

The respondents agreed strongly with the statement that the target cost must be realistic. This seems to be because both projects have struggled with producing accurate target costs. Respondents agreed that the target cost was set too high. Most of the respondents feel that the target cost was high while the contractor's people feel

it was too low. The contractor is currently in pain not gain therefore perception is perhaps different to the reality.

### **A1.3.1.3 Key incentive issues**

This question aimed to identify how effective incentive schemes can be developed. The respondents were asked to rank a series of key factors in establishing and maintaining an effective incentive scheme within a partnering arrangement. As shown in Figure A2, the rank of the key incentive issues are:

- Clearly defined objectives
- Known design parameters
- Mutual objectives
- Positive attitude in parties involved
- The correct contractor
- Structural risk management process
- Reliable cost data
- Level of pain/gain satisfactory for all
- Target cost set early

The 'Level of Pain/Gain' was ranked higher by Project A than by Project B who ranked it last. Project A ranked 'Positive Attitude' at the top while Project B ranked it four places lower in the middle of the rank order. However the largest difference was found in the 'Correct Contractor'. Project A ranked this at the bottom while Project B ranked it third. Project B started with an unclear design which changed frequently during construction. Therefore Project B has rated 'Clearly defined objectives' and 'Known design parameters' for this reason. The 'Correct contractor' was rated so highly by Project B because it was a one off project and the contractor stalled on agreeing a target cost. Project A has rated 'Positive attitude' highly because during the interviews they discussed the distrust that existed in the partnering team. Project A had also placed more emphasis on the 'Level of pain/gain' because all parties except the client realised that the skewed pain share gain share did not help the win – win idea of partnering.

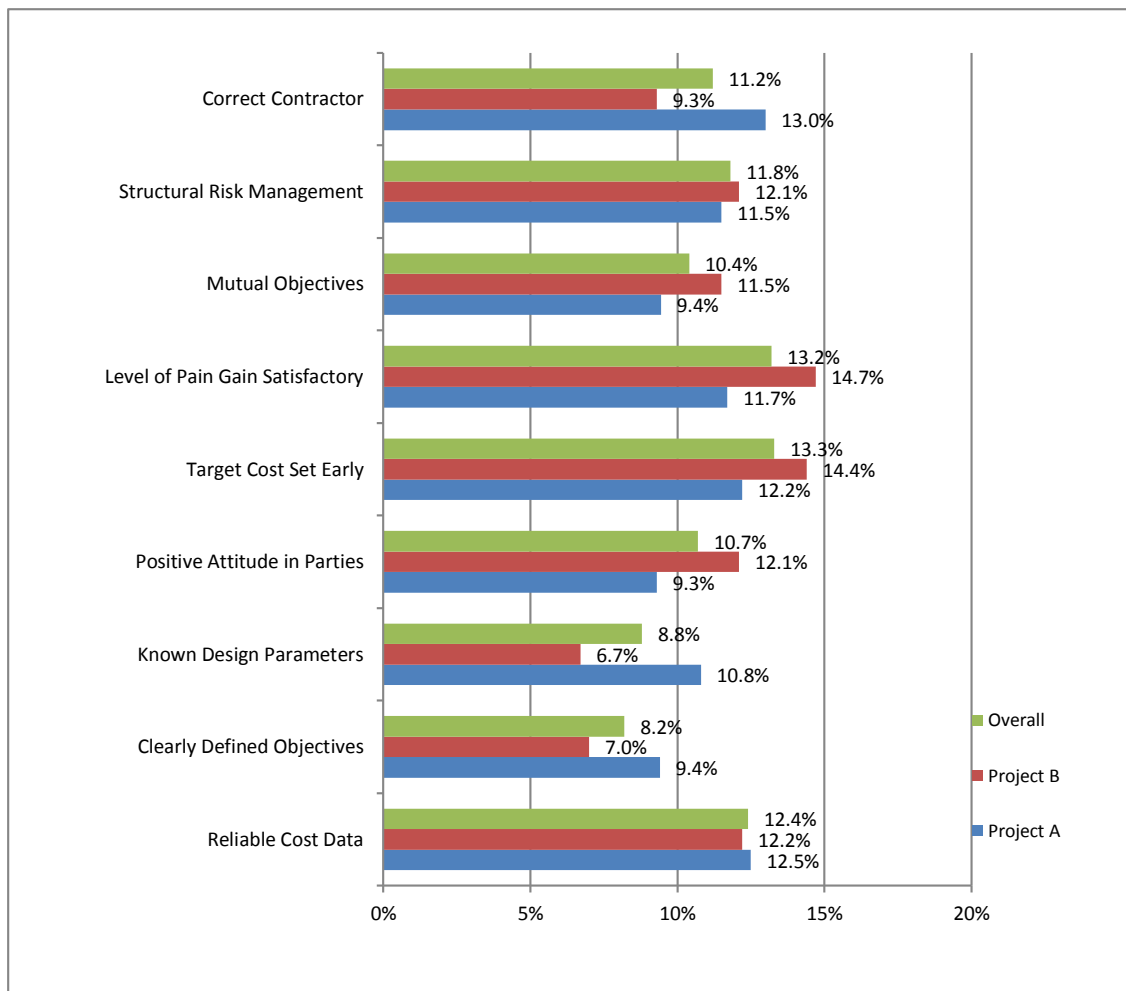


Fig. A3. Key factors for an effective incentive scheme.

The Spearman's Rho statistical test was carried out in order to ascertain if there was any correlation between any of the factors. The test provided three significant results.

- a) 'Clearly defined objectives' has a positive correlation against 'level of pain/gain satisfactory to both parties'. The correlation coefficient achieved was 0.469 with a significance of 0.012. This is a moderate relationship which means that if people feel that clearly defined objectives are required they also tend to feel that the level of pain/gain should be satisfactory to both parties and vice versa.
- b) 'Clearly defined objectives' had a positive correlation against 'mutual objectives'. The correlation coefficient achieved was 0.384 with a significance of 0.044. This is also a moderate relationship. If people feel that clearly defined objectives are important, they tend to feel that the objectives should be mutual.
- c) 'Positive attitude in parties involved' has a positive correlation against 'level of pain/gain satisfactory for both parties'. The correlation coefficient achieved

was 0.391 with a significance of 0.040. This is a weak relationship. This means that if they feel that 'positive attitude in parties involved' is important they will likely also feel that the level of pain/gain should be satisfactory to both parties.

#### **A1.3.1.4 Level of pain/gain**

This question aimed to examine if participants agree or disagree with Egan's statement (i.e. *I would introduce, as early as possible in every possible project, a gain share between the client and the industry, with a target based upon an agreed set of parameters, plus or minus I would say 15%*). In order to examine what parts people agree or disagree with, the statement has been divided into its three component parts: a) every project should use incentives; b) the target cost should be set as early as possible; and c) the incentive should be set at 15% pain/gain.

The results are provided as percentages throughout the paper, as the number of respondents was greater for Project A than project B, therefore to avoid an unfair bias towards Project A's results percentages have been used. To test the statistical significance of these results chi squared tests were carried out. The results however provided a significance greater than 0.05 and therefore there was no statistically significant differences between the number of people within Project A or B. Indicating that statistically, both Projects A and B, share similar opinions about Egan's statement.

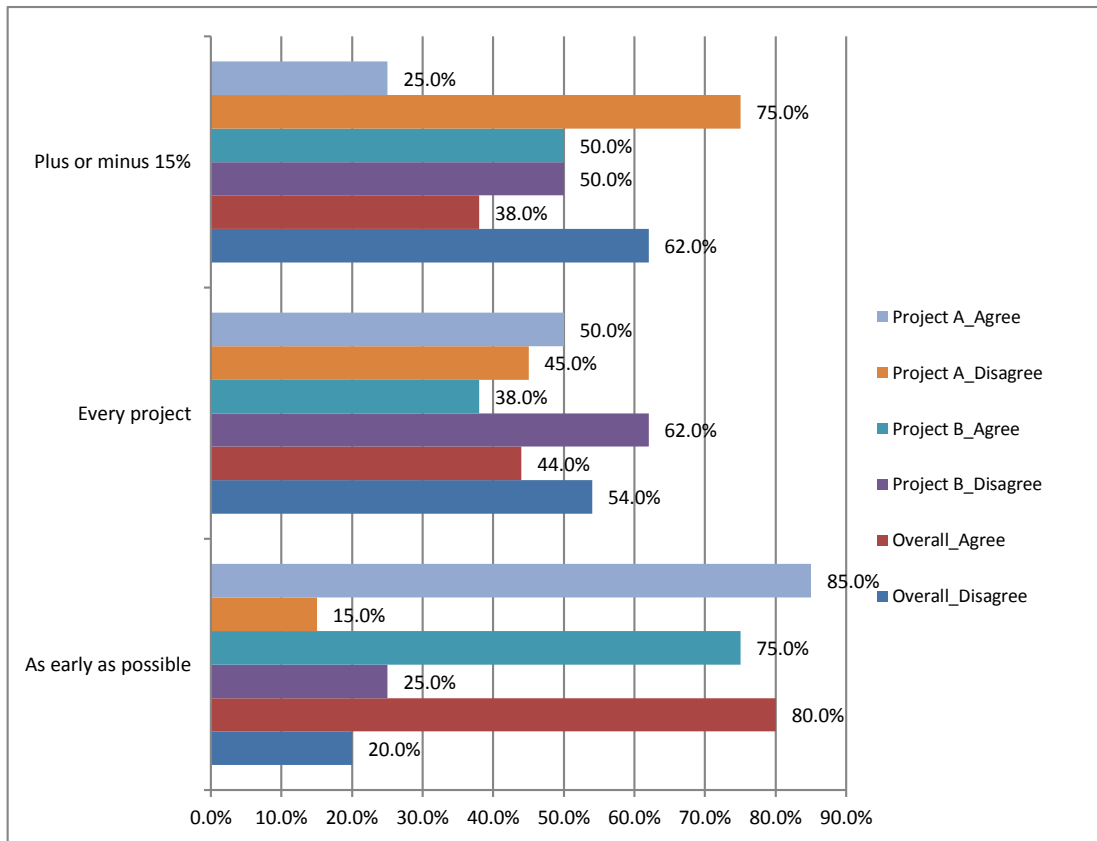


Fig. A4. Opinions on Egan's Statement.

### A1.3.2 Interview Results

The interviews were complimentary to the answers to the responses to the questionnaire. The followings are a summary of the interview results (for details, see Hughes 2010) and appendix 7 page 53.

The contractors in Project A (Con\_ProA) thought that the pain/gain share percentage was not as important as the pain/gain share being equal and that the process was based on an accurate target cost. The contractors for Project B (Con\_ProB) also felt that the pain/gain share should be equal but felt that the 15% suggested by Egan (2008) was too low. Con\_ProA felt that incentives could produce a successful project if it allowed value management but realised it produced a focus on cost. Con\_ProB agreed with the financial focus and that incentives only work correctly if the client's focus was cost and not quality or time. When asked about the accuracy of the target costs, the contractors for Projects A and B felt that the target costs were not accurate. Con\_ProA calculated the target cost from a mixture of first principles and previous projects but Con\_ProB calculated from first principles. Both Con\_ProA and Con\_ProB felt that the drawings need to be almost

complete before the target cost was set. Con\_ProA felt that early on they did not have sufficient information to set an accurate target cost while Con\_ProB thought that they had more of an advantage early on. Both Con\_ProA and Con\_ProB agreed that quality costs and incentives placed the focus on reducing cost. Furthermore they agreed that incentives could work but they were not working for those particular projects.

When the clients were asked about Egan's suggestion of a pain/gain share of 15%, both Projects A and B felt that 15% was fine. The client's representative from Project A (Cli\_ProA) felt that the pain/gain share should be the same. When asked if incentives produce a successful project the clients for both Projects A and B agree that this is only true if the clients focus is on cost. Cli\_ProA was more positive that the target costs were accurate whereas Cli\_ProB felt that the target cost was not always accurate. The target cost for both Projects A and B were calculated by first principles according to the clients. Cli\_ProA generally wanted to set the target cost at a slightly later point while Cli\_ProB said that the target cost should not be set too early. Cli\_ProA said that the drawings should be 70% complete while Cli\_ProB said that the risks need to be identified first of all. When asked if incentives provides the quality required, the clients for both A and B agreed that quality could suffer and Cli\_ProB stressed the important of choosing the correct contractors. Finally both clients agreed that incentives could work but Cli\_ProB stressed the point about identifying risk so that contractors did not go into pain.

The interviewees from both projects stressed the need for the gain/pain share to be equal and that the percentage should change with particular project. The contractors want a higher percentage than the client wishes to give for both Projects A and B. The contractors and clients for both Projects A and B believed that incentives focused the parties on project cost. The clients for both Projects A and B felt that project quality could suffer if the inappropriate contractor was selected based on cost only. The contractors for both Projects A and B felt that they did not calculate the target cost accurately which was confirmed by Cli\_ProB while Cli\_ProA felt they were accurate. The clients for both projects stressed the need for an open and transparent relationship, necessary to avoid target costs being set too high.

### A1.3.3 Summary

The questionnaires sampled a breadth of people, especially those on project A. The interviews then produced in depth data on certain people's view of incentivisation within a partnering arrangement in the two infrastructure projects in South Wales. Most of the questionnaire questions require analysis before any conclusions can be drawn about them.

Question 3 however has provided respondents opinions on Egan's statement. 50% of project A agreed that incentivisation should be used on every project while 45% disagreed and 5% did not answer. Project B was slightly more negative as 66.7% disagreed and only 33.3% agreed. But overall the split was 41.7% agreed and 55.9% disagreed with 2.5% not answering. Their opinions on setting the target cost and incentive scheme early was more polar. Overall 84.2% agreed with the statement and only 15.8% disagreed and both project A and B agreed on this. Finally the respondents were asked their opinion on the incentive being 15% gain share pain share. Overall only 29.1% of respondents agreed with Egan and 70.9% disagreed. The written answers indicate that the contractors feel it should be greater than 15% and the client's consultants feel that it should be less than 15%.

The interviews gathered a lot of data. Project A interviewees stressed the need for the gain share pain share to be equal and that the percentage should change with the particular project. They believe that incentives focus on the project cost and that quality can suffer if the correct contractor is not used. The contractor felt that they did not calculate the target cost accurately while the client's consultant felt they were accurate. They calculated the target cost differently. The contractor used previous projects to inform the cost while the client's consultants used first principles. The contractor would wish to have the design 100% complete while the client's consultants wish to set the target cost at 70% design completion. Overall they felt that incentives alone would not ensure success but the use of equal pain and gain with the correct people would.

Project B also thought that the pain share gain share should be equal but the client in this case was happy for it to be 50%. The incentives however do place the focus on money and the client in this project was more interested in a quality product. Estimated figures were used to calculate the target cost but the design kept changing. The client felt it was



important to wait until there was sufficient data to set an accurate target cost while the client's cost manager felt it was important to set the target cost early before the contractor has the upper hand. A full risk register needs to be produced and extra money put aside for emergencies. Again they feel the correct contractor is essential.

Finally, the questionnaire extended answers found that, for project A the client wishes to lower the percentage pain gain below 15% while the contractors wish to raise it above. However both sides agree that small projects should not consider partnering. Project B also agrees with this. Both projects agree that risks need to be managed and that quality needs to be controlled. However incentives can produce behaviour which goes against the open and honest relationship required within a partnering arrangement. The contractors for project A felt that the target cost was set too low but the majority felt that it was fine or high.

## **A1.4 CONCLUSION**

### **A1.4.1 Introduction**

The aim of the preliminary research was to test the hypothesis "The Use of Incentivisation with a Gain Share of about 15% is a Precursor to the Achievement of Successful Infrastructure Projects in South Wales".

In order to achieve this aim definitions of partnering and incentivisation were provided. Secondary data provided an in depth examination of incentivisation and its application within partnering. Whilst these sources provided general background information they provided limited answers to the hypothesis. In order to gather this data focus was provided via primary research using questionnaires and interviews.

To address the hypothesis the author focussed on the following questions when designing the questionnaire and interviews. These questions arose from Egan's statement "I have to say that I would introduce, as early as possible in every possible project a gain share between the client and the industry with a target based upon an agreed set of parameters, plus or minus, I would say 15%" (Egan 2008). These questions were:

- Should incentivisation be used on every project?

- Should the target cost and incentive be set as early as possible?
- Should the incentives be set at 15%?
- Should the incentive percentage be the same for pain share and gain share?
- What makes a project successful?
- What factors are important in an incentive scheme?

The answers to these questions were....

#### **A1.4.2 Should Incentivisation be Used on Every Project?**

Both project A and project B were split on whether incentivisation should be used on each project but overall 41.7% agreed that every project should use incentivisation while 55.9% disagreed. The reasons provided by the respondents for disagreeing was that partnering and incentivisation schemes require extra administration and administration staff that could not be afforded on small construction projects. Respondents agreeing with the statement did not provide any clarification.

#### **A1.4.3 Should the Target Cost and Incentive be Set as Early as Possible?**

Over all 84.2% of the respondents agreed with Egan that the target cost should be set as early as possible and only 15.8% disagreed. However during the interviews the interviewee's discussed how the design needed to be 70% complete so that an accurate target cost could be calculated. Research from Sweden showed that target costs are often not very accurate but that they become more accurate the longer they work together (Badenfelt 2007). Project A has worked as a partnering arrangement for sixteen years but they are still complaining that the target costs are not accurate which is not in line with Badenfelt's work. The contractor's cost manager would prefer to have the design 100% complete before the target cost was set. Research from the defence industry indicates that the contractor is the only person who can truly judge if the target cost is set correctly (Scherer 1964). The contractor was in pain and this may be the reason for this wish. Until the designs have been completed more risks exist.

#### **A1.4.4 Should the Incentives be Set at 15%?**

70.9% of the respondents disagreed with Egan on this statement and only 29.1% agreed. This was similar for both projects. The contractor generally wanted a larger percentage than 15% and the client's consultants wanted it lower, in some cases as low as 5%. These results were perhaps unsurprising as the client wishes to save money and the contractor wishes to make money. However the client for project B was happy for the pain share gain share to be 50%. This contradicts the other results. The focus of the project however was on quality and then time rather than cost. Incentives focus the parties on cost (Busi and Bititci 2006). Using such a large percentage for the pain share gain share, contradicts the clients focus on time and quality.

#### **A1.4.5 Should the Incentive Percentage be the Same for Pain Share and Gain Share?**

This particular question evolved when the author read the partnering charter for project A. As described previously project A implement a complicated incentive scheme but the pain share percentage is always larger than the gain share percentage. During the interviews both the client's consultants and the contractors emphasised the need for a 'fair' incentive scheme from project A. Al – Harbi (1998) discusses how it is important that the value of the pain share gain share should be decided in partnership. The interviewees from project A did not agree with this view as long as the pain share and gain share percentage was the same value. Project B however agreed to a certain extent with Al – Harbi (1998) and discussed how the percentage would depend upon the nature of the particular project. They did however think that the discussion should be led by the client and not by the contractor.

#### **A1.4.6 What Makes a Project Successful?**

Incentives are said to focus on cost because it is easy to measure (Busi and Bititci 2006). Cost however is only part of the picture and so the questionnaire and interview questions asked about time, quality and health and safety as well. Both project A and B felt that quality could suffer especially if the correct contractor is not used. Project A use health and safety as one of their key performance indicators so for them a reduction in notifiable accidents was important, while for project B quality was the focus. Therefore the

individual project and the client dictates the individual focus and therefore what success means. One incentive scheme will not suit every project and will require adaptation.

#### **A1.4.7 What Factors are Important in an Incentive Scheme?**

Project A and project B have different views on what makes an effective incentive scheme. Their views on what factors were important in an effective incentive scheme depended largely on their experience in previous projects and therefore on the type of project they are involved in and the type of partnering. Therefore for project B they felt that known design parameters and the correct contractor were very important. Project A suffers from a lack of trust and communication between the partners and therefore placed positive attitude in parties involved as the most important within an incentive scheme. Both project A and B found clearly defined objectives to be very important but surprisingly rated setting the target cost early very low given the contradictory answers earlier in the questionnaire.

#### **A1.4.8 Summary**

This research has demonstrated that partnering is not suitable for all projects. Incentivisation places a focus on cost and this can have a detrimental effect on the other aspects that exist within the oft quoted triangle of time, cost and quality. The level at which to set the percentage for gain share is also a divisive issue but a substantial majority of respondents disagreed with the 15% suggested by Egan. The timing of the setting of the target cost was a problem on both projects with a reluctance by both contractors to set it early in the process. Project B did not judge partnering a success primarily because the target cost was not set early enough placing most risk upon the client. Project A has contractors that are unhappy with the uneven pain gain share and a lack of trust between the parties. Neither of these projects can be adjudged a success from the perspective of both parties. Incentivisation does not of itself appear to be the key to success and a level of 15% would not generally satisfy either party. Measures of success varied between parties and the client for project A having a focus on cost and B on quality. What represents success to one client would not equal success to the other. Both contractors had a focus on maximising gain.

Overall it must be concluded that the hypothesis was not proven. Egan's view appears to be too simplistic to apply in all situations and is not always the key to success as he suggests.