

University of Wales, Trinity St. David

DBA Programme

**Approaches to Research and
Academic Communication**

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**Authentic Project Leadership:
A Study in the Management of
Complexity**

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August 21st, 2022



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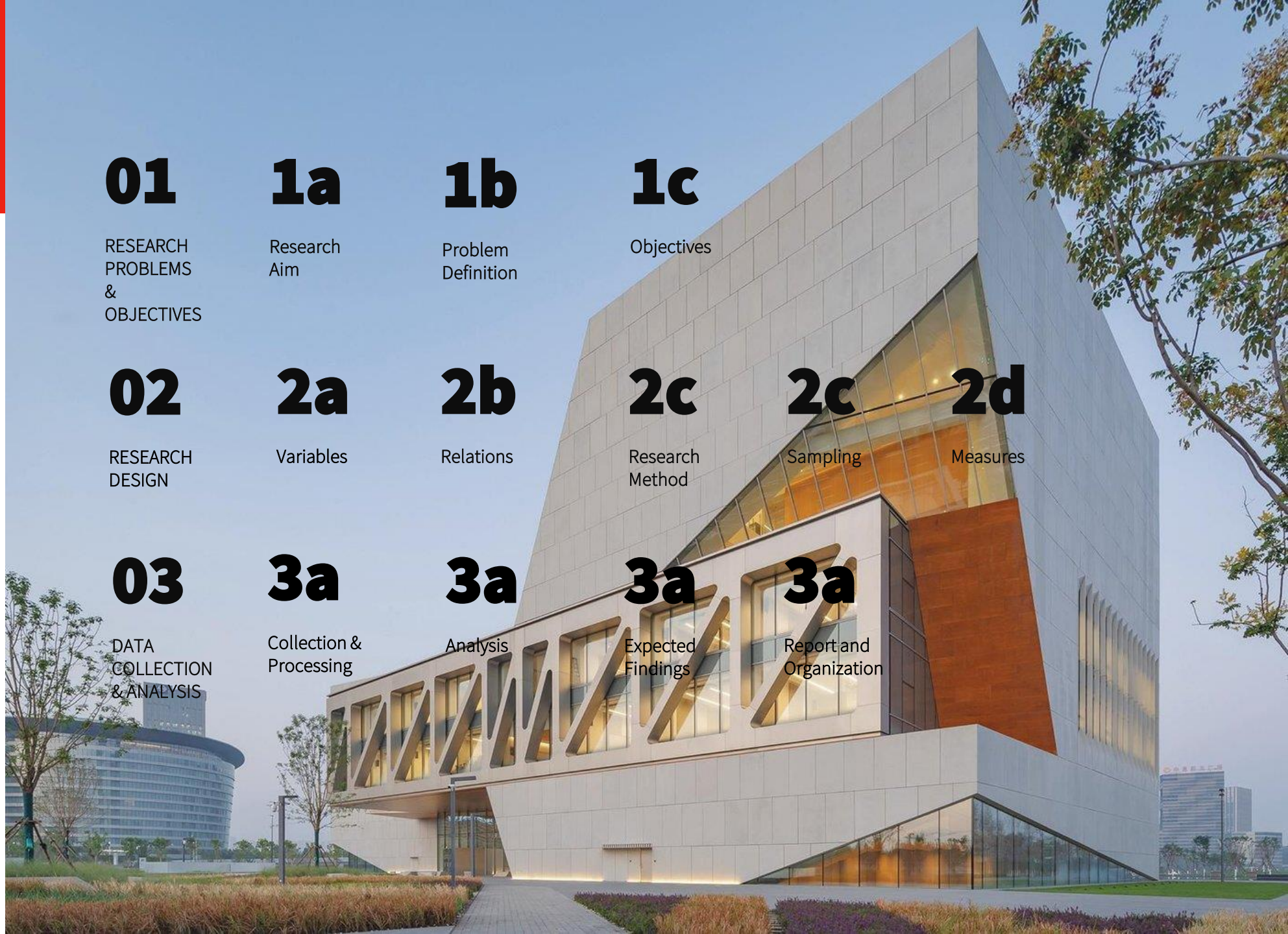
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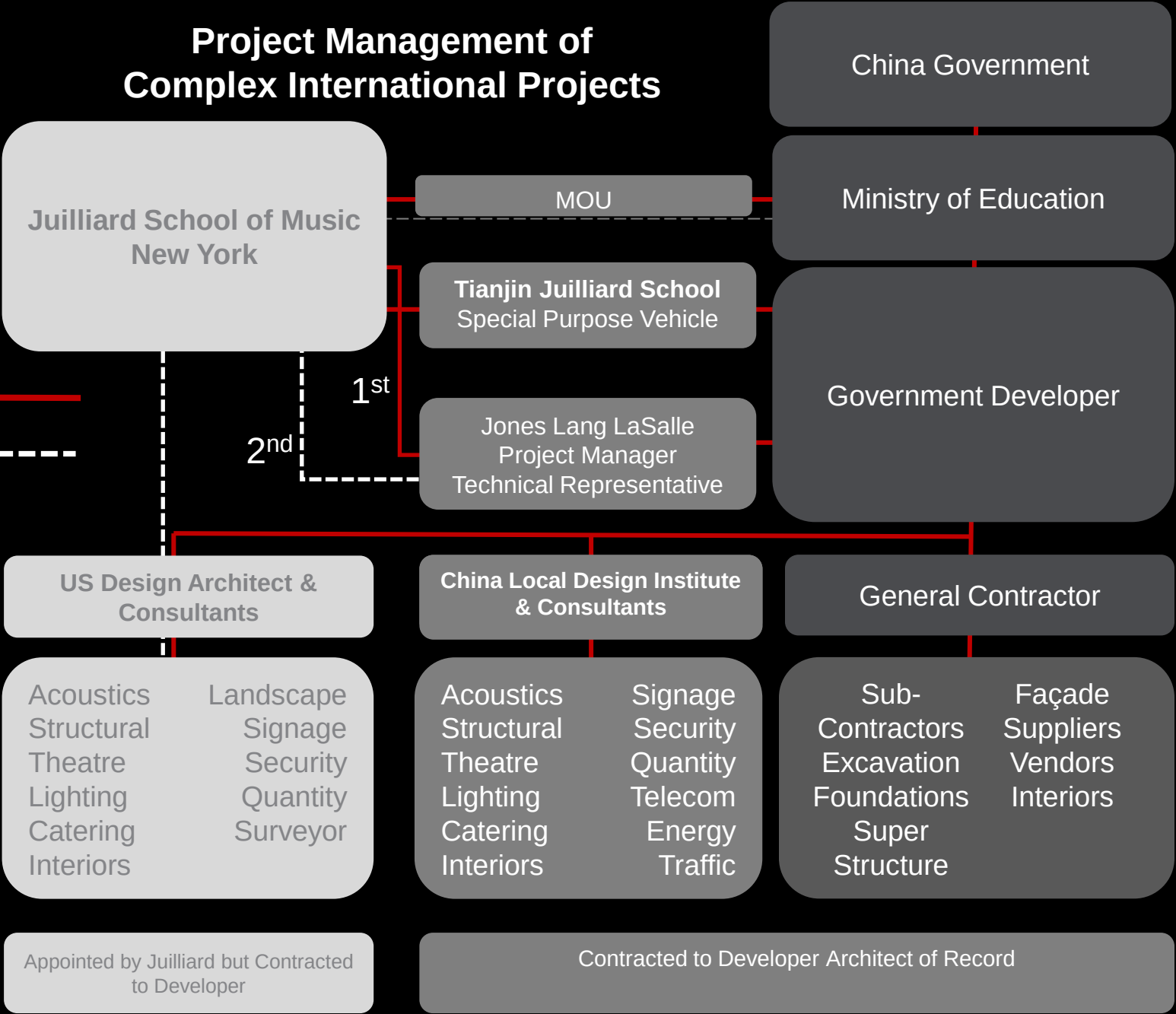
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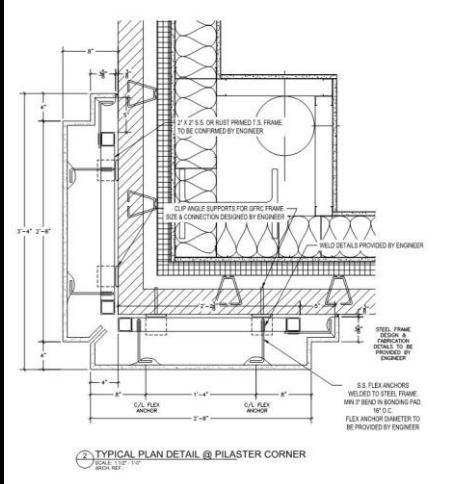
Contract ———
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Project Sponsor
First Lady Peng LiYuan



Architectural and Structural Complexity



Technical Complexity
Acoustic Isolation and
Humidity Control Detailing

- 1. Project Management Influences Project Success (Dvir, Sadeh, Malach-Pines, 1996)**
 - Contingency Theory asserts that different conditions require different organizational characteristics
 - Recent research characterizes projects as 'temporary organizations' (Turner and Muller, 2003)
- 2. Complexity is not well defined:**
 - construction Projects are dynamic subject to 'uncertainty, complexity pace'. (Shenhar, 2001)
 - International projects have additional factors of complexity
 - project size, number & type of stakeholders, location, form of contract (Turner & Muller, 2006)
 - many complex projects are not successful (Shehar and Dvir, 2003)
- 3. Success is Not Well Defined**
 - The traditional definition Iron Triangle (Time, Cost, Quality) no longer sufficient for complexity
 - emphasis on satisfaction: client, stakeholders, project team, end user (Baker, Murphy, Fisher, 1988)

Research Problems & Objectives

Defining Complexity

Leadership and Complexity

Factors of Complexity

Internal	External	Technical	Regulatory
Stakeholder Power	State Power	Systems	Environmental Codes
Location	Geo-politics	Functional Requirements	Disparity in International Standards
Organizational	Geo-economics	Architectural Detailing	Building Code Restrictions
Uniqueness of Project	Pandemic	Information	Function Codes
Form of Contract	Environmental Requirements	Structural	Labour Health and Safety Codes
Decision Making	Labour Supply	Skill Levels	Approvals Processes
Norms & Practices	*Technical Adoption Disparities	Design Technology	Fire and Building Services
Ethics	Supply Chain		

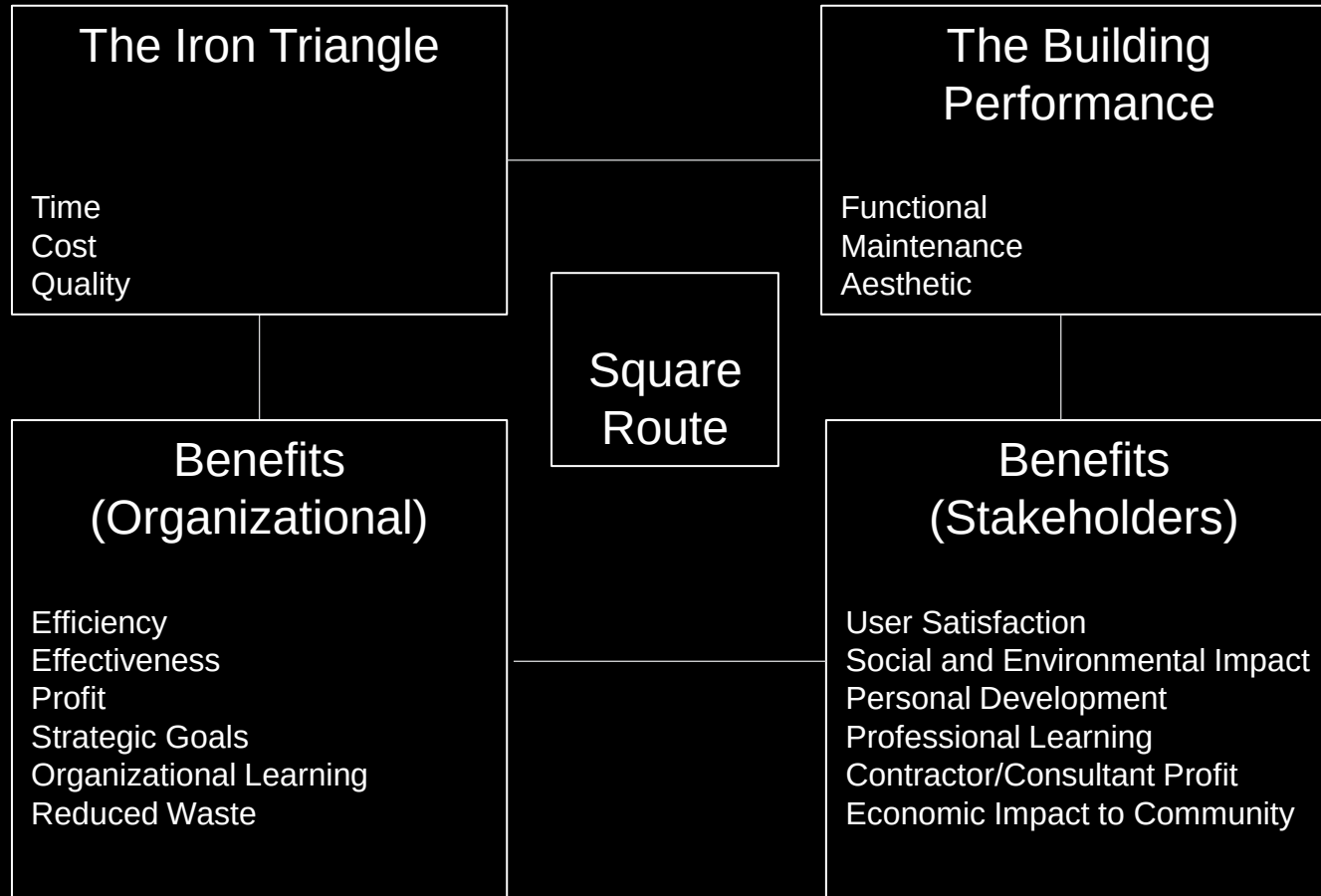
Is the relationship between project management and successful project delivery, mediated by complexity?

Does the complexity of international projects require a higher level of project leadership, over project management?

Consisting of many varied interrelated parts' and can be operationalized in terms of differentiation and interdependency. (Baccarini, 1996)

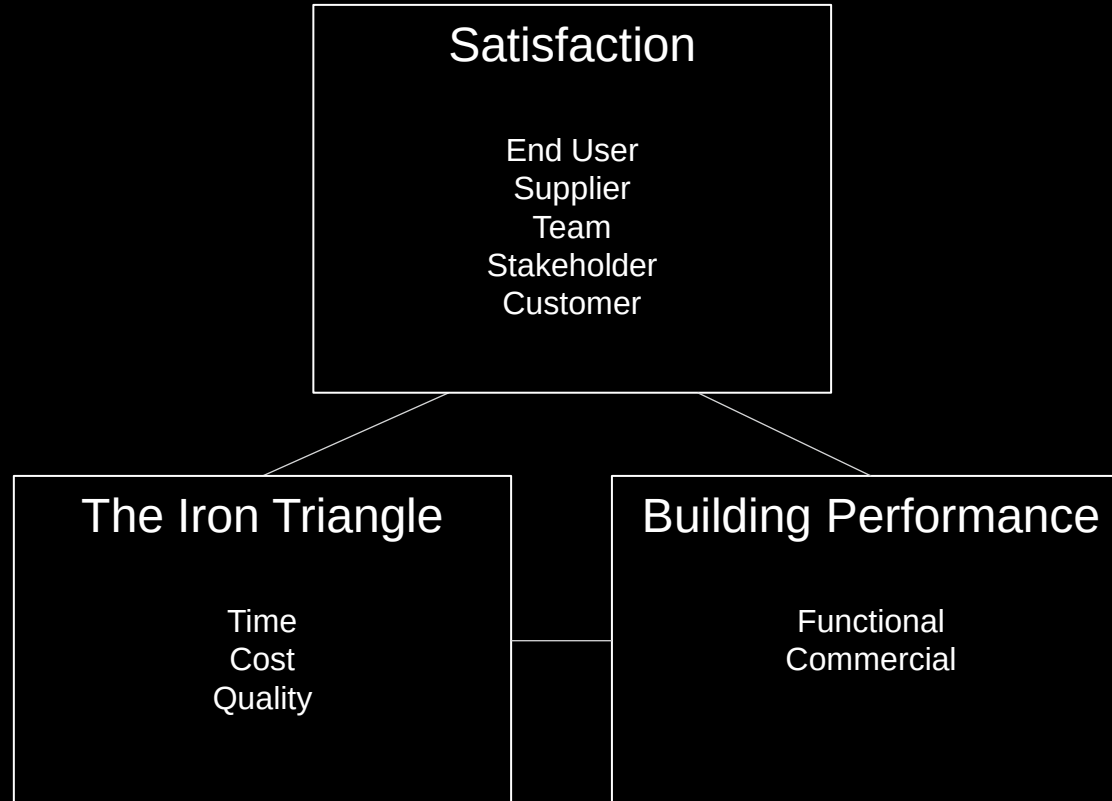
**Size of project, Number and Type of Stakeholders, Location, Form of Contract
(Turner & Muller, 2006)**

A Definition of Success



Atkinson R, (1999)

A Definition of Success



Muller, Geraldi, Turner (2012)

This research proposes a theoretical model that describes the
relationship between
Leadership, Complexity and the Success of International Projects

H1. The presence of a leader with characteristics of authenticity will reduce the impact of complexity on the successful outcomes of an international project.

H2. Authentic Leadership mediates the impact of complexity and project management on the success of international projects.

Definition of Variables

Leadership and Complexity

Independent Variables	Dependent Variables
Project Complexity	Successful Project
Authentic Leadership	
Project Management	

Research Design

Authentic Leadership Questionnaire

A 16 point questionnaire developed by Avolio, Gardner, & Walumbwa (2007) operationalizes Authentic Leadership across 4 factors:

- Transparency
- Moral/Ethical Behaviour
- Balanced Processing
- Self Awareness

多因素真实领导力问卷 (MALQ 3.0 版团队成员)									
Multi-factor Authentic Leadership Questionnaire (MALQ Version 3.0 Team Members)									
名字 Name									
	偶尔	Occasionally	有时	Sometimes	相当频繁	Fairly often	经常或总是	Frequently or always	
	1		2		3		4		
1 班组长总是说他的意思.....							0	1	2 3 4
1 The team leader always said exactly what he meant.....							0	1	2 3 4
2 班组长承认了自己的错误.....							0	1	2 3 4
2 The team leader admitted his own mistakes							0	1	2 3 4
3 班长鼓励大家说出自己的想法.....							0	1	2 3 4
3 The team leader encouraged everyone to speak their mind.....							0	1	2 3 4
4 团队领导总是说出艰难的真相.....							0	1	2 3 4
4 The team leader always told the hard truth.....							0	1	2 3 4
5 班组长表现出的情绪完全符合他的感情.....							0	1	2 3 4
5 The team leader displayed emotions exactly in line with his feelings.....							0	1	2 3 4
6 团队负责人表现出与他的行为一致的信念.....							0	1	2 3 4
6 The team leader demonstrated beliefs that were consistent with his actions.....							0	1	2 3 4
7 团队领导根据他的核心价值观做出了决定.....							0	1	2 3 4
7 The team leader made decisions that were based on his core values.....							0	1	2 3 4
8 团队领导要求我们持有支持我们核心价值观的立场.....							0	1	2 3 4
8 The team leader asked us to take positions that supported our core values.....							0	1	2 3 4
9 团队负责人基于高标准的道德行为做出了艰难的决定.....							0	1	2 3 4
9 The team leader made difficult decisions based on high standards of ethical conc.....							0	1	2 3 4
10 团队负责人征求了挑战他根深蒂固的观点的观点.....							0	1	2 3 4
10 The team leader solicited views that challenged his deeply held opinions.....							0	1	2 3 4
11 团队负责人在做出决定之前分析了相关数据.....							0	1	2 3 4
11 The team leader analyzed relevant data before coming to a decision.....							0	1	2 3 4
12 团队负责人在得出结论之前仔细听取了不同的观点.....							0	1	2 3 4
12 The team leader listened carefully to different points of view before coming to con.....							0	1	2 3 4
13 团队负责人寻求反馈, 以改善与他人的互动.....							0	1	2 3 4
13 The team leader sought feedback to improve interactions with others.....							0	1	2 3 4
14 团队领导准确地理解了别人如何看待他的能力.....							0	1	2 3 4
14 The team leader accurately understood how others viewed his capabilities.....							0	1	2 3 4
15 团队领导知道什么时候该重新评估他在重要问题上的立场.....							0	1	2 3 4
15 The team leader knew when it was time to re-evaluate his position on important iss.....							0	1	2 3 4
16 团队负责人表明他了解具体行动将如何影响他人.....							0	1	2 3 4
16 The team leader showed he understood how specific actions would impact others.....							0	1	2 3 4

Leadership and Complexity

Research Method

Independent Variable

Authentic Leadership Questionnaire (ALQ)
Avolio, Gardner, & Walumbwa (2007)

Research Design

Research Method

Independent Variable

Project Complexity Questionnaire

Leadership and Complexity

Operationalization of the complexity factors is achieved through the 12 factor questionnaire developed by Geraldi and Adlbrecht (2007) evaluates 3 factors of complexity across the timespan of the project:

- Structural Complexity
- Technical Complexity
- Relational Complexity

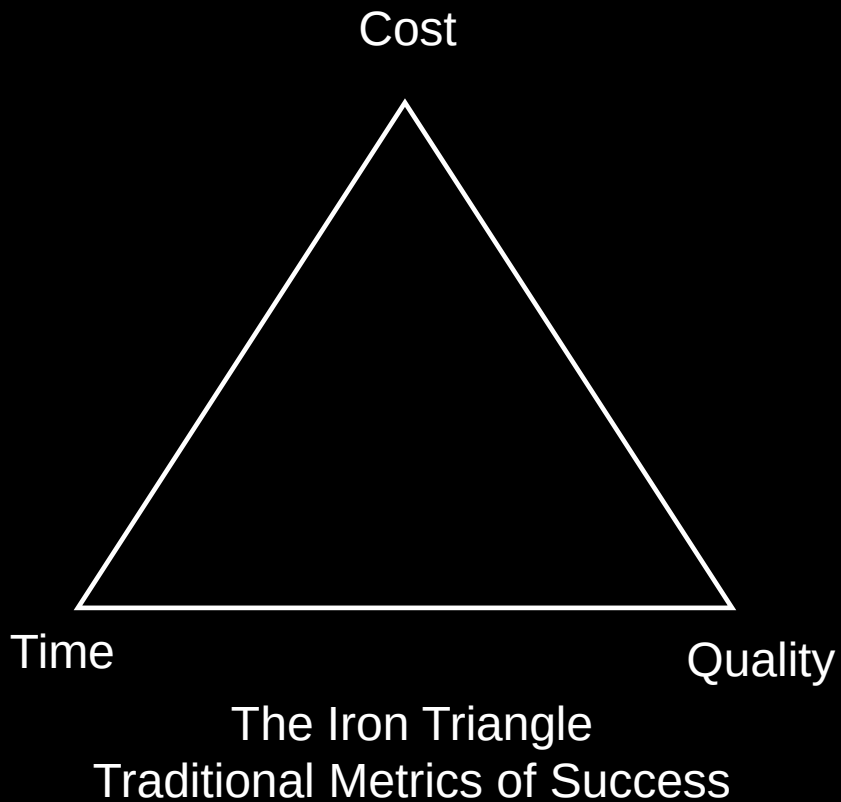
PROJECT COMPLEXITY QUESTIONNAIRE																																				
		Feasibility							Design							Construction							Closeout							Commissioning						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
A.	Project Structural Complexity																																			
	1 Maturity of the Project																																			
	2 Technical Specification Change Frequency																																			
	3 Impact of Technical Changes																																			
	4 Project Eccentricity (architectural design, function)																																			
B.	Technical Complexity																																			
	5 Volume of Data																																			
	6 Number of Stakeholders and Team Members																																			
	7 Interaction of individuals, organizations																																			
	8 Project Scale																																			
C.	Relational Complexity																																			
	9 Degree Internationalism																																			
	10 Number of disciplinary skills																																			
	11 Transparency of Information Flow																																			
	12 Empathetic Connection of Stakeholders																																			

Project Complexity Questionnaire (PCQ)
after Geraldi & Adlbrecht (2007)

Research Design

Research Method Dependent Variable Measurement

Leadership and Complexity



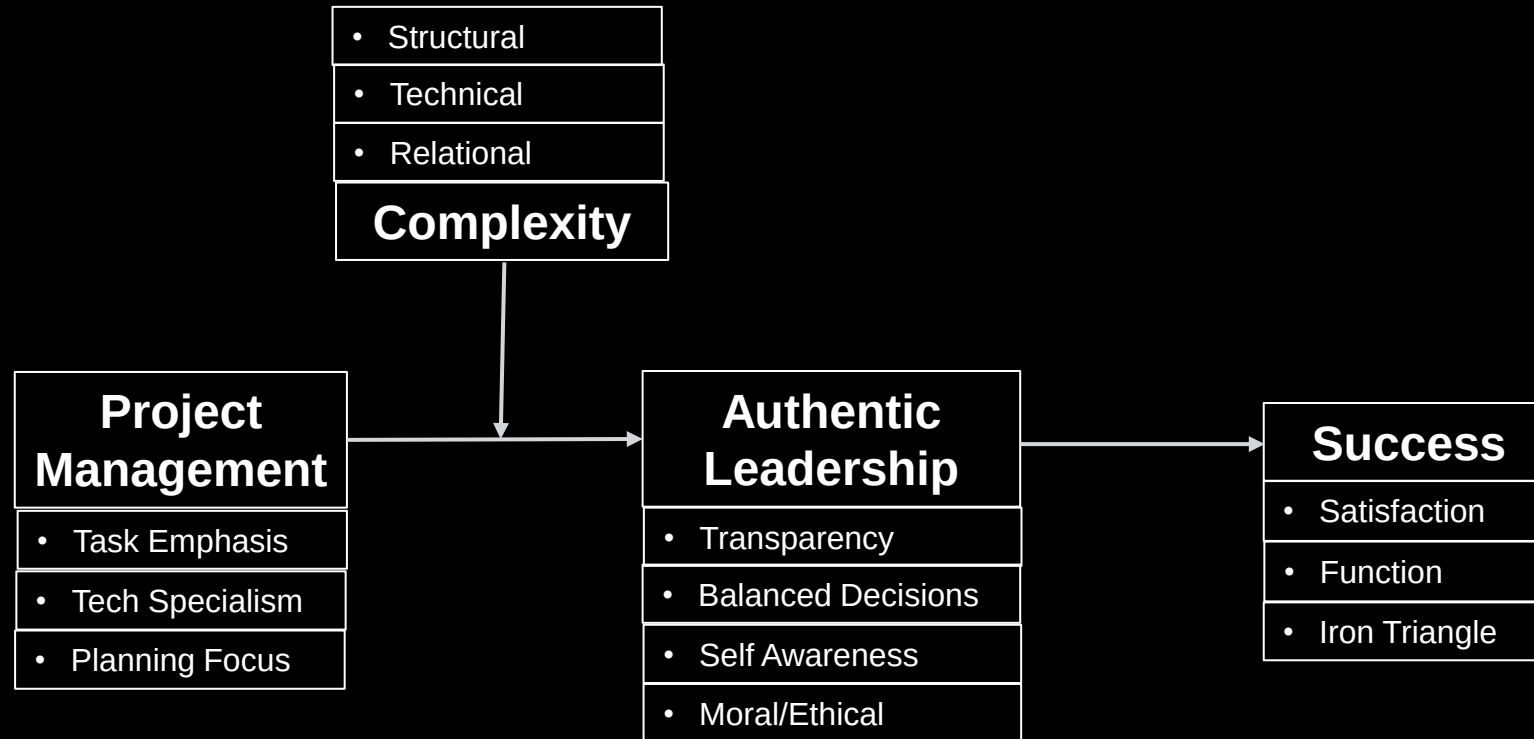
PROJECT SUCCESS MEASURES									
					1	2	3	4	5
1	Enduser Satisfaction								
2	Supplier Satisfaction								
3	Team Satisfaction								
4	Stakeholder Satisfaction								
5	Time, Cost Quality								
6	User Requirements								
7	Achieves Stated Purpose								
8	Customer Satisfaction								
9	Project Defined Success Criteria								

Turner and Muller (2006)

Project Success Questionnaire

A 9-point questionnaire developed by Turner and Muller (2006) operationalizes Success factors of: satisfaction, iron triangle and criteria unique to the project.

Framework of Relations



A deductive approach has been taken to the design a quantitative research method to explore the mediating effect of complexity on the project management of complex projects.

Three bilingual questionnaires make up the data collection package. The two dependent variables:

Leadership: multifactor authentic leadership questionnaire (ALQ) developed by Avolio, Walumbwa and Turner (1997) on a 5 point Likert Scale

Complexity: complexity questionnaire developed by Geraldi and Adlbrecht (2007) on a 7 point Likert Scale

And the dependent variable:

Project Success Factors, developed by Turner and Muller (2006) using 5 point Likert scale

Surveys will be delivered by proprietary platform such as Google forms, Survey Monkey or SoGo Survey.

Participants will be invited through professional association memberships such as the Institutes of Architects and Engineers, Association of Project Managers.

To test for bias between participant groups an ANOVA test will be undertaken.

Research Design

Research Method Sampling

Leadership and Complexity

Participants

Professional Consultants from China and abroad who have recently completed, international projects in China.

Sample size >100

Demographic Information

Sector: Culture, Sports, Infrastructure Commercial, Education, Industrial
Project Type: Arch, Eng, Int
Geography:
Age:
Project Value: CNY
Professional Certification:
Education Level:
Gender:

Sampling Method

Independent Dependent Variable
Questionnaires

- Project Management
- Complexity
- Authentic Leadership

Dependent Variable

- Success

Research Method Variable Measures

Leadership and Complexity

Measure		N	Mean	Standard Deviation	Number of Dimensions	Reliability Alpha Cronbach
Authentic Leadership						
Transparency					5	
Moral/Ethical Behaviour					4	
Balanced Processing					3	
Self Awareness					4	
Complexity						
Project Structural Complexity					4	
Technical Complexity					4	
Relational Complexity					4	
Project Success					9	

Data Collection & Analyses & Report

Reliability Test for Complexity Factors

Leadership and Complexity

		Structural Complexity	Technical Complexity	Relational Complexity
1	Project Maturity			
2	Specification Changes			
3	Impact of Change			
4	Uniqueness			
5	Data Volume			
6	# of Stakeholders			
7	Connectedness			
8	Project Scale			
9	Internationalism			
10	Disciplines			
11	Transparency			
12	Empathy			
	Cronbach Alpha Reliability Test			

Testing the reliability or accuracy of the classifications of the three complexity factors:

- Structural
- Technical
- Relational

$$Y = a + bX + e$$

Linear regression is used to find the relationship between the dependent and one or more independent variables.

Regression analysis constitutes an important part of a statistical analysis to explore and model the relationship between variables.

The dependent variable is denoted as Y, while the predictors or independent variables are referred to as X.

Regression analysis helps in predicting the value of a dependent variable based on the values of the independent variables.

The regression line in a simple linear model is formed as $Y = a + bX + \text{error}$, where the slope of the line is b, while a is the intercept. Errors in the line are the residuals which are normally distributed.

1. Definitions of success in construction have only recently challenged the decades old Iron Triangle of Time, Cost and Quality, a definition which fails to capture the multiplicity of stakeholders who have a direct or indirect interest in the outcome of the project.

This study expects to contribute to a better understanding of the factors which constitute project success.

2. Complexity has not featured as an area of study in project management until early 21st century. The increase in international projects, pervasive use of technology in design and construction, the increasing interests of stakeholders place an increased emphasis on relational interactions.

This study expects to add to a better understanding of the complexity in international projects

3. An increased emphasis on relationship management requires a change in management focus from the technically task-based skills of a project manager to broader and higher-level stakeholder management skills of authentic leadership.

This study expects to identify the mediating effect of authentic leadership in complex international projects

Introduction

- Problem Statement
- Research Objectives
- Background

Methodology

- Sampling Design
- Research Design
- Data Collection
- Data Analysis
- Limitations

Conclusions

- Summary Conclusions
- Recommendations

Appendices

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