

Relationships Between Project Success and Failure:

A Systematic Review and Analysis of Project Success and Failure Factors, Criteria, Relationships, and Definitions

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Introduction



Research Motivation

Failure and success literature typically assumes that there is a common, self-evident understanding of the meaning of failure and/or success as observed by (Drevin, 2014; Lyytinen & Robey, 1999; Ika, 2009; Iriarte & Bayona, 2020; Pace, 2019; Ramos & Mota, 2014; Taherdoost & Keshavarzsaleh, 2016).

When defined, there is no consensus on the definitions of failure and success in the field (Frefer et al., 2018; Dwivedi et al., 2015; Agarwal & Rathod, 2006; Lehtinen et al., 2014).

Literature suggests there is a relationship between success and failure but it is likewise rarely defined (Fowler & Horan, 2007; Ramos & Mota, 2014).

The lack of definition of failure and success and their relationship can lead to miscommunication and make project outcomes difficult to measure and assess (Koutsikouri et al., 2008; Toader et al., 2010).

Research Questions

- **RQ1:** How are failure and success related according to the sources in the literature set?
- **RQ2:** Are failure and success defined in the same way according to the sources in the literature set?
- **RQ3:** Do the factors that are perceived to lead to success appear at different proportions from those perceived to lead to failure in the literature set?
- **RQ4:** Do the criteria used to assess success at different proportions from those used to assess failure in the literature set?

Background

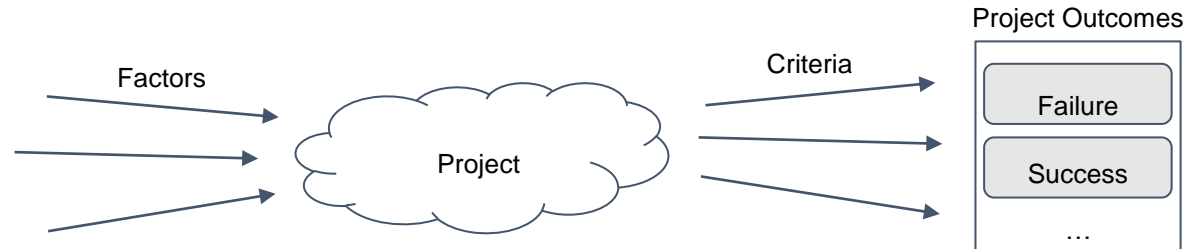


Project Outcomes, Factors, and Criteria

Project outcome: An assessed “end” state of a project, such as failure or success.

Factors: perceived to influence the project outcome.

Criteria: used to assess the project outcome.



Relationships Between Success and Failure

Spectrum: Failure and success are two extremes; projects can be positioned at failure, success, or any middle point (Frese et al., 2003; Connell et al., 2001; Procaccino & Verner, 2006).

Inverse: Failure and success are binary opposites; a project is either a failure or a success. (Lyytinen & Robey, 1999; Verner et al., 2008; Taherdoost, 2016)

Others:

- Addressing success factors reduces failure and vice versa (Dwivedi et al., 2015; Kasser & Williams, 1998; Lesca & Caron-Fasan, 2008; Uder et al., 2008; Verner et al., 2008).
- No relationship
- Unspecified relationship

Definition Aspects for Success and Failure

Subjective: Determination of project outcome is dependent upon the individual assessing the project outcome.

Multidimensional: The project outcome is assessed in separate considerations.

Comparative: The project outcome is compared to requirements or specifications determined before the initiation of the project.

Other

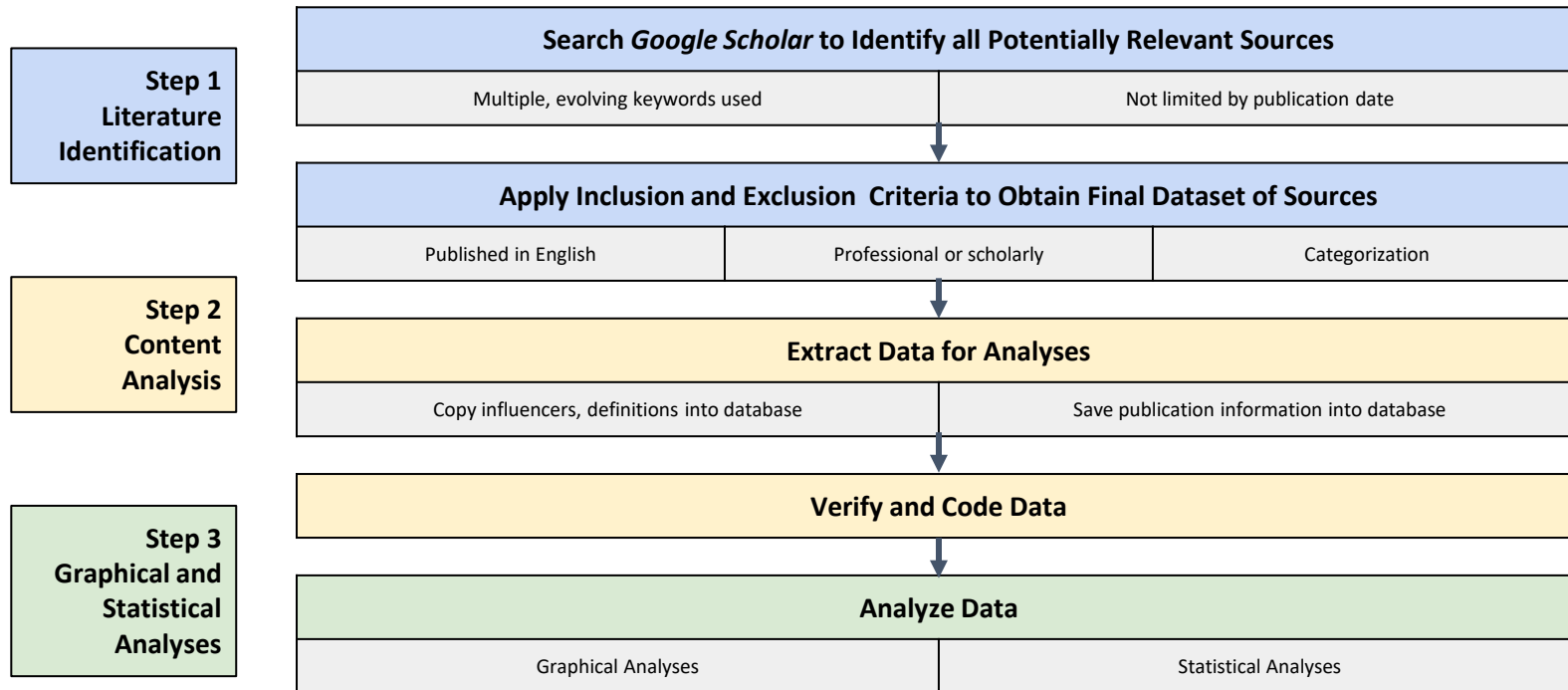
Methodology



Methodology Overview

Considerations:

- Research questions seek to understand perceptions in literature.
- Data can be extracted from a set of literature.
- The extracted data needs to be standardized in order to analyze.



Step 1: Literature Identification

Systematic literature review process identifies sources through a predetermined search strategy to provide a set of sources that can be analyzed as data (Kitchenham & Charters, 2007).

Multiple search terms were imputed into Google Scholar to cast a “wide net” for sources (Gusenbauer, 2019; Haddaway et al., 2015; Harzing & Wal, 2008; Loan & Sheikh, 2018; Martín-Martín et al., 2017, 2018).

Selection criteria were applied to determine if a source was included in the set.

- Scholarly or professional, digital, English, included a categorization

Step 2: Content Analysis

Content analysis is a systematic, repeatable process that allows for description and inference from large amounts of data (Stemler, 2000).

Content analysis can be used to identify patterns or trends in textual data with the advantages of being a direct analysis of a text of interest (Weber, 1990).

The content analysis included data extraction, coding, and inter-rater reliability.

Step 2: Data Extraction

Data was copied directly from the sources into a database including:

- Source information (title, date, author, link, abstract, etc.)
- Categorization title
- Categorization content (influencers and definitions)
- Project outcome definitions

1	Identif	Title	Date	Author	Does the paper consider? (cause vs assessment) (NEW)	Does the SCHEME consider both Success and Failure?	What does the SCHEME refer to? (failure vs success) (NEW)	Definition of Success	Type of Definition - Success	Definition of Failure	Type of Definition - Failure	Factors List Title	Upper Level Factors (if applicable)	Influencers (one cell list)	Influencers (as presented in source)	Definitions	Code	
67	3.18	2004	User and developer common knowledge: Effect on	2000	Tsch	Cause	Success	N/A	N/A	N/A	N/A	Constructs	None	Project Performer	Group problem solving	Group problem solving describes Team	T	
71	3.18	2005	Information Systems Project Manager Soft Compe	2008	Skulmoski	Cause	Success	N/A	N/A	N/A	N/A	Key competencies	None	Personal Attribute	personal attributes	(e.g., eye for details	Personal Attributes	E
78	3.18	2006a	The Effect of Intrinsic and Extrinsic Rewards for De	2008	Mahoney	Both Assessment	Yes	Success	Three dimensions of project success: client satisfact	Subjective A	N/A	Measurement of Success	None	Client Satisfaction	Client Satisfaction	reflected by user	Customer Satisfaction	C
81	3.18	2006b	The Effect of Intrinsic and Extrinsic Rewards for De	2008	Mahoney	Both Cause	Yes	Success	Three dimensions of project success: client satisfact	Subjective A	N/A	Variables (Rewards that relate to project success)	Extrinsic R	Pride/Sense of co Pro	N/A	Personal Attributes	E	
94	3.18	2008	Information Systems Success: The Quest for the I	1992	DeTone	Assessment	Yes	Success	Six dimensions	Areas - Eval	N/A	Dimensions or Categories of IS Success	System Quality, User satisfaction	People	the interaction of the informati	Customer Satisfaction	C	
102	3.18	2010	Research on information systems failures and suc	2015	Davis	Cause	Yes	Failure	Multiple dimensions	Areas - Eval	Multiple dimens	Areas - Eval	Failure Categories	Process, People, People			People	P
109	3.18	2011	Critical failure factors in information system project	2002	Yoo	Cause	Yes	Failure	Types of failure	Areas - Eval	N/A	Issues or Influences	Process, ex (This is top 5 fail, ITIS professional and knowled		The "people" category summer	People	K	

Step 2: Coding

Five codings:

1. **Relationship** between failure and success (spectrum, inverse, related but not specified, no mention, other)
2. **Project outcome** (failure, success, both)
3. **Definition** aspects of failure and success (subjective, multidimensional, comparative, other)
4. **Factor or criteria**
5. **Influencers**

Influencer Codes

People (PPL)	Process (PRS)	External Environment (EXT)	Attributes (ATT)	Other (OTH)
Commitment & Completion (CMT)	Analysis (ANL)	Ecological (ECO)	Complexity (CMX)	
Communication (COM)	Assembly & Production (APR)	Economy (EMY)	Effectiveness (EFC)	
Culture & Climate (CUL)	Business & Commercial (BCM)	External Competition (EXCP)	Efficiency (EFF)	
Customer & Stakeholder (CUS)	Change Management (CGM)	Geopolitical Influence (GEO)	Flexibility (FLX)	
Employees (EMP)	Control (CTL)	Legal (LEG)	Novelty (NOV)	
Expectations (EXC)	Design (DSN)	Outsourcing (OSR)	Quality (QUAL)	
Experience (EXP)	Documentation (DOC)	Public (PBLC)	Reliability (RBY)	
Health & Safety (HES)	Goals, Objectives, & Mission (GOM)	Resources (RES)	Resilience (RSL)	
Human Resources (HUR)	Information (IRM)	Supplier (SPLR)	Security (SEC)	
Incentives (ICT)	Integration (IGT)			
Knowledge (KNW)	Marketing (MKT)			
Management (MAN)	Material (MAT)			
Roles (ROL)	Monetary (MON)			
Team (TEM)	Organization (ORG)			
Training (TRN)	Outputs (OTP)			
Workplace (WPL)	Planning (PLN)			
	Policy (PLC)			
	Procurement (PRO)			
	Requirements & Specifications (REQ)			
	Risk (RSK)			
	Schedule (SCH)			
	Size & Scope (SZSC)			
	Technology (TEC)			
	Use (USE)			

Step 2: Inter-rater Reliability

Cohen's kappa was used to assess agreement between raters (Cohen, 1960; Sun, 2011).

A high agreement suggests the raters understood the data in similar ways.

Inter-Rater Reliability	
Type	Kappa (κ)
Level of Agreement for Project Outcome	.919
Level of Agreement for Factor or Criteria	.874
Level of Agreement for Influencers	.823
Level of Agreement for Definitions*	.651

*A weighted Cohen's kappa was used.

** An IRR could not be performed on the relationship coding due to the current structure of the data

Inter-Rater Reliability Scale [1]	
Value of κ	Strength of Agreement
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Good
> 0.80	Very Good

[1] Landis, J. R., & Koch, G. G. (1977). The Measurement of Observer Agreement for Categorical Data. *Biometrics*, 33(1), 159.
<https://doi.org/10.2307/2529310>

Step 3: Graphical & Statistical Analyses

Graphical visualizations to compare categories.

Statistical tests to determine categorical differences.

Findings



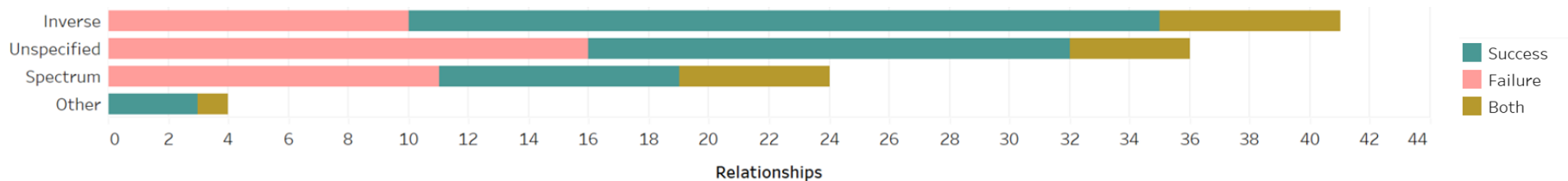
Findings

Research Question 1: How are failure and success related according to the sources in the literature set?

RQ1 | Finding 1

Inverse is the most common relationship described in the sources.

A chi-square test of independence was performed to examine the relation between project outcome considered (failure and success) and relationship (see Figure XX). There was not a significant relationship between the project outcome and relationship between success and failure, $\chi^2(8, 239) = 13.33, p = .101$, suggesting that similar relationships between failure and success may be described regardless of the project outcome considered.

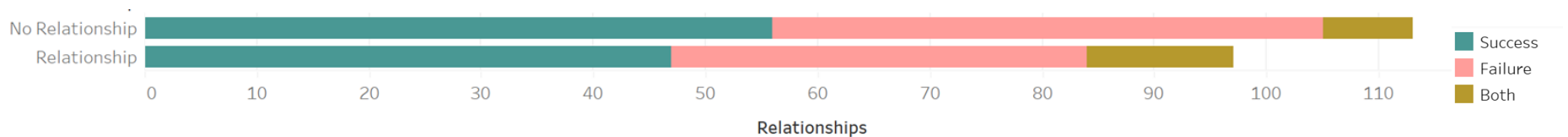


RQ1 | Finding 2

54% of sources do not state a relationship between failure and success.

A lack of stated relationship does not mean authors believe there is not one.

For literature focused on either failure or success, authors may not wish to introduce a second concept not central to their research.



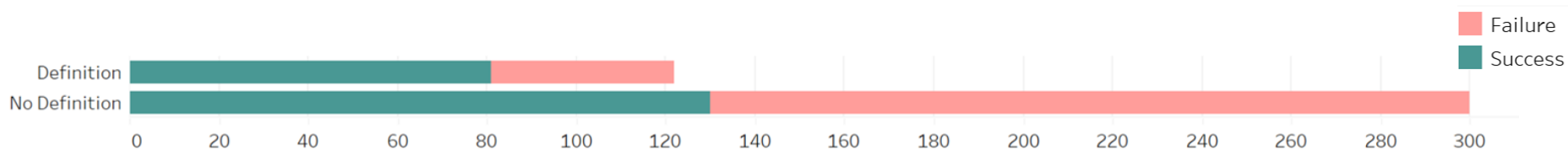
Findings

Research Question 2: Are failure and success defined in the same way according to the sources in the literature set?

RQ2 | Finding 3

Few sources define success or failure.

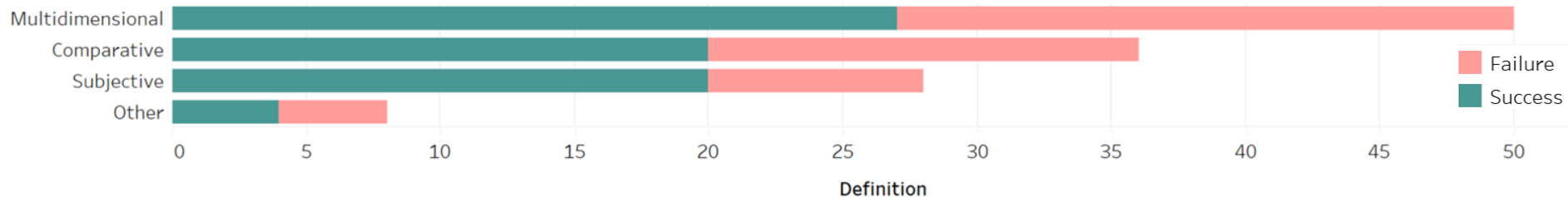
Providing no definition means these sources rely on the community having a common definition for failure and success in order to understand and integrate the sources' findings.



RQ2 | Finding 4

There are a variety of aspects to definitions that could change how a project is directed.

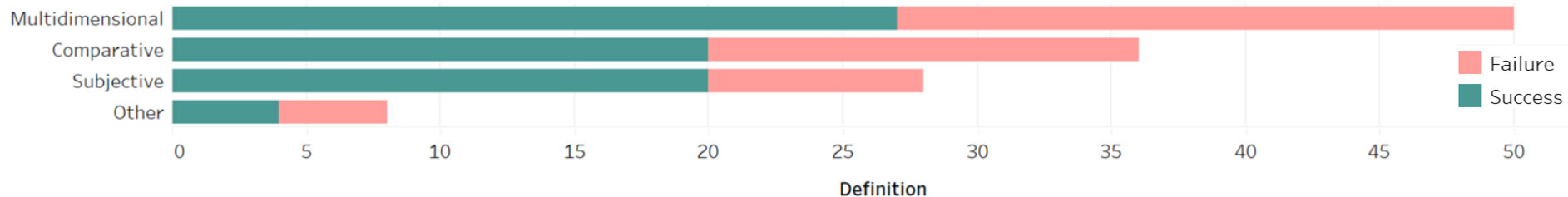
For example, using a purely subjective definition to failure or success such as “it depends who you ask” provides a different direction to practitioners than a purely predetermined definition such as “if you meet your requirements, the project is a success”.



RQ2 | Finding 5

There was not a significant relationship between the project outcome considered and definition, $\chi^2(3, 123) = 2.567, p = .463$, despite the high number of success criteria papers which often defined project outcomes multidimensionally.

This suggests that success and failure are defined with similar aspects.

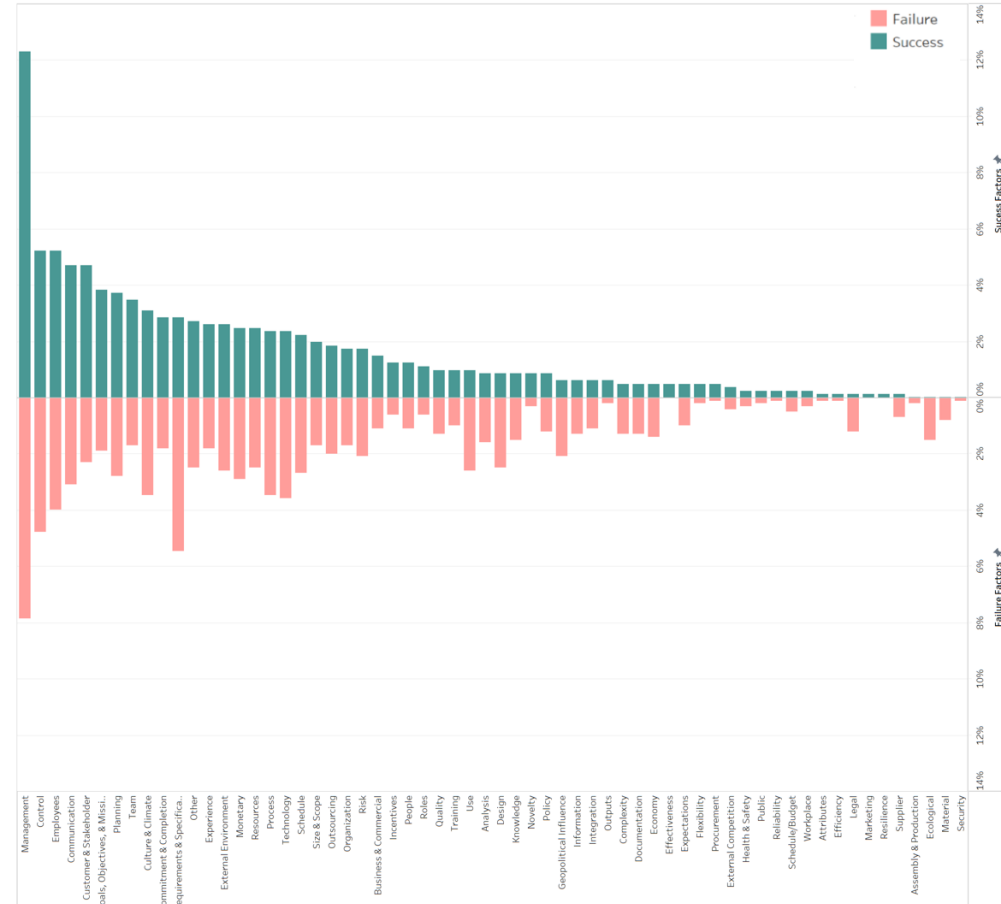


Findings

Research Question 3: Do the factors that are perceived to lead to success appear at different proportions from those perceived to lead to failure in the literature set?

RQ3 | Finding 6

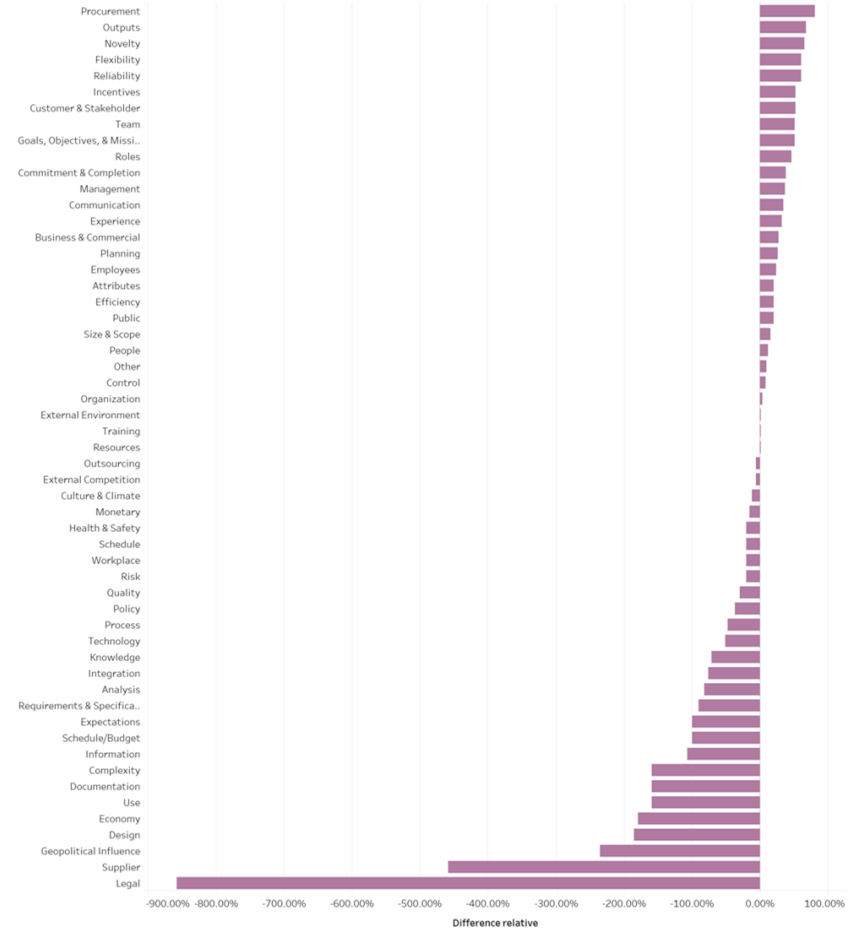
A chi-square test of independence was performed to examine the relation between project outcome (failure and success) and factors (see Figure 2). There was a significant relationship between the project outcome and factors, $\chi^2(61, 1813) = 141.7, p < .0005$. The proportion of factors are not the same for success and failure.



RQ3 | Finding 6

While there is a difference between success factors and failure factors, some factors appear to be important to both failure and success, such as management, control, employees, culture & climate, etc.

Many factors have low relative differences in proportion.

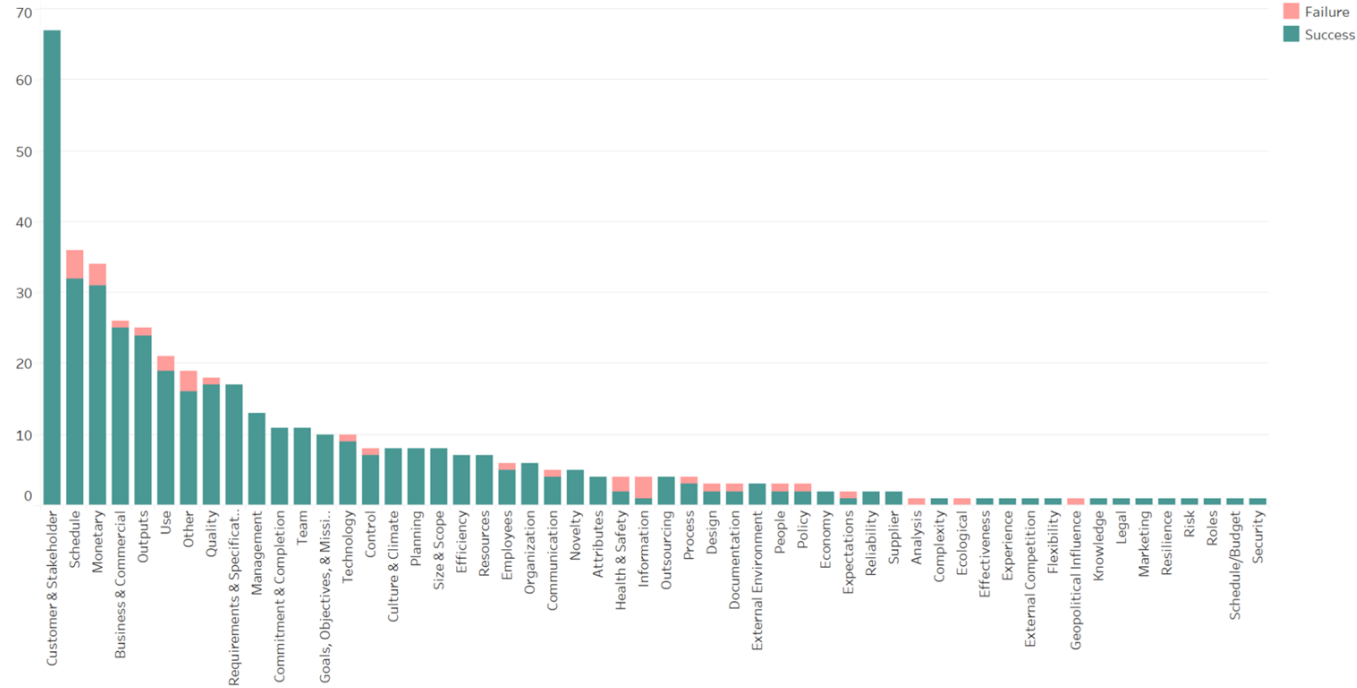


Findings

Research Question 4: Do the criteria used to assess success at different proportions from those used to assess failure in the literature set?

RQ4 | Finding 7

There were not enough failure assessment sources to perform a comparison of the success and failure criteria.



Conclusions



Research Implications

A definition must accompany factors and criteria research on failure and success. Otherwise it is possible that researchers may believe they are studying the same phenomena while their definitions differ.

Failure and success factors differ at the proportions in which they appear in categorizations, but have many common factors, suggesting there are commonalities in what influences failure and success.

Some of the literature suggests that project failure and success are intrinsically linked but much of literature does not explicitly address the relationship.

Practitioner Implications

Practitioners should be aware of definitions for project failure and success in project failure and success research and if the definitions align with the intentions for their project.

While this study does not seek to prove that the different definitions could impact either the research accompanying the definitions or practical management of a project, it did illustrate how a project could be declared a success by one definition aspect and a failure by another.

Therefore, assuming another's definitions match one's own definitions may lead practitioners to misapplying project failure and success research.

Limitations



Limitations

The categorizations evaluated in this research reflect the perceptions of their authors.

This research is a high level mapping of perceptions in literature, rather than an aggregated theory. The different relationships between failure and success, definition aspects of failure and success, criteria, and factors presented in this paper are not intended to be aggregated and used as a “meta-theory”.

Different relationships, definitions, criteria, and factors are necessary depending on what is being studied for specific projects.

Thank you! Questions?

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