

What Causes Failures in Projects?

Analyzing Factors in Failure Classification Schemes

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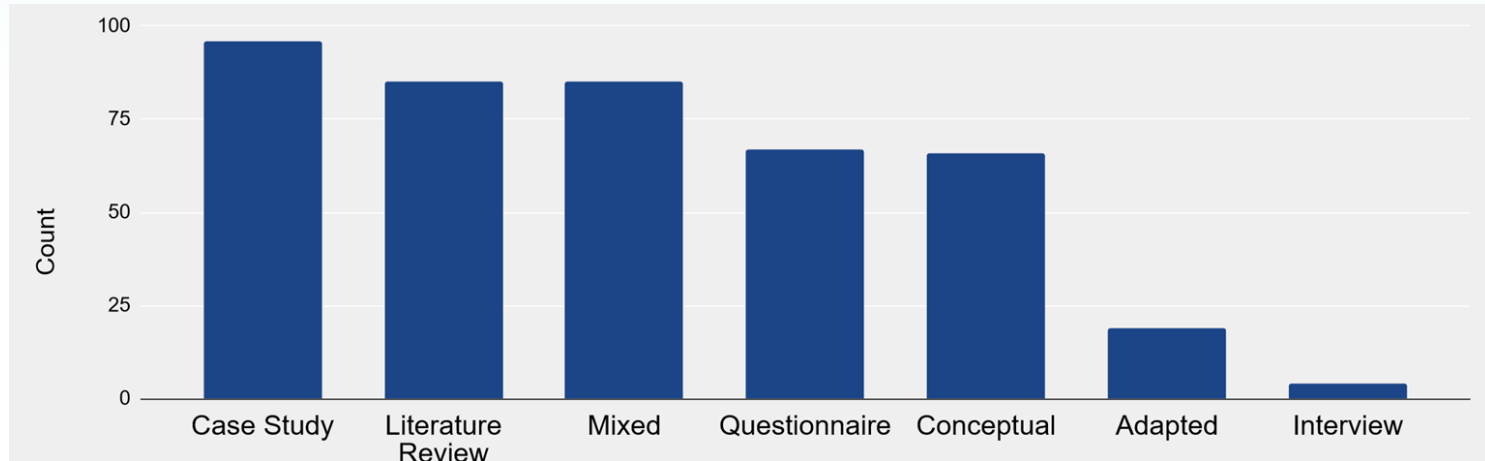


Research Questions

- Are there common factors leading to failures in projects?
- Do different disciplines address failures in projects through similar or distinct factors?
- Can a multidisciplinary classification scheme be formed with these factors?

Novelty

1. Previous research has studied factors that lead to failure through small literature reviews and case studies.



Previous Factor Studies Formation Methodologies

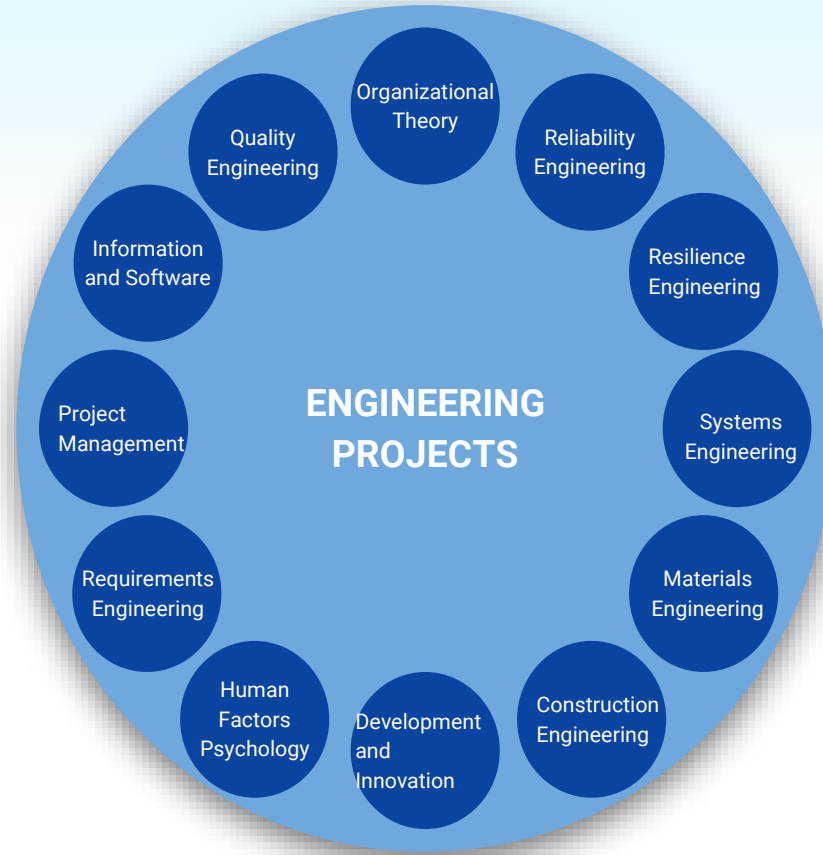
Novelty

2. Previous research is **disciplinary**.

Identified Disciplines	
Project Management	Development and Innovation
Organizations	Requirements Engineering
Human Factors	Construction
Information	Materials Engineering
Software Engineering	Systems Engineering
Reliability Engineering	Resilience Engineering
Quality Engineering	

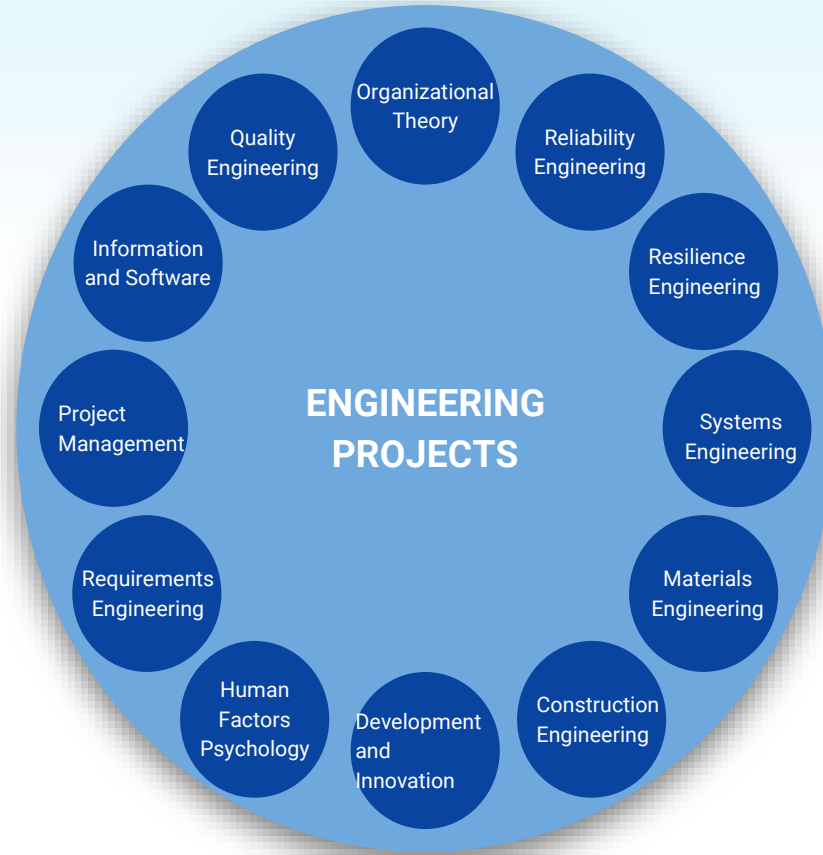
Previous Factor Studies Disciplines

Projects Involve Many Disciplines

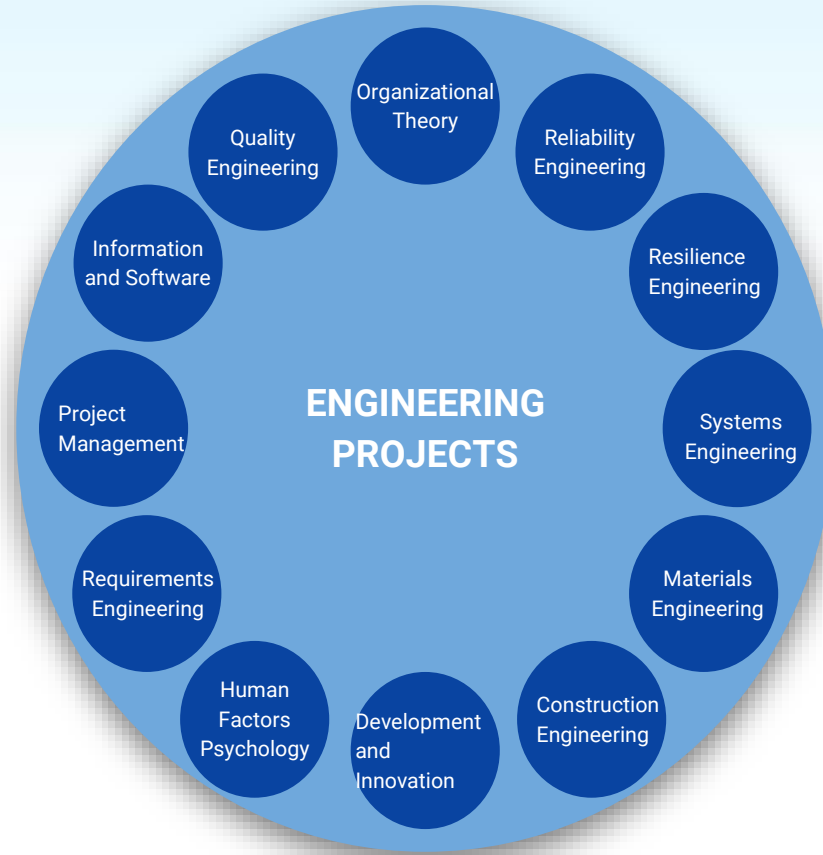


Projects Involve Many Disciplines

Studying failures in engineering projects from a single disciplinary perspective does not reflect the interdisciplinary nature of engineering projects.



Projects Involve Many Disciplines



This research will consider failure classification schemes in these twelve disciplines to create a more comprehensive analysis.

Methodology

Literature Review



Factor Identification



Factor Coding



Factor Analysis

Google Scholar

☒ Articles ☐ Case law

Methodology

Literature Review



Factor Identification



Factor Coding



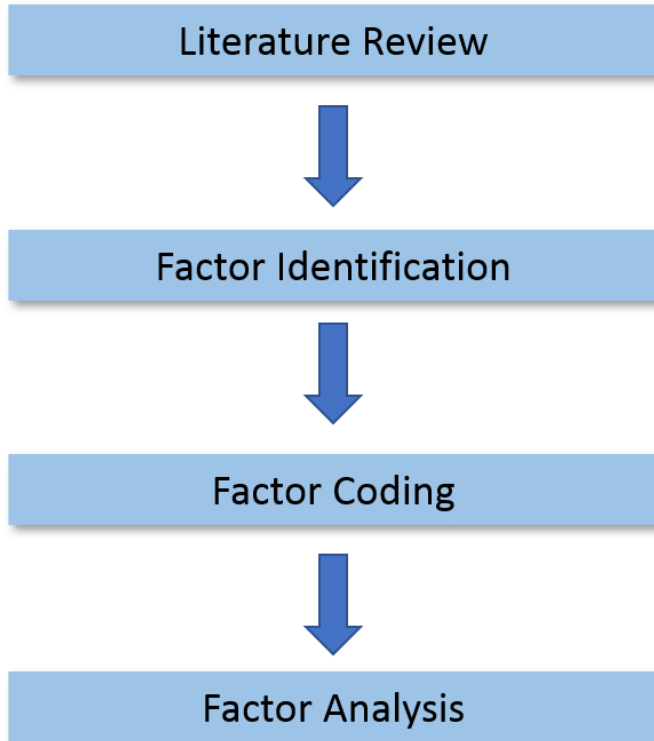
Factor Analysis

Google Scholar

☒ Articles ☐ Case law



Methodology



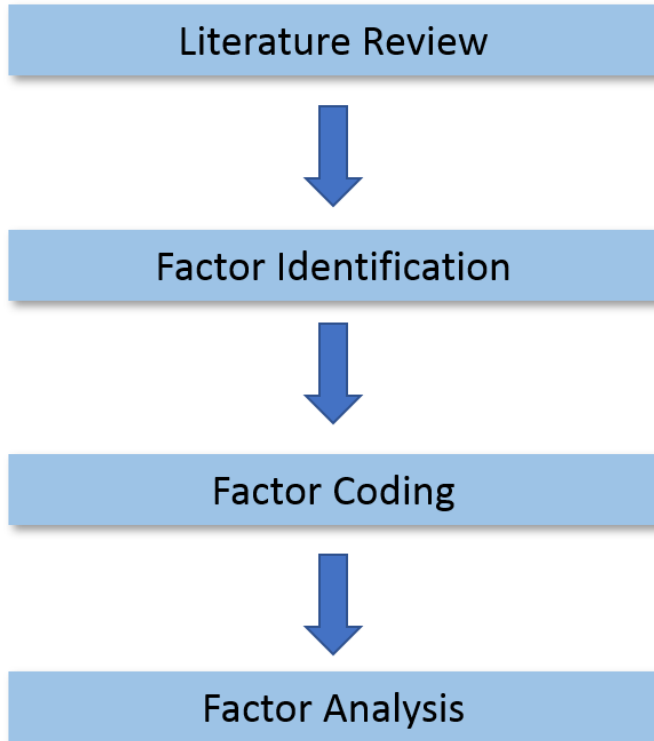
Google Scholar

☒ Articles ☐ Case law



NVIVO

Methodology

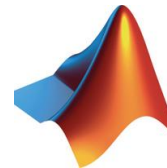


Google Scholar

☒ Articles ☐ Case law

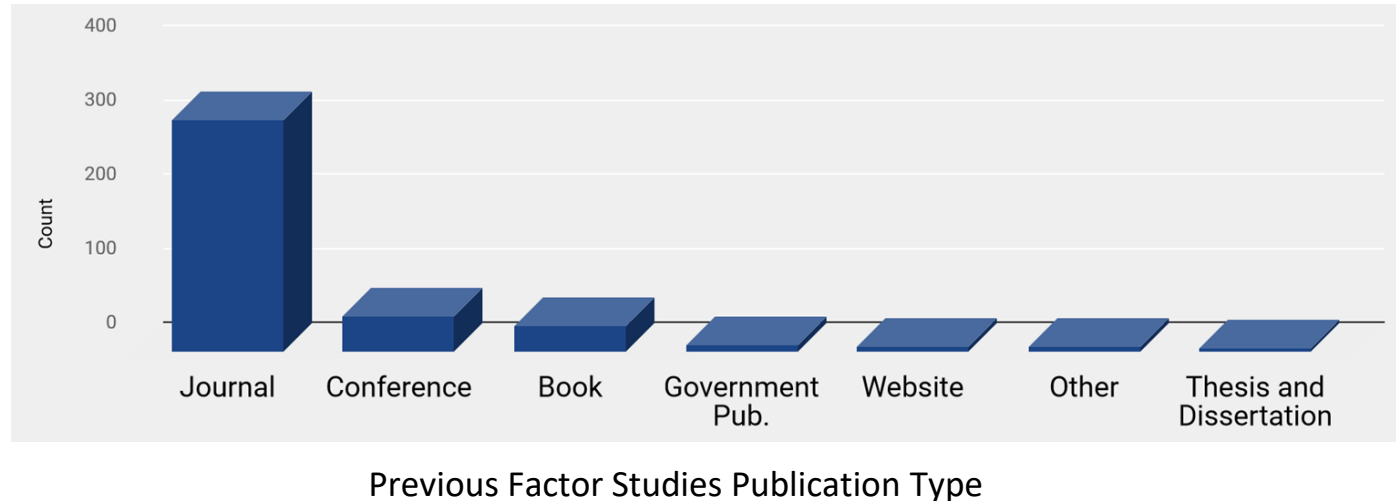


NVIVO



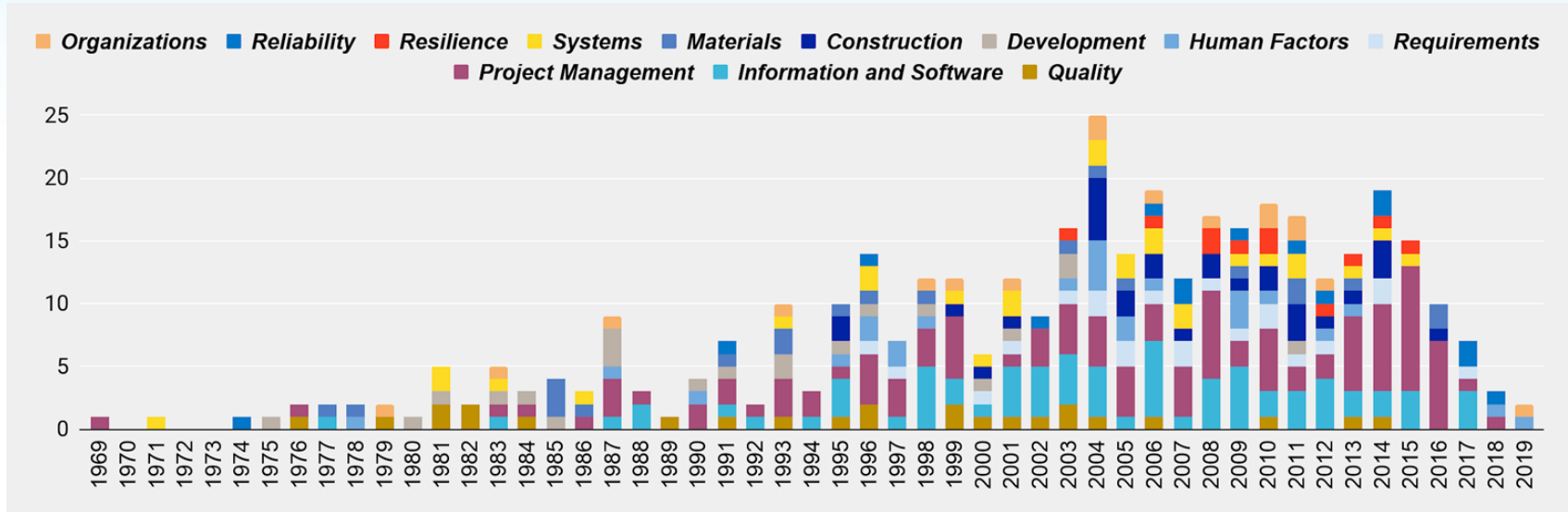
Literature Review

Identified journal articles, conference papers, technical reports, dissertations, books, and other scholarly works through Google Scholar Searches.



Literature Review

These studies are **disciplinary**.



Previous Factor Studies Disciplines by Year

Literature Review

Identified 435 failure classification schemes with **3884 factors**.

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How can 3884 factors be analyzed?

Literature Review

Identified 435 failure classification schemes with **3884 factors**.

How can 3884 factors be analyzed?

Descriptive coding can determine the most common factors out of the 3884 factors identified.

Coding

“Codes are labels that assign symbolic meaning to the descriptive or inferential information compiled during a study.” (Miles et al., 2013)

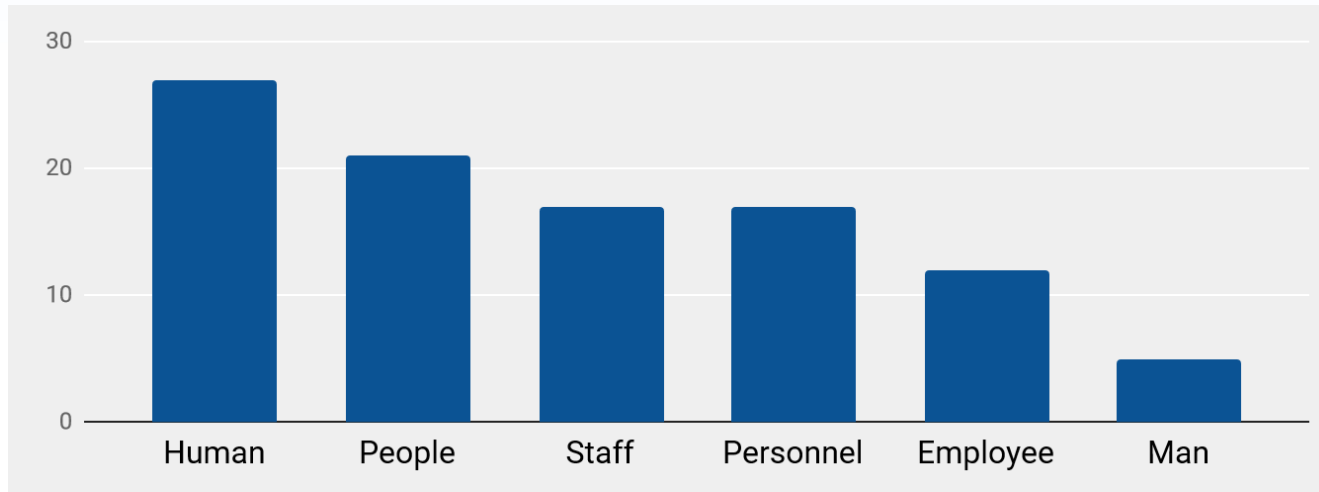
“Descriptive coding assigns basic labels to data to provide an inventory of their topics.” (Saldaña, 2009)

Coding

Why not word frequency?

Coding

Why not word frequency? **Authors use different words for the same meaning.**



Different Words for *People* Found in the Factors

Coding Example

	Disenza and Forman, 2007	Sumner, 1999	Dwivedi, Watell, Laumer, 2015	Pinto and Slevin, 1987	Irani, Sharif, Love, 2001	Islam, Houmb, 2010
<i>Factor</i>	<i>People</i>	<i>Personality</i>	<i>People</i>	<i>Personnel</i>	<i>Man</i>	<i>Human</i>
<i>Description</i>	Managing and motivating people; providing project team members with tools and techniques needed.	Failures caused by "people clashes".	Summarizes factors related to the people involved in a project.	Includes recruitment, selection, and training.	Human and organisational resources.	Deals with the non-technical issues relating to the practitioner, customer/user, and management that directly or indirectly influence the development.

Factors Coded Under *People*

Preliminary Common Factors

<i>Coded Factor</i>	<i>Count</i>
<i>Process</i>	31
<i>Schedule</i>	29
<i>Budget</i>	25
<i>People</i>	25
<i>Requirements</i>	24
<i>Communication</i>	23
<i>Management</i>	22
<i>Quality</i>	22
<i>Satisfaction</i>	20
<i>Organization</i>	18
<i>Technology</i>	17
<i>Team</i>	15
<i>Goals</i>	14
<i>Project Manager</i>	13
<i>Environment</i>	12
<i>Management Support</i>	12
<i>Resources</i>	12
<i>User Involvement</i>	12
<i>Analysis</i>	11
<i>Design</i>	11
<i>Knowledge</i>	11

Currently factors from 120 of the classifications from the database have been coded. Once all the classifications have their factors coded, the coded factors will be analyzed for differences in discipline.

Improving Reliability in Projects

How does this research help systems become more reliable?

- Understanding the causes of failures can lead to reducing them.
- Gaps in factors in disciplinary classifications means that a future multidisciplinary classification scheme based on this research could significantly reduce failures in organizations.

Next Steps

What will this research enable us to do in the future?

- Study interdependencies between factors to determine if combinations lead to failures more frequently.
- Study factors across lifecycle phases to determine which factors are most important during different stages.
- Form a multidisciplinary failure classification scheme that can identify and group important factors for analysis, based on evidence from this research.

References

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Questions?

