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*On Project Success and Failure in Major
Engineering Projects*
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Abstract:

Surprisingly the literature on project management is unclear about what makes a successful project. Some authors mention clear outcomes to which the answer might be yes/no, others suggest criteria against which a project might be judged, others consider the process of project management as a primary basis for success, and few consider the different stakeholders involved in major projects. This paper considers aspects of the success, and failure, of complex projects. It draws on in depth research of twelve major projects to explore the emergent notions of success actually used by different stakeholders.

Introduction

Surprisingly the literature on project management is unclear about what makes a successful project. Some authors mention clear outcomes to which the answer might be yes/no, others suggest criteria against which a project might be judged, others consider the process of project management as a primary basis for success, and few consider the different stakeholders involved in major projects. As major projects become increasingly complicated, sometimes involving joint ventures and strategic alliances, the issues of establishing the nature of project success is more important. More projects are completed so that litigation follows in order for contractors to recover their costs. This paper considers aspects of success, and failure, of complex projects. It draws on extensive research exploring, in detail, the embedded or emergent notions of success actually used by different stakeholders. In doing so, it seeks to establish a clearer framework for considering project success and the project management implications of such a framework.

The Nature of Projects

Before addressing the nature of success and failure of projects it is important to establish what it is that is to be judged. There are many different definitions to a "project". For the purpose of this paper, the definition by Turner (1992) will be taken as the guiding definition of a project. His definition argues that a project is "an endeavour in which human, material and financial resources are organised in a novel way, to undertake an unique scope of work of given specification, within constraints of cost and time, so as to achieve unitary, beneficial change, through the delivery of quantified and qualitative objectives".

This definition highlights the one-off nature of a project by considering a "unique scope of work". The use of the word "unique" is of interest here. A project may be a direct repeat of an earlier project and so not appear unique, and in the definition of a project it is important to emphasise that projects have a beginning and end, rather than focussing on the unique, or otherwise, nature of a project. Nevertheless, we suggest that a project will always be unique in nature – it may be a different customer or a changed customer. As we shall argue later, because projects are unique, as compared to, for example, production for a marketplace, they are subject to particular aspects of success and failure. Turner's definition also suggests inherent uncertainty, presumably because of uniqueness and the organisation of resources "in a novel way". However, as well as uniqueness related to customer, an

important aspect of uncertainty not recognised in the definition derives from various project environment complexities and the interrelationships of these complexities that may interact to influence the determination of objectives, and so success, of a project. As compared to processed products or products manufactured for stock (even if JIT production methods are used), the environment of a project has a crucial impact on a project and is accepted to be relatively uncontrollable. Often a specification is not adequately given, however outcomes and performance are implied, or at least, understood by contractor and customer, even if these understandings are different.

Williams (1997) and Morris & Hough (1987) describe project complexity under the headings of organisation, technical uncertainty, role of politics and community (social) issues, contracting terms and complexity of human factors, such as, project leadership and project team work. These complexities may all impact on a project success. But are they unique characteristics of a project? If so, then they need to be encompassed in the definition of a project – a definition that we expect to guide consideration of success or failure.

The above commentary leads us to change Turner's definition, so that a project is:

- an endeavour which is *customer oriented*, reflecting a contract for the *delivery of an outcome* by a *specific date*;
- *unique*, to the extent that it is unusual for there not to be *significant environmental factors* that make a project different to others, even if the outcome has been achieved before;
- *novel*, to the extent that the organisation of human, material, and financial resources will be unique;
- required to undertake a *scope of work* as understood by customer and contractor and other interested parties, but not necessarily with the same understanding;
- a *tangible* task or series of tasks to *create change*

Project success...

The concept of project "success" is not well defined but Salapatras & Sawle (1986) suggest that success is only achieved when there is " a measure of satisfaction by the customer, builder and the public" - with all these three groups being satisfied (not necessarily pleased?). Their reference to "measure" is a subjective view of a level of satisfaction and seems to imply criteria with a continuous scale rather than a clear satisfied/ not satisfied factor. In addition, they argue that all of the three stakeholders must be satisfied (presumably to a minimum level against each criterion?). For example, a customer or project developer may be fully satisfied that a project was completed on time, within budget and performed as intended. However, the contractor may be disappointed that a project was, for him, over budget. This example illustrates that all parties (stakeholders) to a project do not have the same level of expectation in respect of project "success" or "failure".

Project "stakeholder" is a term used to refer to any group, internal or external to a company that has an active stake in a project development. Therefore, stakeholders include clients, company organisation, project management team and external groups who have been termed "intervenor" by Cleland (1988).

Morris (1989) shows that there are much wider issues than Salapatras & Sawle three-fold definition of customer, builder and the public, and includes technical and

commercial definition of a project, plus a consideration of strategic and external factors. Adams & Martin (1982) view projects and their outcomes in terms of controls and consider project "success" comes from risk identification, risk assessment and the decision-making process that creates a course of action. In contrast to Adams & Martin (1982), Morris & Hough (1987) suggest six elements as a means to defining a project success. These being;

- all parties to a project must be desirous of project success
- a project must be fully defined and workable
- external forces influencing a project definition must be project managed
- schedule matters, finance and manner of project implementation each can compromise the realisation of a project definition
- organisation and contracting matters, communication and controls, people and their experience
- right people for the right job.

These suggested project success elements are, too general in their definition and reflects on an ideal world without complexities or uncertainties. They are not elements that can assure project success, as Morris and Hough suggest.

As Potter (1987) comments, "success" and "failure" are "two sides of the same coin" and an exploration of failure helps define success.

Project failure...

"Failure" is an ill-defined term used by practitioners, and in the literature, without depth of meaning. Gantier **et al** (1997) refers to failure in new product design in terms of the management of information within the scope of quality assurance methodology (ISO 9001). However, Pinto (1997), although not offering a definition of project failure, describes from his research of famous (high media profile) examples of project failure, twelve principles on *how to* ruin a project. Pinto uses the term "ruin" to imply that project objectives are less likely to be achieved if one or more of his twelve principles are not managed. For example, he asserts that to ignore a project environment (including stakeholders) is to position a project for failure. Thus, once again we see the *process* of completion of a project as indicating some of the characteristics of a failed project.

A possible reason for the vagueness in the use of the word "failure" is that it is a retrospective measure of environmental (internal and external) circumstances and performance in time and costs. Such factors may, as suggested by Fox (1984), be distorted due to the influence of hindsight bias. Therefore if failures are to serve a valuable experience for future activities then failure requires some form of definition. For the purpose of this paper an appropriate definition of failure could be: a post-mortem measure of decisions and actions taken against constraints of, budget, schedules, performance and project environment *that did not grasp beneficial opportunities*. Failure, like success, may not mean the same to all stakeholders. However, this definition of failure is intended to indicate that missed beneficial opportunities by any stakeholder could arguably be considered a failure.

As we have observed, the process of a project undertaking, rather than outcomes, seem to be of greater concern to writers in this field. Thus, in seeking to understand success and failure we may wish to explore both the success of project management and the outcomes. Where each of the measures require a reference point against

which to measure success or failure – what might have occurred, rather than an absolute measure that may be unrealistic.

Historical data of project failures is well documented by Morris & Hough (1987) where they make 33 references to project out-turns. To illustrate the trends of project over-runs that might be considered failures it is of interest to note Morris & Hough's introduction to their listed database. This states that "curiously, despite the enormous attention project management and analysis have received over the years, the track record of projects is fundamentally poor, particularly for the larger and more difficult ones. Overruns are common. Many projects appear as failures, particularly in public view. Projects are often completed late or over budget, and do not perform in the way expected". They further state that "there are hardly any reports showing under-runs ... In all the other cases, representing some 3500 projects drawn from all over the world in several different industries, over-runs are normal, being typically between 40 to 200%". The reference here to overruns relates to costs against budget.

We should note that cost overrun is here taken as absolute measure of failure, rather than relative to what might have otherwise have been achieved. Thus, a project is taken to be a failure as long as it suffered a cost overrun (presumably, though, relative to budget or original estimate).

There is a shortage of literature on projects that show cost under-runs (that is, success) in respect of costs against budget. Other authors who illustrate the historical trend of failures are Kharbanda & Pinto (1996). They state that "... overruns in time and costs are customarily seen as failures ... Unfortunately, in many projects, particularly large-scale projects, they are the norm rather than the exception that they ought to be". They further express the view that "Failure is first and foremost a client-based phenomenon. It is the client who is ultimate arbiter of successful project implementation". This latter view indicates only one of the stakeholders to a project, albeit, an important and influential stakeholder.

Exploring Success and Failure through an Analysis of Real Projects

Twelve projects have been explored in depth. The main players involved in the projects have been interviewed in depth, all accessible project records and business records have been interrogated. In each of these instances one of the author's had a privileged access to players and to company records, and so it is likely that all project records have been accessed. The biases of the researchers were protected through full access to the knowledge and meaning of informants. The biases of the researchers were further protected through the direct participatory action of one of the researchers acting as a part of the project team during the latter stages of these projects, with the other acting as bystander. The direct involvement of one of the author's was focused on the development of strategies and actions to progress the "stalled" projects to project completion. Thus, one of the researchers was acting in an action research capacity with the other forcing the type of reflection required for successful action research (Eden & Huxham, 1996). Multiple informal interviews, close working relationship with project team members and social interaction, enabled triangulation of views and opinions passed to the researcher.

However, it should be noted that the research data has the important bias of a contractor's view. For this reason, the various stakeholder views that follow are

expressed from the perspective of a contractor rather than the prospective of a project developer or customer.

The concepts of success or failure will be viewed as a "snap shot" (single point in time) at completion of the project and not as a series of snap shots during the implementation of the projects. This approach is intended to focus on the various stakeholder views at project completion when the project developers (customer) objectives have been realised, or not, by the conclusion of the project. Clearly decisions made and actions taken during the project implementation or project life cycle may contribute to the project status at completion.

The research data from the 12 projects all relate to the electrical power generation industry and undertaken by the same contractor. The parameters of each of the 12 projects are set out in table 1 below.

A Stakeholder View of Project Completion

Before considering the range of notions of success and failure emerging from an analysis of the above projects, we consider specifically the significance of project completion. Project completion was consistently discussed as a criterion for project success and failure. However, although project completion was seen as an important indicator of success it had a different meaning for different stakeholders. Table 2, below shows some of the different meaning of project completion as a success factor for different types of stakeholder.

Table 2 about here

We note, that in addition, there are many internal stakeholders to a project: within an organisation and within the project management team. These individual stakeholder views may not always align with the generic perception of success as seen by senior management. For example, a task to design a component for a project may be a "success" in terms of an individual component function but when fitted within a project operating system may be viewed as a "failure". A component failure may be due to interactions with other components that when viewed collectively form a project operating system.

Emergent Notions of Success and Failure

The research data, in respect of satisfaction of a completed project, shows that the customers contributed to project delays and the perceived failures of other stakeholders in terms of time and cost overruns. Although the customers contributed to project delays, these were not necessarily the primary causation of other stakeholder project failures. For the purposes of this paper the perception of success and failure shall relate to obligations and liabilities undertaken by the contracting parties and the project out-turn at completion.

With reference to Table 1, the two projects in Morocco have similar contract obligations with the same customer and contractors. The exception being the project location and different timing of implementing each project. However, from a stakeholder perception of project success or failure there is similarities between the projects. Therefore, for the purposes of this discussion these two projects will be grouped. These circumstances also apply to the three projects in Iran and again

these projects will be grouped and viewed as a single entity in respect of stakeholder perceptions of project success or failure.

For each stakeholder there will be levels or notions of failure or success and examples of these are discussed below in table 3.

Table 3 about here

How might these results be synthesised into an overall view of success characteristics? Figure 4 shows the interrelationships between each of the factors emerging from Table 3. It is unsurprising that the criteria most common to stakeholders is that of "satisfactory completion / close-out agreement" which was recognised by project partners, customer and contractor. "Claims for damages" and "final costs less than or equal to budget" are criteria used by both customer and contractor, although rebuffing a claim is the successful outcome by the customer and winning a claim is success for the contractor. Thus, the project management outcomes with the greatest impact are project delays, engineering advisors failing in controlling project engineering, and changes in specification. Project delays have an impact on success or failure for partners, contractor, and customer. Needless to say, the criteria of relevance to suppliers and to consultants / third parties are independent of the other stakeholders.

Observations about the Project Management Impact on Success and Failure

Here we consider the project management implications from the exploration of the 12 research projects in relation to success and failure (the bottom part of figure 4).

- Customers use, or on many occasions abuse, the power of influence. In using the term "power of influence", we imply that customer's staff see themselves as having a superior ranking within the project structure. This superior ranking may come from the drafting of the project specification and therefore its interpretation or from the influence to release payments for work done or not. The customer perceives the contractor purely as a supplier of equipment or builder of equipment systems to satisfy the full needs of the customer - whatever the customer interprets these needs to be. It may appear obvious that such needs would be within the interpretation limits of the project specification and the contract terms and conditions. However, this research data indicated that customers may be seen as abusing their power of influence by using threats against the contractor. For example, a customer may allege equipment deficiencies against the project specification as a means to threaten to cash the contractors project performance bank guarantees unless the contractor conceded to the customer demands.

The customer successfully obtained gratuitous project benefits beyond the project specification in 8 out of 12 of the projects.

For the contractor this represents a failure and for the customer a success.

- The strategic alliances of contractors for the projects in Morocco and Iran were set-up to offer the customer a competitive price for the project. The alliances were project specific, short-term transitional relationships that intended to utilise

complementary skills to deliver the project. These contractors, at least on paper, appeared to be capable of delivering the project objectives for all stakeholders. However, as Buono (1991) suggests, such alliances are hybrid organisations that have "instant" presence, size and performance expectations. The concept of a hybrid organisation was true of the contractor alliances for the projects in Morocco and Iran. The alliance partners lacked (i) a common cultural domain or (ii) previous experience base of alliances or (iii) a management structure that was based on co-operation and collaboration. These concepts were generally untested and placed an inherent fragility to the alliance arrangements.

In these projects the international alliances had socio-cultural and political tensions, which were compounded by communication and language problems that made co-operation and collaboration difficult. Such difficulties are reflected in the examples suggested by Smith *et al* (1995) were they categorize them under two headings of "conflict" and "culture". Although these two categories are unlikely to comprehensively cover all aspects of alliance difficulties they are sufficient to demonstrate the difficulties in respect of stakeholders perception of success or failure.

Within the alliance partnership there were conflicts of (i) interest in respect of project objectives, (ii) management styles and (iii) implications of project failure.

- Each of the projects covered within this research were considered successful at the point of completion or at signing of the close-out agreement. For the customer, full control was transferred at project completion, without further involvement of the contractor. For the contractor, the books on the project could be closed. However, in terms of financial rewards, there were many elements that affected the financial outcome of a project and that provided the notion of success or failure. It is the role of the contracting parties and the influence each has on the other that may determine the financial outcome of a project.

Although the contractors contributed to the extended project duration as evidenced by the extent of the re-engineering and equipment deficiencies there is evidence from the research that customers interfered with project progress and contributed to the disruption and delays. Eden *et al* (2000) give an account of the factors that may contribute to project disruptions and delays. Factors such as, nature of client knowledge, lack of appreciation of planning, contractual issues where terms may be ambiguous and client change orders are discussed. However, as discussed above, the financial outcome of a project for a contractor significantly is dependent on the extent of customers' (clients) influence on the projects. This was particularly evident with overseas customers where contractors are often faced with many external factors of uncertainty, such as, culture, laws (local and country), environment etc. The customer awareness of the contractor's lack of knowledge of these uncertainties means that they are able to use their power of influence on a project and over the contractor. The customer influence on a contractor are many but from this research (and as indicated in table 3) the customer's power of influence was evident were they used bullying (threats) to obtain gratuitous extra works from the contractor. The customer used their power of influence against the contractor in at least four ways. These being:

- Interpretation of areas of ambiguity in the project specification
- Threatening to cash the contractor's project performance bank guarantee
- Withholding of project payments

- Deciding when the project was complete to their satisfaction

Each of these influences had an adverse impact on the project duration and financial outcome. It was interesting to note that such influences were equally available to the home-based customers and, although used, they did not appear to exert the same extent of bullying of the contractor as the overseas customers.

The customer power to influence a project is often underestimated. Although there has been much written on project risk assessments, Chapman & Ward (1997), Williams (1995) and the nature of project disruption and delays, Williams, Eden, Ackermann & Tait (1995) and Eden, Williams, Ackermann & Howick (2000) there is little written on how to combat the abuse of customer power over a contractor.

Concluding Remarks

Project failures can be attributed to many factors but most often uncontrollable project environment forces were cited as a major contributor. However, the cause or contributor to the notion of project failure for the projects researched for this paper were typically the project management system, ineffective organisational procedures, or practices.

This paper set out to establish a framework for considering project success and the project management implications of such a framework. It may appear that the ultimate framework for a project success would be equal stakeholder influence on a project or equal influence on each contracting party. Thompson & Perry (1986) argue that "it is not the form of contract (legal form of framework) which primarily determines whether targets are met (success is achieved), but the attitude of the parties to which the form of contract may contribute. Industry and customer should look for ways of sharing the benefits from improved project performance". It is clear from this research and the arguments of various authors that influencing factors on a project success are many but all agree that possibly the highest influence comes from the human factors of customer or contractor organisations.

The conclusions reached from the analysis of the research data, as summarised in this paper, would lead us to the view that a framework for project success might be achieved by openness or transparency of (i) project risks, (ii) project risk allocation and (iii) full understanding of the project objectives. To make such a project framework functional, it would be important to have the involvement of the right people. Cleland & Gareis (1994) suggest the right people are those who are comfortable in an environment of uncertainty and change, seasoned performers from project management organisations and dedicated to project success.

With a framework of, the right people, transparency of project risks, openness of risk allocation and a full understanding of the project objectives, there is a possible recipe to target project success. The implications for project management are unlikely to be major in terms of tools and techniques but more towards attitude of the project parties to each other. Turner (1995) suggests the possibility of "partnering" as a contractual technique for motivating all participants (individuals and organisations) involved in a project. Turner's view is limited to that of contractors aiming to achieve an enhancement of their competitive position to win a project. The research data obtained from the projects in Morocco and Iran reflect the reasons for partnering as those expressed by Turner. However, there is no apparent reason why such concepts could not be a possible framework for customer and contractor partnering.

During the past 15 years much attention has been devoted to an analysis of traditional project management methodologies and tools in an effort to improve the practices of project management. For example, the introduction to the project process of the new concept labelled project risk management, as documented by Williams (1997) and Chapman & Ward (1997). Also, the development of new project risk assessment computer software packages, as suggested by Stewart & Sanders (1990). Despite these developments, project failures still occur. Projects can fail for various reasons and seldom result from an isolated decision or action. It is not the intent, in this paper, to discuss the detail causes that contribute to project failure or success, as this will be the subject of a separate paper.

Notes

To assist the reader and aid understanding of Table 1, the following notes may be helpful.

1. FOB / CIF

Free On Board / Cost, Insurance and Freight. These are terms used in marine transport to indicate a delivery point where equipment is loaded onto a ship or at a port where risk passes, usually in respect of contractual delivery or for marine insurance. For those interested in more depth of meaning on these and other marine terms, the writer recommends the literature by Schmitthoff (1990), *The Law and Practice of International Trade*.

2. Turnkey

Turnkey is a term used internationally to indicate that a contractor is responsible for design, supply, installation and putting to work a process or piece of equipment ready for use.

3. Partnership

Where it states "yes", in the above table it reflects that the contractor was in partnership with another contractor who was not the customer for that project. Therefore the partner was also an active stakeholder to the project. Where it states "no", this indicates that there was no partnership arrangement with other contractors to the project. For the purposes of this research, any partnerships that the project developer (customer) may have had e.g. financial institutions, has been ignored. It is appreciated that any partnership that the customers may have had could have influenced the project out-turn and their notion of success or failure may have been relevant. However, due to confidentiality within customer's organisations it was not always possible to research opinions beyond the customers project team.

4. Out-turn

This term indicates, from a contractor's view, the financial profit (+ve) or loss (-ve) status of the project at completion. For this section of this paper it is not important to quantify the magnitude of profit or loss. However, this is discussed in Chapter X

5. Site Supervision

The term site supervision is give to a contract (project) obligation where a contractor is required to provide technical advice and guidance during the installation and testing of the contractor's equipment. The term "site" relates to contractor's supervisors being physically at the location of the project implementation.

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Project	Location	Start Date	Value (£m)	Duration (months)	Actual Completion	Contract Type	Partners	Out-turn
1	Morocco	4/89	22	12	2/99	CIF + site supervision	yes	+ve
2	Iran	8/89	70	23	6/99	FOB + site supervision	yes	+ve
3	Iran	2/91	166	28	7/2000	FOB + site supervision	yes	+ve
4	Iran	3/92	15	18	6/99	FOB + site supervision	yes	+ve
5	Morocco	5/92	29	20	2/99	CIF + site supervision	yes	+ve
6	Abu Dhabi	6/92	88	17	6/98	FOB + site supervision	yes	+ve
7	UK	11/92	22	21	12/97	Turnkey	no	-ve
8	Saudi Arabia	3/93	6	15	7/97	FOB + site supervision	no	-ve
9	Oman	8/93	82	24	12/97	Turnkey	no	-ve
10	UK	10/93	52	21	11/96	Turnkey	no	-ve
11	UK	8/94	22	22	12/99	Turnkey	no	-ve
12	UK	4/95	26	19	3/98	Turnkey	no	+ve

Table 1 – Parameter Summary of Research Projects

Table 2 – Completion as the Dominant Meaning of Success for Different Stakeholders

Stakeholder	Meaning of Project Completion
Government Authority	Project is <i>functioning</i> for the benefit of the public and is expected to do so until its usefulness deteriorates to the level where there is a need for a new project. In terms of time-scale, this may be many tens of years
Commercial Client	<ul style="list-style-type: none"> a) End of contractor’s warranty (guarantee) period, or b) Final financial accounts have been settled, or c) Project reaches the end of its useful commercial life In terms of time-scale, this may be tens of years
Contractor	<ul style="list-style-type: none"> a) Delivery (FOB) project equipment, or b) End of warranty (guarantee) period, or c) Full payment has been received, or d) All litigation, if appropriate, has been settled In terms of time-scales, this is likely to be less than ten years <ul style="list-style-type: none"> e) Project in service support may be taken in the form of separate (mini) projects over the commercial life of the project
Suppliers (products and services)	<ul style="list-style-type: none"> a) Delivery of equipment or services to Contractor, or b) End of warranty (guarantee) period and any outstanding monies have been received or paid, or c) All litigation, if appropriate, has been settled In terms of time-scales, this is likely to be much less than ten years.

Table 3 – Summary of Stakeholder Notions of Success or Failure

Stakeholder	Morocco Projects 1 and 5	Iran Projects 2, 3 and 4	Abu Dhabi Project 6	UK Project 7	Saudi Arabia Project 8	Oman Project 9	UK Project 10	UK Project 11	UK Project 12
Customer									
Project budget control	<i>Success</i> - original budget did not change.	<i>Success</i> - final project costs were US\$17 million less than contracted	<i>Success</i> – no variation orders to the project specification or budget	<i>Failed</i> – many changes to specification and budget	<i>Failed</i> – many changes to specification and budget	<i>Success</i> – no variations to the project specification	<i>Failed</i> - many changes to specification and budget	<i>Failed</i> - many changes to specification and budget	<i>Failed</i> – project delays caused loss of revenue
Project specification	<i>Success</i> – no changes to the project specification	<i>Success</i> – no changes to the project specification	<i>Success</i> - project specification accepted by the trading house – exceptions with drawn	<i>Failure</i> – many changes to specification	<i>Failure</i> – many changes to specification	Customer had the notion that his engineering advisors had <i>failed</i> to control the project engineering	<i>Failure</i> – many changes to specification	<i>Failure</i> – many changes to specification	Customer <i>failed</i> to understand the full implications of the project specification in respect of the operating criteria in UK
Customer operating team	<i>Success</i> - gratuitous project benefits beyond the project specification	<i>Success</i> - gratuitous project benefits beyond the project specification.				<i>Success</i> - gratuitous project benefits beyond the project specification	<i>Success</i> - gratuitous project benefits beyond the project specification		
Customer financial claims	none	<i>Success</i> – obtained US\$17m for	<i>Success</i> – obtained US\$26m for	none	<i>Success</i> – obtained US\$250k for	Customer <i>successful</i> in its claims for	Customer <i>successful</i> in its claims for	Customer <i>successful</i> in its claims for	Customer had a claim on UK

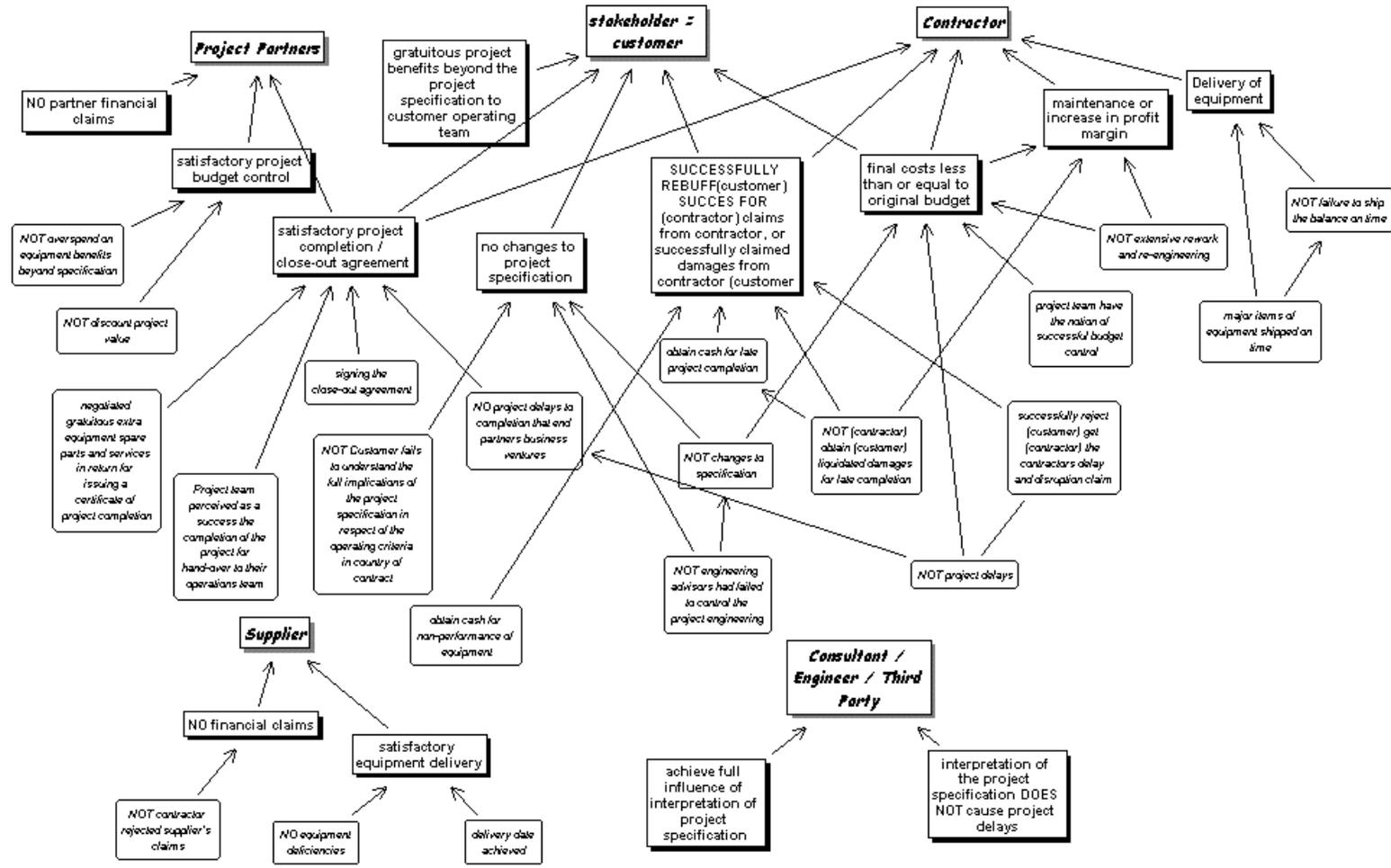
		non-performance of equipment	late project completion		non-performance of equipment	liquidated damages for late completion	liquidated damages for late completion	liquidated damages for late completion	contractor for £3.2m but only <i>successful</i> in obtaining £700k
		Customer <i>successfully</i> rejected the contractors delay and disruption claims				Customer <i>successfully</i> rejected the contractors delay and disruption claims	Customer <i>successfully</i> rejected the contractors delay and disruption claims	Customer <i>successfully</i> rejected the contractors delay and disruption claims	
Project completion / close-out agreement	<i>Success</i> - negotiated gratuitous extra equipment spare parts and services in return for issuing a certificate of project completion	<i>Success</i> - negotiated gratuitous extra equipment spare parts and services in return for issuing a certificate of project completion	<i>Success</i> - negotiated gratuitous extra equipment spare parts and services in return for issuing a certificate of project completion	<i>Success</i> - signing the close-out agreement	Project team perceived as a <i>success</i> the completion of the project for hand-over to their operations team	<i>Success</i> - signing the close-out agreement	<i>Success</i> - signing the close-out agreement	<i>Success</i> - signing the close-out agreement	Customer perceived as a <i>success</i> the signing of the close-out agreement with NGC and the UK contractor
Consultant / Engineer / Third Party									
Project specification			<i>Success</i> – full influence of interpretation			<i>Failure</i> – interpretation of the project specification caused project delays			
Project									

Partners									
Project budget control	<i>Failure</i> – overspend on equipment benefits beyond specification	<i>Failure</i> – overspend on equipment benefits beyond specification plus discount project value	<i>Failure</i> – overspend on equipment benefits beyond specification plus discount project value						
Partner financial claims	none	<i>Success</i> – claim against UK contractor	none						
Project completion / close-out agreement	<i>Failure</i> -project delays to completion ended partners business ventures in Morocco	<i>Success</i> – albeit 6 to 8 years late	<i>Success</i> – albeit 4 years late						<i>Success</i> – for NGC in satisfying the electricity guidelines
Contractor									
Delivery of equipment	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was CIF	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was FOB	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was FOB	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was turnkey	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was FOB	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was turnkey	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was turnkey	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was turnkey	<i>Success</i> -major items of equipment shipped on time but failure to ship the balance on time – project was turnkey

Project budget control	<i>Failed</i> – extensive rework and re-engineering	<i>Failed</i> – extensive rework and re-engineering	<i>Failed</i> – extensive rework and re-engineering	<i>Failed</i> – extensive rework and re-engineering	<i>Success</i> – despite the overspends the project team had the notion of successful budget control				
Contractor's financial claims	none	none	none	none	<i>Success</i> – claims for changes to specification	<i>Failure</i> – customer rejected contractor's claims	<i>Failure</i> – customer rejected contractor's claims	<i>Failure</i> – customer rejected contractor's claims	none
Project completion / close-out agreement	<i>Success</i> – albeit 5 years late	<i>Success</i> – albeit 6 to 8 years late	<i>Success</i> – albeit 4 years late	<i>Success</i> – albeit 2 years late	<i>Success</i> – albeit 2 years late	<i>Success</i> – albeit 2 years late	<i>Success</i> – albeit 1 years late	<i>Success</i> – albeit 2 years late	<i>Success</i> – albeit 1 years late
Project profit margin	<i>Success</i> – maintained target profit margin	<i>Success</i> – maintained target profit margin	<i>Success</i> – maintained target profit margin	<i>Failure</i> – rework and re-engineering	<i>Failure</i> – rework and re-engineering	<i>Failure</i> – rework and re-engineering plus liquidated damages	<i>Failure</i> – rework and re-engineering plus liquidated damages	<i>Failure</i> – rework and re-engineering plus liquidated damages	<i>Success</i> – despite the overspends and payment of liquidated damages the project profit margin increased
Supplier									
Equipment delivery	<i>Success</i> – delivery date achieved	<i>Failure</i> – late delivery and equipment deficiencies	<i>Success</i> – delivery date achieved						
Financial claims	none	none	none	none	none	none	<i>Failure</i> – UK	<i>Failure</i> – UK	none

							contractor rejected supplier's claims	contractor rejected supplier's claims	
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Figure 4 – Success and Failure Criteria (shadowed boxes) and influencing factors (plain boxes) in relation to Five Stakeholders (bold italics)



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