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Does project governance lead to successful projects?

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Abstract

Project governance can potentially provide the top management support needed for projects to succeed. However, the awareness and adoption of project governance guidelines has been sporadic. This research seeks to overcome any credibility gaps that may exist by developing a theoretical model to explain why project governance should work and testing the model against industry data. The research found five of six theoretical constructs for project governance correlated significantly with project success and different constructs were more important at different at different stages in the project lifecycle. The contribution of the research is firstly to show project governance can be explained by agency theory and theories of planned change. The second contribution is to provide evidence that project governance leads to project success.

Keywords

Project governance, project success, project failure.

INTRODUCTION

Project management is now considered a mature discipline (Thomas & Mullaly 2008) and there is an extensive literature emphasising standardized tool sets and methodologies to deliver projects on-time, on-budget and on-specification (Crawford et al. 2006). However, there is a paradox because low success rates (however defined) suggest that current approaches are not working (Clegg et al. 1997; Tichy and Bascom 2008). If the widely cited Standish statistics are to be believed, project success rates may actually have declined in the past ten years (Standish 2003, 2009). Lovallo and Kahneman (2003) describe disappointing results with all types of large projects in areas as diverse as manufacturing, marketing and mergers and acquisitions.

The paradox is partly explained by a changing definition of success (Markus et al. 2000). In the past, projects tended to be associated with engineering or construction and success was understood in terms of on-time on-budget delivery of outputs. From the 1970s projects were increasingly associated with the implementation of strategy (Kwak and Anbari 2009) and de Wit (1985) made the seminal contribution of differentiating between project management success (on-time on-budget) and project success (realisation of benefits). Many have gone on to recognise project success to be more important than project management success (Cooke-Davies 2002; Thomas and Fernández 2008).

When project success is defined in terms of benefits realised, evidence suggests factors such as soft skills and top management support are more important than the concerns of the traditional body of knowledge (Turner & Muller 2006; Young & Poon 2013). However, this finding is difficult for project management professionals to accept and there is considerable inertia in updating the body of knowledge (Morris et al. 2006). In addition to this, engaging top managers is problematic because top managers rarely consider projects to be a matter of direct concern (Crawford 2005).

Project governance is emerging as the way to engage top managers and respond to the poor success rates. The emphasis on governance has much to recommend it because governance unlike project management is accepted

as a matter of direct concern for boards and top managers. The term 'project governance' was first used in academia in an IT context (Mähring 2002) and developments since then have been driven by both the practitioner and academic communities. Currently there are guidelines from project management organisations such as the UK's Association for Project Management (APM Governance of Project Management SIG 2004), the IT audit industry (ISACA 2012) and Standards organisations (AS8016 2010).

However, the awareness and adoption of project governance guidelines has been sporadic. A characteristic of the industry, the IT industry in particular, is an enormous number of methodologies which are untested and appear not to have a consistent impact on success (Strassmann 1995). One speculates that boards and top managers are cynical because none of the project governance guidelines have been proven to work.

This research seeks to address the issue of credibility. There is no evidence project governance leads to more successful projects and few if any theories explaining why project governance guidelines should work. There is also no theory of project management to refer to in the mainstream project management literature (Jugdev 2008; Sauer and Reich 2007) although the IS literature has made some in-roads by exploring escalating projects in the context of self-justification theory, prospect theory, agency theory, approach avoidance theory and whistle-blowing theory (Keil & Mann 2000; Keil et al. 2007). This research proposes to follow this lead and test one of the better project governance guidelines in the context of theory.

The remaining part of the paper is organised into four sections. The first section will review the literature to suggest a theoretical basis for project governance. The second section proposes a model of project governance and introduces a secondary data set which will be used to operationalize the model. The secondary data set is of interest because it is industry data and likely to have credibility with the top management audience. The secondary data has also been chosen because it contains generic measures of project success that are likely to be widely applicable (e.g. reduced costs, increased customer service, increased effectiveness). The third section provides a discussion of the results and section four provides the conclusion.

LITERATURE

The two words 'project' and 'governance' point to two background literatures: the corporate governance literature and the project management literature. The corporate governance literature is conceptually simpler to address and will be reviewed first.

Project governance is best understood as a subset of corporate governance (Chartered Secretaries Australia 2010). There is no general theory of corporate governance but agency theory holds the dominant position with stewardship theory and stakeholder theory as alternative perspectives. (Clarke 2004).

Agency theory is directed at the agency relationship that occurs in which one party delegates work to another. Agency theory is concerned with resolving two problems that can occur with agency relationships: (1) when the goals of the principal and agent conflict and (2) when it is difficult or expensive for the principal to verify what the agent is doing (Eisenhardt 1989). Agency theorists have been most concerned with describing the governance mechanisms that solve the agency problem. Two formal prepositions describe the objective of these governance mechanisms (Jensen and Meckling 1976):

Preposition 1: When the contract between the principal and the agent is outcome based, the agent is more likely to behave in the interests of the principal.

Preposition 2: When the principal has information to verify agent behaviour, the agent is more likely to behave in the interests of the principal.

Management researchers have applied agency theory extensively but IS researchers have applied it much less. (King and Marks Jr. 2008; Tiwana and Bush 2007). Mahaney and Lederer (2011) tried to develop an agency theory explanation of project success but were largely unsuccessful possibly because they did not differentiate between project success and project management success.

This research will have project success as the dependent variable and apply agency theory to the project context because there are multiple stakeholders with different goals and high levels of information asymmetry. Project governance in this context can be understood as the mechanisms to align the goals and actions of multiple stakeholders and reporting to allow principal(s) to evaluate whether outcomes will be achieved.

Three hypotheses are proposed. The first hypothesis relates to a common vision to address the agency problems of goal incongruence and the second two hypotheses relate to monitoring to address the agency problem of and information asymmetry.

H1 – project success increases when governance arrangements require stakeholders to agree on the benefits to be realised.

H2 – project success increases when governance arrangements put in place a KPI to measure the benefits realised

H3 – project success increases when governance arrangements include monitoring against the KPI

At first glance these first three hypotheses may seem trivial until they are compared against the common prescriptions in the project management literature. Standish (1996, 2009) is an example of contrasting advice with recommendations to: follow a project management methodology, get the users involved, get top management support, conduct high level planning and assemble a good project team. In addition to this there is significant evidence suggesting the advice in the first three hypotheses are not followed in practice (Deloitte 2007; Jenner 2012; Ward and Daniel 2012). If these first three hypotheses are confirmed, there will be a strong case to argue agency theory provides a good explanation for effective project governance.

Agency theory as it has been presented so far has been criticised as minimalist (Perrow 1986). At the project level, additional mid-level theories are probably needed. Sir Adrian Cadbury explains that governance structures are important but their precise forms are less so. We take his meaning to imply governance is more than having structures to address agency issues. Cadbury (2004 p. i) explains it in this way, "What matters in practice is the way individuals put these structures to work".

Whistle blowing theory (Near and Miceli 1995) is important as a mid-level theory to describe governance behaviour when agency conflicts arise. In the corporate governance literature, whistleblowing requires a culture where stakeholders will not be afraid to raise issues when unethical behaviour is observed. In the project governance context, stakeholders need to be encouraged to raise issues when emergent events make it unlikely the desired benefits will be realised. This will often be the case because the world has become too turbulent to predict the future with any accuracy (Mintzberg 1994). The disaster literature tells us someone always seems to know before each disaster occurs that something was wrong (Fortune and Peters 1995; Nikander and Eloranta 2001). Our hypothesis to capture this insight is as follows:

H4 – project success increases when governance arrangements develop a project culture where all stakeholders feel free to raise issues about unexpected events as they arise.

We now turn to the project management literature. This literature is extensive but the most relevant mid-level theories can be identified by considering only those that relate to the realisation of business benefits.

Benefits are generally realised through change or complementary investments (Brynjolfsson and Hitt 1998, Poon et al. 2005, Poon et al. 2010). There is an extensive change management literature with most building on the work of Kurt Lewin and his theories of planned change (Burnes 2004). For benefits to be realised, change is almost always necessary and projects are better thought of as change management initiatives than as technical endeavours. Benefits are not realised through the identification process alone (the subject of hypothesis 1), and Markus (1996) has long suggested change-agentry is the next skill set that will need to be acquired. We hypothesise that project governance should include the oversight of planned change.

H5 – project success increases when governance includes evaluation of whether the changes required to realise the benefits can be implemented.

Finally we can turn to the issue of top management support (Jarvenpaa and Ives 1991). In practice, a project sponsor is usually delegated with oversight authority. The project sponsor is normally a senior manager and a contributor to the phenomenon of 'top management support' (TMS). TMS is very important and has been found to be necessary and often sufficient for project success (Young & Poon 2013). The importance of the project sponsor has been explained using the construct of 'passion': the personal commitment to drive through organisational and behavioural change (Young & Jordan 2003). However, one report suggests that sponsors are made accountable for the benefits no more than 5-13% of the time (Thorp 2008). The hypothesis to follow from these insights is as follows:

H6 – project success increases when governance arrangements delegate accountability for the benefits to a project sponsor with the passion to drive through the required change.

A model of project governance

The hypotheses have been informed by the literature review and also a project governance guideline, HB280-2006 (Standards Australia 2006). This project governance guideline was chosen because it has both industry credibility and academic rigour (Young and Jordan 2008). Six project governance guidelines are proposed that correspond to both the hypotheses in this research and also a typical project lifecycle.

The model of project governance is developed below:

The dependent variable is project success – the realisation of a project's expected benefits. The expected benefits can be defined in many ways but typically relates to reduced costs, increased customer service or increased effectiveness.

The first three independent constructs (shaded) describe governance mechanisms to address the agency problems of goal incongruence and information asymmetry. The first construct *Q1 Vision* corresponds to H1 – an agreement by all stakeholders on the benefits to be realised. The next two constructs provide governance mechanisms to verify agent behaviour: *Q4 KPIs* corresponds to H2 – having a success measure that relates to the benefits and *Q6 Monitor* corresponds to H3 – whether KPI's are on track to being realised or not. The constructs are presented in the order suggested by HB280, rather than in the order they were developed because this order follows the decisions in a typical project lifecycle.

The next two constructs are Q2 and Q3 relating to the implementation of change. *Q2 Change* corresponds to H5 – how much change is required to realise the benefits?' *Q3 Sponsor* corresponds to H6 – and asks whether the sponsor has the influence and passion to drive through the required change. The final construct *Q5 Culture* relates to the project culture or whistleblowing and corresponds to H4.

All the constructs are hypothesised to affect success directly as shown in Figure 1. Note that the bottom two constructs are shown offset to the right to show that they are expected to be more important in the middle to late stages of a project.
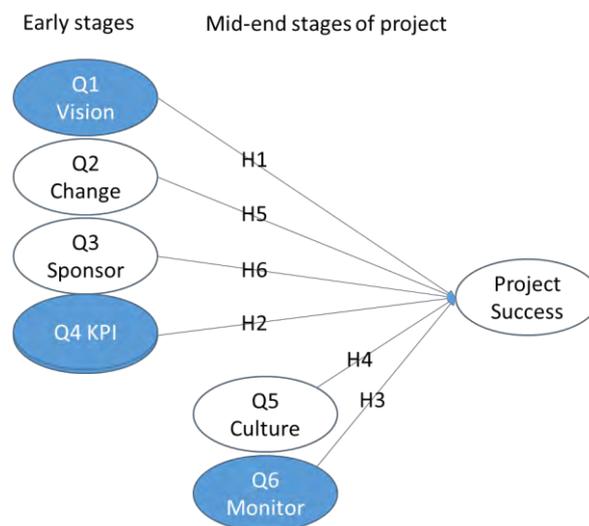

Figure 1: Project Governance Model

DATA

Mahaney and Lederer (2011) reviewed the literature to find very few survey instruments for measuring their agency theory constructs. This issue will be addressed by testing the project governance model using secondary data from a specialist consulting firm which we will call ABC. The secondary data is an anonymised sample derived from over 150 global organisations and completed by 117,335 employees involved in or affected by organizational change projects. There are of course limitations in using secondary data but the credibility of this data with the top management audience compensates for some of the concerns. A second compensation is that the ABC data has measures of project success (cost, customer service, effectiveness) as well as of project management success. ABC were recently bought by one of the big four consulting organisations to strengthen their change management practice.

The data was collected from companies going through some form of organizational change that wanted to receive feedback on how well their project was being managed. The survey data were collected in participating organizations between February 2001 and June 2010. The employee survey consists of 44 standard questions covering various aspects of organizational change (Parry et al. 2012). The survey was administered to all employees in business units and teams that were involved in or affected by the change project, across hierarchical levels, roles, and functions. All data were treated as confidential and managed under a strict data security and privacy policy. Feedback to the company was provided as team average for teams with at least six (6) responses, so that no individual response could be identified. Participation was voluntary and the response rates ranged from 40% to 95%.

The data at the firm level has most industries represented with financial, utility and public sector firms representing half the sample. The complete range of industries includes: management and other consulting services, arts and recreation services, insurance and superannuation funds, oil and gas extraction, transport, postal and warehousing, waste collection, treatment and disposal services, defence, hospitals, social assistance service, basic chemical and chemical product, manufacturing, electricity distribution, finance, scientific research services, information media and telecommunication, metal ore mining, food and beverages manufacturing, public administration, public order and other, services, electricity generation, petroleum and coal product manufacturing, medical and other health care services, non-metallic mineral product manufacturing, machinery and equipment manufacturing, health care and social assistance services.

In terms of project type, one third are IT implementations, and the remainder are organisational change projects. The complete range of organization change types included: Restructuring, Business transformation, call centre, cost management, cultural change, general performance improvement, health services, human capital strategy, IT Transformation, Leadership alignment, merger/acquisition, new organization, structures, outsourcing/BPO, process improvement, shared services and new strategic direction.

The range of countries represented include: Argentina, Australia, Belgium, Brazil, Canada, China, Finland, France, Germany, India, Italy, Japan, Luxembourg, Mozambique, Netherlands, New Zealand, Norway, Philippines, Poland, Singapore, South Africa, Spain, Sweden, Switzerland, UK, Ukraine, USA.

Data clustering, as proposed by Loureiro, Torgo & Soares (2004), was used for the purpose of normalising the data and eliminating outliers due to its proven application to real-world data (Maletic & Marcus, 2000). Homogeneity of the data was ensured by removing fifteen outlier firms identified through t-tests of the measurement model at the firm level. 51 firms and 66,817 records were left to analyse.

Operationalising of constructs

The project governance model was operationalized by mapping the most relevant of ABC's 44 questions to formatively specify the 6 independent project governance constructs and reflectively specify the dependent variable: project success. The mapping and measurement model was iteratively refined to minimise errors following Petter, Straub and Rai (2007) and Cenfetelli and Bassellier (2009).

Project success was reflectively specified as: (BPb|ChangeCostManagement) 'increased ability to manage costs and resources', (BPb|CustSvc) 'increased customer service' (BPb|Effectiveness) 'improved business unit effectiveness'.

Hypothesis 1: Q1 Vision – was formatively mapped against two indicators: (ADb|Vision_Lvl1) 'understanding of project vision', (ADb|Vision_agreeLvl1) 'agreement with project vision'.

Hypothesis 5: Q2 Change – was formatively mapped against two indicators: (SFb|Current_change) 'how well is change being managed?', (RSb|Quick_remedy) 'how quick is the response to issues?'.

Hypothesis 6: Q3 Sponsor – was formatively mapped against three indicators: (LLb|Leads_Implementation) 'direct supervisor leads implementation', (LLb|Conf_Lvl5_Ldr) 'confidence in direct supervisor',(LLb|PerformanceManagement) 'performance at leading change and mobilising commitment'.

Originally three additional indicators relating specifically to top managers were also included, but they were removed because they did not add to the accuracy of the measurement model (ref Appendix 1). The omission of indicators relating directly to top management may be problematic because the construct is significantly changed. However when one considers that the survey instrument is completed by staff with relatively little contact with top managers, the three indicators may be justified. It could be that the influence of top managers is experienced by survey respondents through the commitment of their direct supervisors.

Hypothesis 2: Q4 KPI – was formatively mapped against two indicators: (LLb|Objectives_Outcomes) 'clear objectives and measurable outcomes', (LLb|Accountable) 'accountability for achieving objectives'.

Hypothesis 4: Q5 Culture – could not be mapped against any of the ChangeTrack indicators. After successive iterations it was decided to replace this construct with: (EEb|Passion) Passion (people feel excited, proud, pleasantly surprised, feeling good'), (EEb|Drive) Drive ('people feel determined, creative, decisive') (ref Appendix 1)

These two indicators were originally mapped against the sponsor construct. This mapping is the weakest of all the mappings but there is still a case to claim formative indicators of project culture have been selected. It remains to be seen whether they are sufficiently formative.

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Hypothesis 3: Q6 Monitor – was formatively mapped against two indicators: (RSb|Workgroup_processes) 'workgroup processes needed to achieve objectives', (RSb|Workgroup_systems) 'workgroup systems needed to achieve objectives'.

ABC categorise these two indicators under 'systems and processes' which has some theoretical parallels with the governance construct. Unfortunately limitations in the data prevented a closer mapping to the measurement construct developed in the literature review. If the construct is found to have any correlation against success, our understanding of the theoretical construct may have to be adapted.

RESULTS

A measurement model was developed based on the mappings described in the preceding section. Partial least squares analysis was then performed in order to determine the appropriateness of the model.

After three iterations (ref Appendix 1) the measurement model produced a Goodness of Fit Index of 0.983 (Figure 2). The model consists of 13 indicators and 6 constructs. Each of the constructs exhibited good factor loadings with the lowest being 0.78 and the remaining being 0.85 or greater.
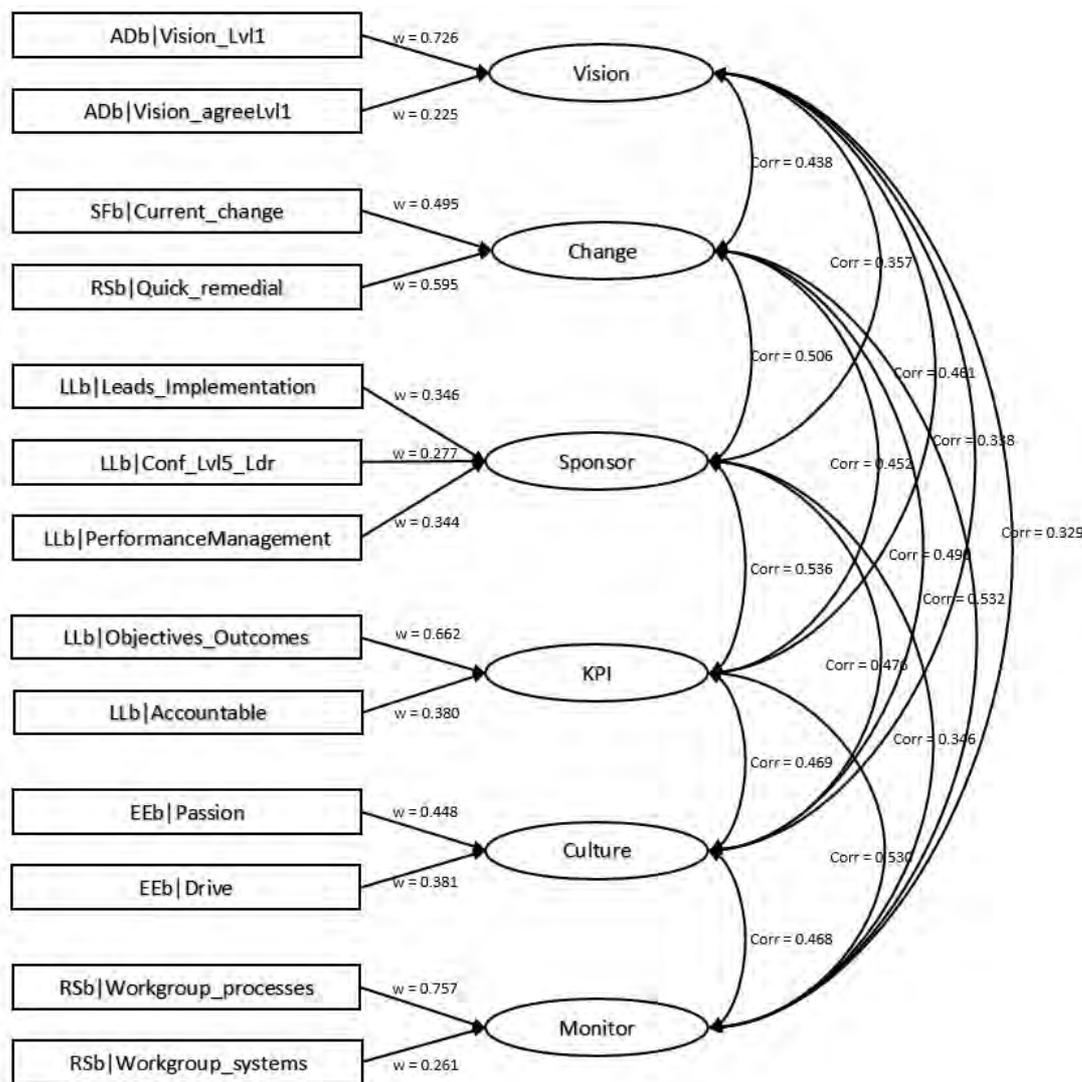
Goodness of fit index (1)									
GoF	Standard error	Critical ratio (CR)	Lower bound (95%)	Upper bound (95%)	Minimum	1st Quartile	Median	3rd Quartile	Maximum
0.983	0.035	28.419	0.836	0.968	0.776	0.902	0.925	0.941	0.980

Figure 2: Measurement Model output from XLSTAT Version 2013.1.01

Figure 3 summarises tests of discriminant validity to show that multi-collinearity is not a concern with all results falling well below the 0.85 threshold. The Cronbach's alpha and Dillion-Goldstein's Rho scores were above 0.7,

with the lowest being 0.719 and 0.877 respectively, indicating good reliability. Validity was also observed to be good with average variance extracted [AVE] figures well above the 0.5 threshold.

A structural model was then developed using the measurement model and Partial Least Square regression analysis (PLS) to identify which if any governance constructs correlates against the success construct. This analysis was repeated for the different project stages (classified as initial, early, middle and late) to try to identify early predictors of success. The statistically significant results are shown in Table 1.

The project success construct displayed very high values for Cronbach's alpha (0.853), Dillon-Golstein's Rho (0.912), AVE (0.773) (Figure 3). The structural model followed the measurement model with Cronbach's alpha and Dillion-Goldstein's Rho scores greater than the 0.7 threshold and AVE scores well above the 0.5 threshold, with an average score of 0.823, indicating good reliability and validity.

R-Square values were generated for each of the results but were disregarded as a measure of goodness of fit because the model does not include an intercept/constant. PLS regression without a constant assumes that the regression line should run through the origin, but this is not always the case. Thus, the sum of squares figures which the R-Square value is derived are miscalculated as they don't account for the non-zero value of the intercept, and lead to inflated R-Square values.

Composite reliability:

Latent variab	Dimensions	Cronbach's alpha	D.G. rho (PCA)	Condition number	Critical value	Eigenvalues
Vision	2	0.869	0.938	2.759	2.130	3.766
						0.495
Change	2	0.719	0.877	1.888	1.698	2.651
						0.744
Sponsor	3	0.911	0.944	3.986	2.491	6.342
						0.732
						0.399
KPI	2	0.804	0.911	2.261	2.035	3.404
						0.666
Passion &	2	0.883	0.945	2.937	2.355	4.220
						0.489
Monitor	2	0.791	0.906	2.189	1.904	3.150
						0.657
Success	3	0.853	0.912	2.846	1.615	3.762
						0.619
						0.465

Cross-loadings (Monofactorial manifest variables / 1):

	Vision	Change	Sponsor	KPI	Passion & Drive	Monitor	Success
ADb|Vision	**0.987**	0.507	0.342	0.343	0.398	0.349	0.385
ADb|Vision	**0.862**	0.440	0.309	0.337	0.351	0.307	0.336
SFb|Curren	0.473	**0.903**	0.465	0.403	0.486	0.478	0.512
RSb|Quick	0.432	**0.863**	0.488	0.441	0.508	0.517	0.490
LLb|Leads	0.333	0.507	**0.947**	0.517	0.494	0.463	0.400
LLb|Perfor	0.323	0.510	**0.944**	0.527	0.502	0.469	0.399
LLb|Conf_L	0.309	0.465	**0.868**	0.502	0.471	0.437	0.367
LLb|Accou	0.300	0.396	0.470	**0.838**	0.450	0.468	0.377
LLb|Object	0.345	0.461	0.539	**0.967**	0.495	0.532	0.435
EEb|Drive	0.376	0.517	0.497	0.498	**0.931**	0.484	0.460
EEb|Passi	0.388	0.542	0.507	0.486	**0.960**	0.493	0.474
RSb|Work	0.345	0.545	0.496	0.546	0.505	**0.972**	0.481
RSb|Work	0.286	0.455	0.368	0.426	0.411	**0.815**	0.403
BPb|Chang	0.330	0.470	0.360	0.388	0.407	0.419	**0.835**
BPb|Custo	0.344	0.494	0.373	0.406	0.441	0.443	**0.894**
BPb|Effect	0.355	0.529	0.382	0.395	0.452	0.443	**0.906**

Model assessment (Dimension 1):

Latent variab	Type	an (Manifest variab	R²	Adjusted R²	Mean Communalities (AVE)	an Redundanc	D.G. rho
Vision	Exogenous	0.000			0.858		0.923
Change	Exogenous	0.000			0.780		0.876
Sponsor	Exogenous	0.000			0.846		0.943
KPI	Exogenous	0.000			0.819		0.900
Passion &	Exogenous	0.000			0.894		0.944
Monitor	Exogenous	0.000			0.804		0.891
Success	Endogenous	0.000	0.392	0.392	0.773	0.303	0.911
Mean			0.392		0.823	0.303	

Figure 3: Tests of discriminant validity and reliability

The structural model (Table 1) shows all the governance constructs except Culture (passion & drive) correlate against project success and confirmed all the hypotheses except H4. These results, although limited by the mapping against secondary data, are the first to show that project governance can lead to success. The constructs also provide a theoretical explanation for why project governance leads to success through agency theory and theories of planned change. This is a significant finding because project governance guidelines have been strongly influenced by project management theories. It appears project governance is better understood through corporate governance and change management theories.

Table 1 correlation coefficients of Project Governance constructs against success

Hypothesis	Governance construct	Stage of project			
		Initial	Early	Middle	Late
H1	Vision	0.275*			0.207**
H5	Change	0.285*	0.451**	0.311*	
H6	Sponsor	0.333**			
H2	KPI				0.264*
H4	Culture *passion & drive*				
H3	Monitor			0.671***	0.507***

The structural model has also shown that the different project governance constructs correlate against project success at different stages of a project.

The *initial stage* three constructs appear to correlate with project success: vision, change and sponsor. Project governance at this initial stage appears to require the sponsor to drive understanding to the point of agreement with the vision and acceptance of the need for change. ABC have found that 'agreement with the project vision' is more important than 'understanding the project vision' and their insight combined with the insight from this research suggests quite different approaches to that advocated by the project management and change management literatures. Project success in the initial stage seems to require more sense-making in an organisation than project planning or communicating of the vision (for understanding).

The research is silent on the role of top management and the sponsor specifically. The measurement model did not produce a better fit when it was operationalized with measures such as (LLb|Conf_Lvl1_Ldr) 'confidence in senior management'. Like Markus (1981), we find it unlikely that the research on top management support could be far from wrong. We suggest that importance of top management is hidden in the ABC data because it consists mainly of the responses of staff without any direct contact with top management. We hypothesise that it is top management and the sponsor's role in the initial stage to build acceptance of the vision down to the level of the direct supervisors.

From *the initial stage through to the middle* of the project, managing change and responding quickly to change issues seems to characterise the key to success. This insight is consistent with the literature but might be problematic for the project management community because change management is not a core part of the project management body of knowledge. This research is providing quite a clear picture that 'they are all change projects' and need to be governed accordingly. The result may however be simply reflecting the data which is gathered from change projects. Never-the-less it is significant to be able to describe the range of projects in the data set as change projects.

From *the middle to the end* of the project, success appears to require a change of focus from managing change to 'monitoring'. The correlation coefficients for monitoring are quite high and the degree of significance for this construct is 99% (shown as ***). Vision at the end of the project also appears to be significant for success. It seems that success requires a strong focus on the goals of the project from the middle of the project to the end, and the goals of the project need to be reinforced at the end. This insight is different to the advice in the benefits management literature. The benefits management literature acknowledges emergent benefits may arise during a project but it advocates benefits be emphasised from the beginning (Jenner 2012; Peppard et al. 2007). This research is suggesting the initial stages of a project are softer and less amenable to methodology which is better left to the middle and end stages of a project.

The importance of the construct 'Monitor' may need to be qualified because of the limitations of the data. The construct was justified by reference to agency theory and the need to verify agent behaviour. The ABC data only had two indicators to operationalize this construct: (RSb|Workgroup_processes) 'workgroup processes needed to achieve objectives' and (RSb|Workgroup_systems) 'workgroup systems needed to achieve objectives'. These indicators relate more to systems and processes for monitoring rather than monitoring directly. The strong correlations suggest that systems and processes (focussed on achieving the objectives) might be an adequate proxy for information to verify agent behaviour. Further research may be required to understand how and when systems can be an adequate proxy.

Conclusion

This research has provided evidence that project governance can lead to project success. Project success has been operationalized to mean improved management of costs and resources, customer service and business unit effectiveness. Project governance was operationalized into six constructs based on agency theory and theories of planned change. Five of these six constructs were shown to correlate with project success. This is a significant finding because it suggests project governance is better understood through corporate governance and change management theories than project management theories.

This research suggests project governance should emphasise different aspects at different stages of the project. In the early stages it is mainly about building support for a vision. In the early to middle stages project governance is about driving change through an organisation. In the middle to late stages project governance seems to require a focus on monitoring (through systems and processes). If so, project governance is very different to project management which emphasises methodology, user involvement, top management support, high level planning and good project teams.

The theoretical contribution of the research is to show project governance can be explained by agency theory and theories of planned change. The contribution to practice is not only to show project governance should lead to project success but also to show that project governance does correlate with project success. Evidence has been presented to strengthen the credibility of one project governance guideline (HB280) and it is possible this research will lead to increased adoption rates of the guideline and possibly increase project success rates.

These conclusions are limited by a number of considerations. Firstly the model is being tested by secondary data and the operationalization of the model has been limited to the indicators available. The culture construct in particular was not able to be operationalized. The secondary data is also an issue because the questionnaire design and method of data collection could not be controlled to minimise survey error. Further research is recommended using primary data.

Appendix I: Model Refinement

The measurement model was produced after three iterations of model refinement. Analysis of the models was performed using XLSTAT Version 2013.1.01 due to the formative nature of the measurement model. The Goodness of Fit Index (GFI) along with Standard Error were the main determining factors in model refinement. The Goodness of Fit Index in particular, was chosen because it allowed an assessment of how well the data fitted the model (Mulaik et al., 1989), thus ensuring the credibility of the results generated by the structural model. A Goodness of Fit threshold of 0.950 was used in determining whether the data fit the model suitably.

The first iteration of the model resulted in a Goodness of Fit Index of 0.866 and a Standard Error of 0.041. this first iteration had 17 measures, 6 of which were associated with the Sponsor construct. The relatively poor GFI as well as the presence of a number of indicators exhibiting extremely low factor weightings prompted modification of the model.

The second iteration although significantly improved, did not pass the prespecified GFI threshold of 0.950. Furthermore, it was decided that the single-indicator construct Culture consisted of more than just the ability to react quickly to change. This resulted in the development of the final model (Figure 2) which achieves a high GFI whilst maintaining parsimony with only 13 indicators.

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