

What Do We Really Know? A 40-Year Scientific Realist Examination of Theory Testing in Project Management

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ABSTRACT

Purpose: The nature and extent of middle-range theory testing, an indicator of intellectual progress, is an unexamined area in project management scholarship.

Design/Methodology: We conducted a scientific realist analysis of all 4,033 articles published in three core project management journals over 40 years (1983 to 2023), and identified which theories were tested, how often, and their disciplinary origins.

Findings: Theory testing grew from 6% to 33% of empirical articles. We found 19.5% theory testing density, comparable to neighboring disciplines. We identified 441 distinct theories tested and a large volume of single tests of domestic theories. However, repeatedly tested theories are predominantly borrowed from other disciplines, indicating reliance on foreign theories for knowledge creation.

Practical Implications: We introduce a borrowed theory assessment framework and demonstrate its application to transaction cost economics, providing scholars and editors with criteria for evaluating foreign theories before adoption.

Originality/Value: This is the first systematic examination of theory testing patterns in project management, revealing growing maturity and legitimacy while identifying overreliance on borrowed theories.

1. Introduction

Project management scholarship is a legitimate scientific research discipline (Gauthier & Ika, 2012; Locatelli et al., 2023) that has evolved beyond technical, operational and interpersonal roots in engineering science, applied mathematics, and the social sciences (Karanja et al., 2024; Söderlund, 2004). It has experienced exponential growth across allied management disciplines such as strategic management, operations research, and organizational behavior (Kwak & Anbari, 2009) to include strategic, evaluative, and systematic approaches that address strategic organizational capability (Crawford et al., 2006). The scholarship encompasses a growing spectrum of research domains (e.g., risk management, stakeholder management, contract management, planning methodologies, leadership approaches, and organizational capabilities) and levels of analysis, from individuals and teams to projects, organizations, inter-organizational networks, firms, industry sectors, and broader societal impacts (Gerald & Söderlund, 2018; Turner et al., 2010). Further, the discipline has developed substantial theoretical sophistication, anchored in diverse epistemological orientations (Smyth &

Morris, 2007) reflecting different approaches to theorizing that range from positivist hypothesis testing to interpretive sense-making of project phenomena (Pollack, 2007).

Söderlund (Söderlund, 2011) characterized the conceptual evolution of the project management scholarship as advancing toward theoretical pluralism through seven schools of thought. The schools represented distinct epistemological orientations and methodological approaches ranging from optimization and contingency perspectives to behavioral and governance approaches. Building on this pluralistic foundation, Gerald and Söderlund (Gerald & Söderlund, 2018) addressed the diversity through their influential project studies framework. The framework combined three distinct research types (technical problem-solving, interpretive understanding, and emancipatory inquiry) with multiple levels of analysis to create a comprehensive map of theoretical evolution. Their framework depicted how different types of theorizing serve distinct purposes: technical approaches focus on optimization and control; interpretive approaches emphasize sensemaking and understanding; and emancipatory approaches critically examine power relationships. More recently, a systematic analysis confirmed that the

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paradigmatic, thematic, and methodological diversity represents not just topical expansion but fundamental epistemological maturation that positions project management scholarship to engage with complex organizational phenomena through multiple theoretical lenses (Padalkar & Gopinath, 2016)

Within this context of theoretical sophistication, concerns about theory borrowing have emerged. In 2023, Locatelli et al. (2023) issued a manifesto for project management research that discussed theory mainly through the lens of borrowing. The authors observed that “Project scholars increasingly borrow theories...from ‘neighbouring fields’ such as strategy, organization studies, human resources management, operations management, information systems, and innovation management” (p. 6). The manifesto encouraged theory cross-fertilization (Davies et al., 2018) with foreign grand theories (see Bacharach, 1989; Gregor, 2006) to examine underlying assumptions about projects.

Foreign theories are often viewed enthusiastically by emerging disciplines because they provide an air of legitimacy (Merton, 1973) and convey a scientific image (Hambrick, 2007). However, a liberal borrowing policy can afford reference disciplines a degree of power over disciplinary progress. For example, reference disciplines may “...set the standards by which the quality and maturity of [project management] research should be measured” (Baskerville & Myers, 2002, pp. 1, brackets added). Further, reliance on foreign theories can “...hinder the development of project research as a separate discipline over the longer term” (Ahern et al., 2014, p. 1248) see also (Bredillet, 2008; Morris, 1994; Packendorff, 1995; Söderlund, 2004), increasing the risk of the discipline being subsumed or marginalized.

Scholars in well-established neighbouring disciplines have assessed the legitimacy and scope of foreign theory influence. For example, Green and Shapiro (1994) concluded that political science suffered from borrowing economics theories: “...the stature of rational choice scholarship does not rest on a readily identifiable set of empirical successes” and, “...the case has yet to be made that these models have advanced our understanding of how politics works in the real world” (pp. 5–6). Ghoshal (2005) raised similar concerns in management and organization studies (MOS) about economic theory influence and the implications for education and practice. Such cautionary tales clearly resonate with project management scholars, given recent concerns about foreign theories (Ivory & Alderman, 2005; Keil, 2022; Tywoniak et al., 2021).

The purpose of our research was to investigate the nature and extent of theory testing and shed additional light on disciplinary intellectual progress. The scope of our paper is not on project management practice or empirical research that observes practice. While comprehensive reviews document the discipline’s expansion across topics, levels, and theorizing approaches, theory testing represents the empirical foundation through which theoretical claims establish their validity and explanatory power. Our primary research question was: What is the nature and extent of theory testing in project management scholarship? Our scientific realist approach focused on empirical testing of middle-range theories, which contain explanatory and predictive theoretical claims. We also addressed the following sub-questions. What theories are tested the most? What are the disciplinary origins of borrowed theories?

We manually analyzed and coded all articles published in the three core project management journals between 1980 and 2023 (International Journal of Project Management [IJPM], Project Management Journal [PMJ], and the International Journal of Managing Projects in Business [IJMPB]). We identified middle-range theories according to specific criteria from the philosophy of science and the MOS literatures (c.f. Rudner, 1966; Whetten, 2002). Our research offers several contributions to the scholarly project management literature. First, we observe growth in theory testing and a meaningful level of domestic theorizing. We conclude that realist project management scholarship displays a growing maturity and legitimacy. However, we express concern about reliance on foreign theories for knowledge development, i.e., multiple

tests of theories.

Second, we reveal the balance of empirical and conceptual articles. Our results show that published research has become increasingly characterized as empirical. The commensurate decline of conceptual papers, a trend observed in neighbouring MOS disciplines, may be attributed to changing editorial preferences, doctoral training, and promotion and tenure requirements. The result is that scholars introduce new domestic theories, which are limited in scope due to manuscript length restrictions, in empirical submissions.

Third, we introduce a borrowed theory assessment framework and apply it to transaction cost economics (TCE), an economics theory that has been tested in empirical project management research. We demonstrate how to use the assessment framework and reveal concerns about the value of TCE to project management scholarship.

In the following section, we explain the relevance of our research agenda within the greater philosophical context, acknowledge the plurality of perspectives in MOS scholarship, and note that our philosophical stance, research method, and subsequent results are not intended to exclude other ways of knowing and understanding. Then, we discuss theory development, domestic theory, foreign theory, and theory borrowing. Next, we describe the research method and discuss our results. Finally, we conclude with study limitations and future research directions.

2. Philosophical considerations

Konstantinou and Müller (2016) assert that “Philosophies underlie our thinking; our social and personal existence; our innovation; and, ultimately, the solutions and the actions we undertake to address the challenges we face collectively and individually” (p. 3). Hence, the hard and soft paradigms and philosophies underpinning them (Pollack, 2007) inform project management research. The hard (quantitative) paradigm assumes a knowable reality. Scholars working in this object-oriented/objective paradigm subscribe to rationalistic, positivistic, scientific, and reductionist methodologies to reveal lawlike generalizations and scientific laws. Knowledge development occurs via theory testing and replication efforts. The soft, or qualitative, paradigm does not assume an objective, knowable reality. Scholars working in this paradigm subscribe to, for example, hermeneutic, qualitative, phenomenological, interpretive, reflective, inductive, and ethnographic methodologies.

Pollack (2007) found a growing acceptance of soft paradigm methodologies, despite the historical dominance of the hard paradigm in project management scholarship (Hair & Sarstedt, 2021). Numerous works have subsequently promoted enhanced consideration for soft paradigm methodologies. For example, Gauthier and Ika (2012) argued that “...a new and integrated ontological framework is needed to inform and stimulate the current and future research in project management” (p. 19). Floricel et al. (2014) explored the potential value of activity, actor-network, and structuration theories. Frame (2016) encouraged scholars to explore the realism versus antirealism debate to build a meaningful philosophy of project management. According to Boisot and McKelvey (2010), there may be a way to merge the hard and soft paradigms. They articulate a philosophical ‘bridge’ between the paradigms by replacing atomistic ontology assumptions underpinning the Gaussian distribution with those of a power-law distribution. The solution may have merit across MOS disciplines (c.f. Crawford et al., 2015), including in project management scholarship (Bredillet, 2015), assuming that it holds up to philosophical scrutiny.

There has been a growing impetus for project management scholars to declare their philosophical and methodological stances (Ika & Bredillet, 2016; Müller & Klein, 2018; Müller & Locatelli, 2023). Accordingly, we adopt a scientific realist perspective (Smith, 2006), situated in the hard paradigm. Scientific realism emphasizes causal mechanisms and empirical validation (Van de Ven, 2007), using rigorous theory testing to determine the empirical status of a theories. It relies on Hunt’s

(2012) inductive-realist model of truth approximation, which includes the four interrelated tenets presented in Table 1. Hunt argues the tenets support the view that "...the long-term success of any scientific theory provides reason to believe that something... actually exists" (p. 5).

2.1. Theory

The central mission of business scholars and educators is to conduct research that contributes knowledge to a scientific discipline and to apply that knowledge to the practice of management. To do this, the authors need to design their research so that it provides understanding of the practical problems facing a profession, and they need to develop good theory so that their research advances the knowledge that is relevant to both the discipline and practice. (Mentzer, 2008, p. 72)

The notion of theory greatly interests philosophers and scholars across the social sciences (Dubin, 1976; Popper, 1963), including project management (Brunet, 2022; Jugdev, 2008; Söderlund, 2004). Svejvig (2021) asserts that "...it is difficult to overstate the importance of theory in a research endeavor." (p. 849). The author's comprehensive survey of seminal philosophical and scientific discussions on theory revealed the existence of several types of theory across the social sciences (c.f. Cornelissen et al., 2021; DiMaggio, 1995; Lalonde et al., 2010; Niederman et al., 2018; Sutton & Staw, 1995; Weick, 1995). He proposed four main types for project management scholarship: predictive, prescriptive, descriptive, and practice.

Theories are often categorized by level: grand, middle range, and grounded (Layder, 1993). Grand theories are very abstract, broad-scope, and philosophical in nature, rendering them difficult to test and/or apply in practice (Cartwright, 2020). Often, they provide the backdrop for the development of testable middle range theories. A theory of the middle range has less abstraction and a narrower scope than a grand theory. Further, it addresses specific phenomena and reflects real-world practice (Meleis, 2011). The design of middle-range theories, according to Bourgeois III (1979), requires seven components: partitioning of the topic under investigation, method of theory construction, review of literature, construction of theory-induction from empirical base, extension of theory-deduction into propositions, metaphysical elaboration, and conclusion (see also Whetten et al., 2009 for similar components). By comparison, a grounded theory is inductive, arising from the analysis of empirical data collected in a specific context. With refinement and a broadening of scope, a grounded theory can become a theory of the middle range.

There are many perspectives on optimal methods for theory development. For example, Argyris and Schön (1974) suggest that theories can come into being by observing what people do (theory-in-use) versus what they say they will do (espoused theory). van Rooij and Baggio (2020) argue for mechanistic explanations of capacities and *a priori* verisimilitude. Ketokivi et al. (2017) draw attention to the relevance of analogical foundations (e.g., TCE views firms as governance structures). Whetten et al. (2009) argue that theory development involves an appropriate and parsimonious set of variables, constructs, and concepts (factors); the relationships between them; and models or frameworks to interpret the patterns (otherwise known as the theoretical logic or glue).

The realist perspective emphasizes the development and rigorous

Table 1
Tenets of Scientific Realism.

Element	Description
Classical Realism	The world exists independently of perception; theories approximate this reality through inquiry
Fallibilistic Realism	Scientific knowledge is always tentative and improved through critical scrutiny
Critical Realism	Reality is complex and structured; interdisciplinary approaches help uncover deeper mechanisms
Inductive Realism	Empirical patterns allow for generalization and the development of approximate truths

testing of theories (Brendel et al., 2023; Easley et al., 2013; Tsang & Kwan, 1999), specifically middle-range ones (Boudon, 1991; Merton, 1968; Pinder & Moore, 1980; Weick, 1974). Davies and MacAulay (2023) indicate that the middle-range "...is where scholars publish most of their theoretical research on projects in management journals" (p. 213).

Theory *building* involves systematically creating a new theory or modifying a theory for theory testing to advance knowledge and improve practical applications (Oswick et al., 2011). Theory *testing* involves hypothetico-deductive, rigorous, and methodical research (Colquitt & Zapata-Phelan, 2007) focused on underlying processes and structures and predictive (cause and effect) relationships, to explain a phenomenon or predict an outcome (validity and reliability) (Hair & Sarstedt, 2021; Oswick et al., 2011).

Rudner's (1966) definition of theory is predictive and central to the realist perspective: "...a systematically related set of statements including some lawlike generalizations, that is empirically testable" (p. 10). This definition aligns with prominent philosophers and theorists emphasizing testability, structure, and explanatory power (Bacharach, 1989; Bunge, 1967; Campbell, 1990; Hambrick, 2007; Kaplan, 1964; Popper, 1959).

Rudner's (1966) definition of theory involves three core requirements. First, a theory must include systematically related statements, though Rudner allows for narrow conceptualizations as long as their components cohere meaningfully. Second, it must contain lawlike generalizations, predictive "if/then" statements that possess empirical content, reflect nomic necessity (i.e., are not coincidental), and are subsumed within broader bodies of knowledge. Third, empirical testability is essential: a theory must be capable of being evaluated against real-world data to determine its empirical adequacy (Hunt, 1991). Empirical content alone is not enough unless it enables confrontation with reality.

The intellectual considerations of several other key scholars also inform the definition of theory. The first is Whetten's (2002) modeling-as-theorizing framework, which indicates four practical elements for complete theory engagement: "what" (the constructs or variables), "how" (the relationships between them), "why" (the underlying rationale or mechanism), and "who/where/when" (the boundary conditions). The second is Sutton and Staw's (1995) criteria for insufficient theorizing. The scholars argue that "...it is much easier for a set of reviewers and editors to agree on a carefully crafted empirical piece that has little or no theory than it is for them to go along with a weak test of a new theoretical idea" (pp. 381–382) because references, data, variables, diagrams, and hypotheses alone do not constitute theory. Meaningful theorizing requires these elements and clear descriptions and explanations of the relationships among them (Campbell, 1990; Weick, 1995).

2.2. Domestic theory and borrowing foreign theory

Davies et al. (2018) define a research discipline as "...a topically, epistemologically, and institutionally demarcated field of study that is maintained by an affiliated community of scholars" (p. 965). A research discipline should have domestic theories that are tailored to its problems, questions, literature base, and related arguments (Oswick et al., 2011). Domestic theories promote conceptual clarity and coherence and develop tools and frameworks for practitioners (Shepherd & Suddaby, 2017). Focusing on domestic theories enables scholars to address discipline-specific challenges, related knowledge development, and directions (Cornelissen and Durand (2014). Furthermore, developing new theories stimulates innovation by challenging established thinking methods.

A foreign theory is designed with an idiosyncratic agenda, metaphors, and methodological predispositions to predict and explain phenomena in another discipline (Lalonde et al., 2010; Markóczy & Deeds, 2009; Oswick et al., 2011; Suddaby, 2010). Theory borrowing involves taking a foreign theory – that explains a specific phenomenon in one

Table 2
Historical Engagement with Theory in Project Management Scholarship.

Reference	Focus	Paradigm Orientation	Type of Theoretical Engagement	Key Contribution or Insight
Gilbert (1983) (IJPM)	Application of leadership theory	Hard	Borrowing / Adjusting	Discussed the use of leadership theories in project contexts
Betts and Lansley (1995) (IJPM)	Content analysis of IJPM	Both	Domestic Theory	Found limited attention to theory development in early IJPM articles
Shenhar and Dvir (1996) (Other)	Toward a typological theory	Hard	Domestic Theory Development	Early efforts to develop domestic PM theories by creating typologies
Söderlund (2004) (IJPM)	Middle-range theories	Hard	Domestic Theory Development	Argued for developing middle-range theories within project management
Jugdev (2004) (PMJ)	Borrowing Resource-based view	Hard	Borrowing	Suggested using the Resource-Based View for PM advantage
Winter et al. (2006), (IJPM)	Theory development	Both	Domestic Theory Development	Promoted broader conceptual development within PM
Cicmil (2006) (PMJ)	Reframing project management	Soft	Domestic Theory Development	Promoted reflective and socially grounded theorizing in PM
Koltveit et al. (2007) (IJPM)	Content analysis	Both	Borrowing	Mapped dominant paradigms in PM research
Shenhar and Dvir (2007) (PMJ)	Domestic theory and borrowing	Hard	Domestic Theory & Borrowing	Showed integration of both approaches in practice
Leybourne (2007) (PMJ)	Borrowing management theory	Soft	Borrowing	Advocated for using management theories in PM phases
Artto et al. (2009) (IJPM)	Bibliometric mapping of program management	Hard	Borrowing & Mapping	Traces how program management research evolved and identifies fragmentation, informing later theory development needs
Lalonde et al. (2010) (PMJ)	Pragmatist theories	Soft	Domestic Theory Development	Suggested pragmatism as a foundation for PM theory building
Killen et al. (2012) (IJPM)	Strategic management theories	Hard	Borrowing	Argued for leveraging strategic management theories in PPM
Ahlemann et al. (2013) (IJPM)	Lack of domestic theory	Hard	Borrowing	Highlighted limited domestic theory, leading to heavy borrowing
Reich et al. (2013) (IJPM)	Domestic theory building	Both	Domestic Theory Development	Encouraged the development of domain-specific PM theories
Drouin et al. (2013) (Other)	Borrowing from other disciplines	Both	Borrowing	Advocated for diverse theoretical input into PM
Biesenthal and Wilden (2014) (IJPM)	Project governance	Hard	Borrowing / Adjusting	Used text mining to trace borrowed theory adaptation
Florice et al. (2014) (IJPM)	Borrowing activity theory	Soft	Borrowing	Proposed alternative theories are better suited to PM's complexities
(Drouin & Jugdev, 2014) (IJMPB)	Strategic management theory	Hard	Borrowing	Urged the use of strategic management lenses in PM
Konstantinou and Müller (2016) (PMJ)	PM as knowledge work	Both	Domestic Theory Development	Positioned PM as a knowledge-based practice needing tailored theory
Nikazar and Bourgault (2017) (IJPM)	Middle-range theory	Hard	Domestic Theory Development	Focused on middle-range theory development within PM
(Artto et al., 2017) (IJMPB)	Sectoral literature review	Both	Domestic Theory Development	Analyzed theoretical grounding across project-intensive sectors
(Davies et al., 2018) (Other)	Bridging disciplines	Both	Borrowing	Critiqued poor learning across disciplines; emphasized cross-disciplinary theory building
Svejvig (2021) (IJPM)	Meta-theoretical framework	Both	Domestic Theory Development	Outlined a multi-level framework to guide PM theory development
Tywniak et al. (2021) (PMJ)	Discipline-level theorizing	Soft	Domestic Theory Development	Advanced calls for PM-specific theorization
Pinto (2022) (IJPM)	Theory expansion	Both	Borrowing / Adjusting	Examined processes by which theories are expanded in PM
Geraldi et al. (2022) (IJPM)	Cross-fertilization (M&A + PM)	Hard	Borrowing / Adjusting	Proposed conceptual links to build a theory of the project-based firm
Keil (2022) (PMJ)	Caution in theory borrowing	Hard	Borrowing	Warned against premature or uncritical theory borrowing

social context – and using it to explain a different phenomenon in a different context (Murray & Evers, 1989).

For several reasons, a researcher should judiciously transfer coherent, fully formed theories from outside a discipline. First, a foreign theory can adversely affect research, policy, and decision-making (Pfeffer, 2005). Second, borrowing, which can occur vertically or horizontally across levels of analysis, risks the neglect of contextual differences essential for knowledge production (Shepherd and Suddaby 2017). Third, a reliance on theories from other disciplines raises concerns about creativity, independence, and disciplinary status (Cornelissen and Durand 2014). Fourth, the typical workaround for borrowing, an ad hoc adjustment, may invalidate a theory in the absence of careful consideration for philosophical underpinnings and assumptions (Gillies, 1993: the Quine-Duhem thesis). Finally, unchecked borrowing can interfere with the growth of domestic theory and/or

signal its irrelevance.

The theories mentioned in project management scholarship have been examined in two studies. The first study used bibliometric methods to reveal the theories discussed in seven journals that published project management research from 1999 to 2013 (Johnson et al., 2016). Dominant borrowed theories were identified including the theory of constraints (operations), actor-network theory (psychology), fuzzy sets (mathematics), utility theory (economics), and stakeholder theory (strategic management). The second study reported similar findings via a bibliometric analysis of articles published between 2000 and 2019, revealing commonly borrowed theories from psychology, mathematics, and management (Karanja et al., 2024).

We situate our study within the broad pattern of theoretical engagement in project management scholarship. Table 2 presents a representative dataset of such research published in the leading journals

Table 3
Core Theoretical Distinctions and Relevance to this Study.

Conceptual Distinctions	Descriptions	Relevance to this Study
Borrowed vs. Domestic Theory	Borrowed theories originate in other fields; domestic theories emerge from project contexts	Our analysis is a scientific realist examination of theories tested in project management scholarship
Theory Use vs. Theory Testing	Theory use refers to framing or citing; testing involves empirical examination of relationships	We assess explicit theory testing as a sign of theoretical maturity
Grand vs. Middle-Range Theory	Grand theories are abstract and broad; middle-range theories are contextual, empirically grounded, and testable	We focus on middle-range theories as most relevant to project management
Scientific Realism	A philosophical stance emphasizing causal mechanisms and empirical testing	Our analysis followed the tenets of scientific realism outlined above

(IJPM, PMJ, and IJMPB) and several other sources. There is an almost even split of articles focused on borrowing and borrowing/adjusting theories to creating domestic theories. Early contributions focused on conceptual borrowing or framework development, while recent works reflect growing interest in theory adaptation, middle-range theorizing, and philosophical alignment. The nature and extent of theory testing has not been examined.

Since theory testing has not been examined, Table 3 summarizes the key theoretical distinctions that guide our study's conceptual framing and is followed by the research methodology in Section 3.0.

3. Research methodology

Pollack (2007) examined the influence of the hard and soft paradigms on project management scholarship. He characterized research as dominated by the hard paradigm, with a growing commitment to soft paradigm methodologies. Pollack described the hard paradigm as "...commonly associated with a positivist epistemology, deductive reasoning and quantitative or reductionist techniques, attributes which are often associated with rigour and objectivity" (p. 267). It is within the hard paradigm that we situate our research undertaking. Specifically, we invoke a scientific realism perspective (Smith, 2006), which stipulates causal mechanisms and prescribes validation (Van de Ven, 1989). In this perspective, "...assessing the predictive power of models lies at the heart of the scientific enterprise" (Hair & Sarstedt, 2021, p. 320).

The scientific realism perspective permits both conceptual and empirical articles. A conceptual article is "...one that focuses primarily on theory development and does not present data and/or analyses for purposes of theory testing" (Yadav, 2010, p. 2). By comparison, an empirical study is "...based on facts, systematic observation, or experiment" (American Psychological Association, 2016, p. 1) and can be qualitative or quantitative. A qualitative study mainly generates descriptive data, with little emphasis on numerical quantitative measures. The quantitative type of study "...provides numerical representation of observations for the purpose of describing and explaining the phenomenon studied followed by the application of various descriptive and inferential statistical methods" (p. 1).

Our objective was to assess the prevalence and patterns of theory testing in quantitative, empirical project management scholarship. Our scientific realist orientation necessitated a focus on empirical testing of middle-range theories that contain explanatory and predictive theoretical claims. Two decisions constrained the scope of our analysis. The first decision concerned an appropriate sample of project management journals. We selected IJPM, PMJ, and IJMPB because they represent the dominant outlets for project management research (Kloppenborg & Opfer, 2002; Padalkar & Gopinath, 2016). We excluded related journals

in construction engineering, production and operations management, and engineering management. The second decision concerned the time frame. It was necessary to select a long time frame that would mitigate biases associated with trends or editorial policies. The investigation included all accessible research articles published in IJPM (Volume 1 Issue 1, 1983–2023), PMJ (Volume 30, Issue 1, 1999–2023), and IJMPB (Volume 1 Issue 1, 2008–2023). We conducted a manual analysis of every article, resulting in a complete census of empirical work in the three journals, rather than a representative sample.

3.1. Analytic technique

Several criteria were used to classify published articles as containing tests of theory.

1. An article had to contain empirical research and indicate a research method involving data collection via observation and/or experimentation, as opposed to pure conceptualization. For example, widely cited project management articles (per Table 2) do not contain data for theory testing and were excluded.
2. Empirical articles had to emphasize at least one predictive hypothesis before discussing the research method employed. Rudner's (1966) lawlike generalization stipulation is addressed, in part, by the presence of hypotheses as generalized conditionals. A method section discusses hypothesis testing, empirical content, and nomic necessity.

Research hypotheses (and occasionally, propositions) were readily identified, typically labelled as Hypothesis 1, H1, or Hyp 1. Researchers occasionally structured hypotheses within paragraphs. In such cases, we only observed a hypothesis if the surrounding text clearly indicated the statement's predictive nature.

Our coding process excluded empirical studies that only posed research questions or lacked clear predictions and case studies, which typically emphasize exploration or theory-building rather than theory testing (Eisenhardt, 1989; Yin, 1994). The decision to exclude case studies was not a dismissal of the value of qualitative research. Instead, it reflected our focus on hypothetico-deductive, rigorous, and methodical research (Colquitt & Zapata-Phelan, 2007) focused on underlying processes and structures and predictive relationships, to explain a phenomenon or predict an outcome (Hair & Sarstedt, 2021; Oswick et al., 2011).

3. Empirical articles had to explicitly indicate a relationship between a referenced theory and one or more hypotheses (note that an article could test multiple theories). We relied on, among others, Rudner's (1966) consensus definition of theory, which is well-received in MOS disciplines (c.f. Hunt, 1991; McKelvey, 1997). Rudner (1966) defined theory as a "...systematically related set of statements including some lawlike generalizations, that is empirically testable" (p. 10). An interpretation of the definition is provided by Ryan (2014):

The relationship between the statements is deductive or logical; and some of the statements, due to their explanatory or predictive power within the theory, are designated as 'lawlike.' The theory is empirically testable, meaning that at all points where its concepts or statements relate to reality, they are testable against that reality, and thus are open to being refuted. (Ryan, 2014, p. 7)

The observance of theories was a clear-cut, mechanical task, consistent with similar research in other business disciplines (Kenworthy & Verbeke, 2015). Pre-existing theories were identified in the studies either by name (e.g., stakeholder theory) or citation (e.g., Freeman, 1984). To justify a new theory to include in the dataset, the process relied on the presence of descriptions and explanations of relationships, besides references, data, variables, diagrams, and hypotheses, and clear descriptions and explanations of the relationships among

them (Campbell, 1990; Weick, 1995).

Data collection did not include judgments on how communicated theories and hypotheses were appropriately connected, whether new theories were little more than pre-existing theories, or whether hypotheses received empirical support. The research process assumed that each journal's peer and editorial review processes appropriately addressed such concerns. Fig. 1 illustrates the systematic process.

The methodology also included categorizing the theories by origin. The categorization of theories by origin was consistent with other publications on theory testing (c.f. Kenworthy & Verbeke, 2015, in strategic management). It was achieved primarily by reviewing the citations for theories and identifying the disciplinary homes of the sources (i.e., journals and books). Departmental affiliations of a theory's author or authors were used when citations did not clarify the home discipline of a theory. Admittedly, minor slippage is associated with the categorization process. Further, we appreciate some readers may subscribe to the view that all contemporary applied social science theories originate in the core social sciences (e.g., economics, psychology, and sociology). Nevertheless, the process offers valuable insights for project management scholarship.

4. Results

During the 40 years, the three project management journals published 4033 peer-reviewed, research-oriented articles. Table 4 shows each journal's total articles, including empirical and conceptual, per year.

The total number of empirical articles is 2382 (almost 60 %). Over time, empirical articles increase as a percentage of all articles. The mean publication percentage of conceptual articles is 57 %, ranging from a high of 100 % in 1983 to a low of 18.5 % in 2021. The trend line in Fig. 2 shows that purely conceptual pieces are increasingly rare in top-ranked PM journals.

MOS disciplines may mimic each other's activities since similar declines in conceptual articles have occurred in neighbouring disciplines such as marketing and strategic management (Kenworthy & Verbeke, 2015). Whatever the case, the dramatic decline should be cause for concern. According to Yadav (2010), conceptual articles embody an important facet of the discovery-justification continuum of the knowledge development process (Hanson, 1958), focusing completely on bringing well-formed novel ideas into a scholarly discipline.

Table 5 presents the total number of articles and empirical and theory-testing articles published in the three project management journals between 1983 and 2023. Theory-testing density was derived by dividing the number of theory-testing articles by the total number of empirical articles.

We found that 19.52 % of empirical articles involved tests of middle-range theory, based on previously discussed definitions of theory (e.g., Rudner, 1966; Whetten, 2002). IJPM had the highest share (20.67 %), followed by PMJ (19.19 %) and IJMPB (16.73 %).

Fig. 3 displays the growth in theory testing articles from 1997, when theory testing began in IJPM, through 2023. The presence of theory testing articles has grown from 6 % to 33 % of all empirical articles.

Our analysis revealed 441 separate theories tested in the three journals. Each entry met our definitional criteria for middle-range theory with predictive hypotheses subjected to empirical testing. Though the total appears high, the results align with those in neighbouring MOS disciplines, such as marketing (Kenworthy & Sparks, 2016) and operations management (Kenworthy & Balakrishnan, 2016).

Table 6 presents the 13 theories tested more than once in empirical project management research. Each entry met the criteria for middle-range theory presented in Section 2.1 (Rudner, 1966; Whetten, 2002) including the presentation of predictive hypotheses. The discipline with the most theories is psychology, with 3 theories, followed by project management, economics, marketing, and strategic management, each with 2 theories. Sociology and information systems claim 1 theory.

Strategic management has the highest number of tests, with its two theories tested 9 times, followed by economics (7 tests), psychology (6 tests), marketing (5 tests), project management (4 tests), information systems (3 tests), and sociology (2 tests). The domestic-to-foreign theory ratio for all theories is two to eleven, or 1 to 5.5. For tests of theories, the domestic-to-foreign ratio is four to thirty-two or 1 to 8. This indicates that project management supplied 15.4 % of all theories tested and claimed 11.1 % of all tests.

The domestic-to-foreign ratios serve as a basis for exploring the origins of all theories used in top PM journals. Table 7 displays their origins.

Project management theories represent over two-thirds of all tested theories. Information systems is a very distant second place with almost 13 %. For the entire dataset, the domestic-to-foreign theory ratio is 298 to 143 or 2.08 to 1.

5. Discussion

5.1. General discussion of theory testing patterns

This study results in several observations about project management. The first observation focuses on conceptual articles. Gilson and Goldberg (2015) argue that conceptual papers explore problems, address the 'what's new' question, develop logical arguments, and they "...seek to bridge existing theories in interesting ways, link work across disciplines, provide multi-level insights and broaden the scope of our thinking" (p. 128). The steady decline in conceptual scholarship in the three core project management journals may be attributed to shifts in journal editorial policy and a desire to emulate publishing patterns in neighbouring MOS disciplines such as marketing and strategic management (c.f. Kenworthy & Verbeke, 2015; MacInnis, 2004). Ultimately, the situation should raise concerns about theoretical advancements and knowledge synthesis (Yadav, 2010).

The second observation is an increase in empirical scholarship comparable to that in neighbouring disciplines. Table 8 provides the project management (PM) data along with that from strategic management (SM) (Kenworthy & Verbeke, 2015), entrepreneurship (ENTR) (Kenworthy & McMullan, 2018), operations management (OM) (Kenworthy & Balakrishnan, 2016), and marketing (MKTG) (Kenworthy & Sparks, 2016).

The average percentage of empirical articles across all five disciplines was 57.2 %, with marketing and entrepreneurship scholarship exhibiting exceptionally high empirical research density. The operations management discipline has published less empirical research because of a long-standing emphasis on simulation research (Kenworthy & Balakrishnan, 2016). Excluding operations management data from the mean calculation resulted in an average of 65.2 %, indicating that relative to the other disciplines, project management scholarship (at 59.1 %) was slightly more receptive to conceptual papers over the time frame assessed. The average theory-testing density of the five disciplines was 21 %. Excluding marketing (which may be an outlier at 24 %), the average was 20.3 %. Hence, project management scholarship (at 19.5 %) has been quite competitive for theory testing.

An important concern for scientific realist research is how much it focuses on knowledge creation via middle-range theory testing. From this perspective, middle-range theories warrant extensive testing to advance empirical status and value. The project management dataset revealed that 13 theories were tested multiple times, resulting in 428 theories tested only once. On this account, project management scholarship is hardly unusual. For example, in marketing, 914 of 979 theories were tested once. In operations management, 834 of 874 theories were tested once.

The third observation is that project management diverges from some neighbouring disciplines concerning the frequency of testing top theories. Table 9 provides project management (PM) data along with that from strategic management (SM) (Kenworthy & Verbeke, 2015),

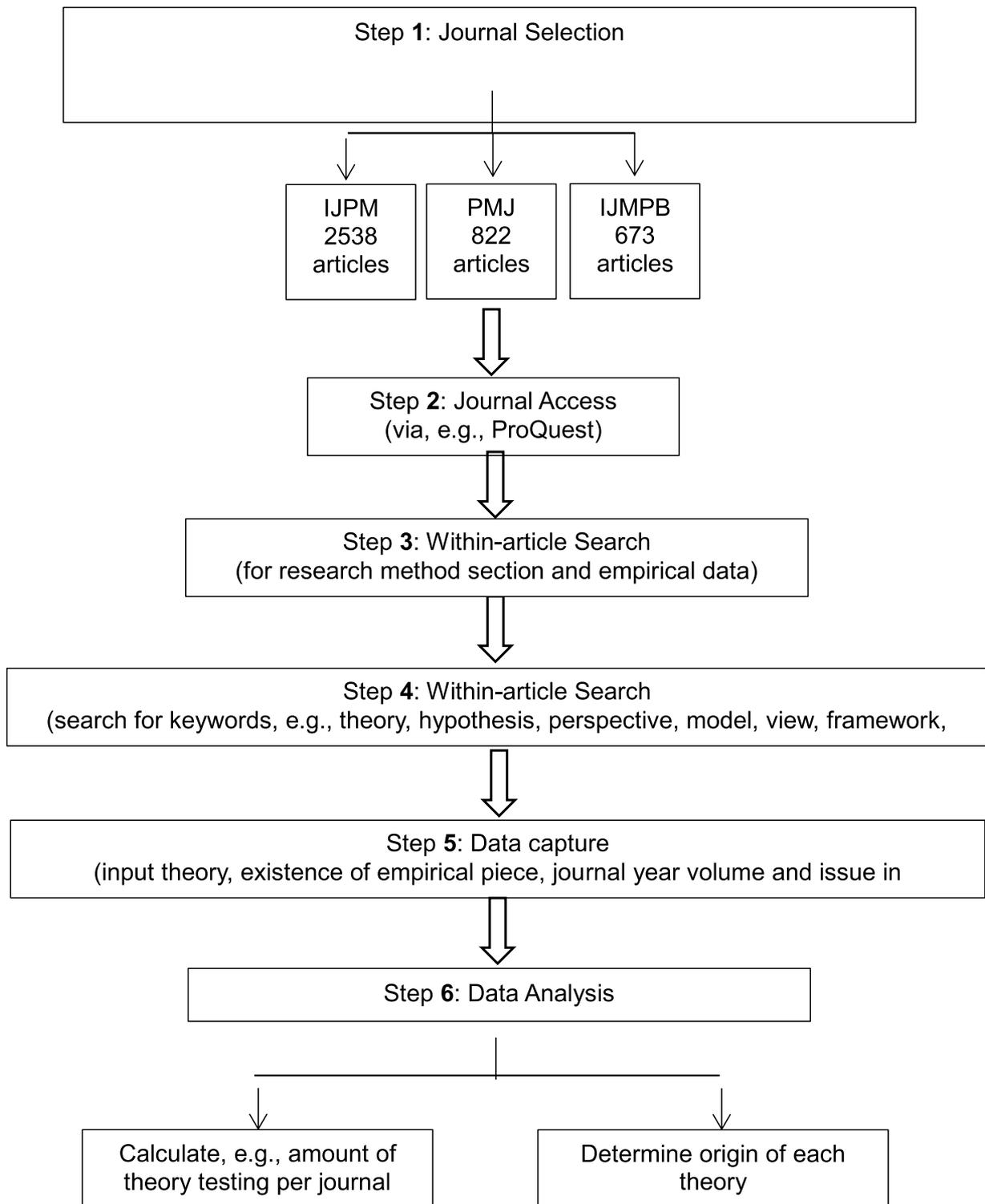


Fig. 1. ¹ Systematic Data Collection and Analysis Process.

¹ In Step 3, the terms perspective, model, view, and framework are often considered interchangeable with the term theory by notable methodologists such as Weick (1995).

entrepreneurship (*ENTR*) (Kenworthy & McMullan, 2018), operations management (*OM*) (Kenworthy & Balakrishnan, 2016), and marketing (*MKTG*) (Kenworthy & Sparks, 2016).

As older disciplines, marketing and operations management have yet to test theories as heavily as strategic management and

entrepreneurship. Although project management is a younger discipline, it could catch up to other MOS disciplines quickly by focusing more on determining the empirical status of the most tested theories. For example, the discipline could focus on the resource-based view, which claims five tests to determine its empirical status, in the three project

Table 4
Article Types per Year by Journal.

Period	IJPM			PMJ			IJMPB		
	Tot.	Empirical	Conceptual	Tot.	Empirical	Conceptual	Tot.	Empirical	Conceptual
1983–1984	71	2	69						
1985–1986	62	10	52						
1987–1988	59	2	57						
1989–1990	73	3	70						
1991–1992	75	9	66						
1993–1994	59	9	50						
1995–1996	101	9	92						
1997–1998	86	26	60						
1999–2000	89	31	58	40	13	27			
2001–2002	110	38	72	45	15	30			
2003–2004	130	74	56	42	18	24			
2005–2006	140	85	55	57	30	27			
2007–2008	170	101	69	70	46	24	26	12	14
2009–2010	158	109	49	67	48	19	56	38	18
2011–2012	178	124	54	72	50	22	69	42	27
2013–2014	217	143	74	70	61	9	70	53	17
2015–2016	269	203	66	90	54	36	77	54	23
2017–2018	197	135	62	77	62	15	89	64	25
2019–2020	107	90	17	87	65	22	121	92	29
2021–2022	135	107	28	69	55	14	123	100	23
2023–2023	52	40	12	36	25	11	42	35	7
Total	2538	1350	1188	822	542	280	673	490	183

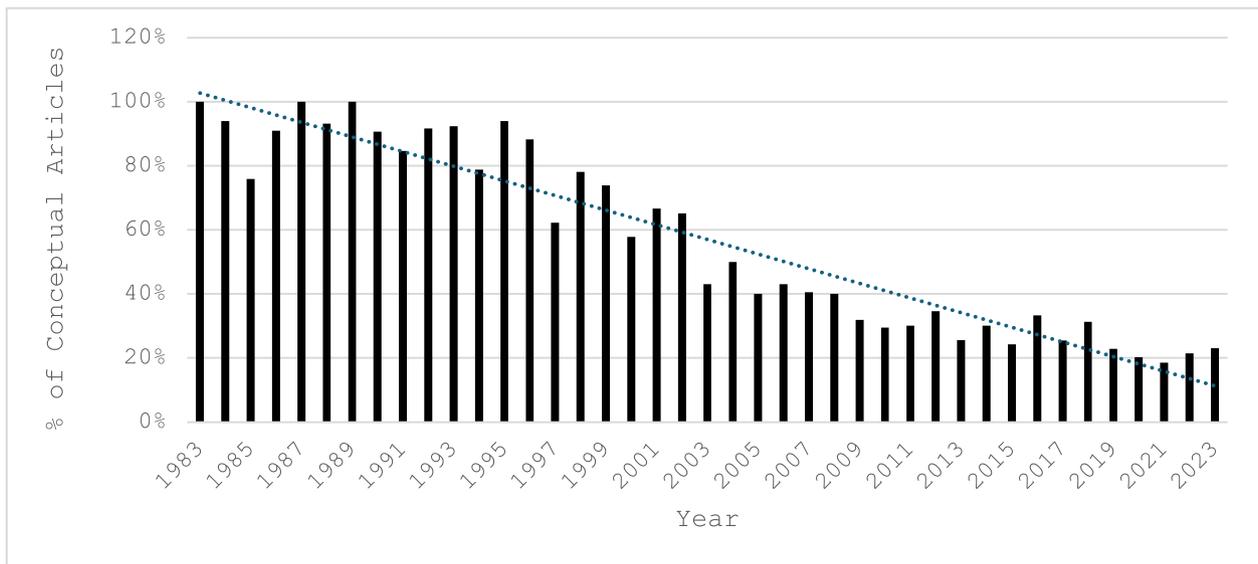


Fig. 2. Percentage of Conceptual Articles Published from 1983 to 2023.

Table 5
Theory Testing Article Counts by Journal (1983–2023).

Journal	Total Articles	Empirical Articles	Articles with Theory Testing	% Theory-Testing (of Empirical)
IJPM	2538	1350	279	20.67 %
PMJ	822	542	104	19.19 %
IJMPB	673	490	82	16.73 %
Total	4033	2382	465	19.52 %

management journals.

The fourth observation involves the origins of the top-tested theories (displayed in Table 7). For project management, the home disciplines of the tested theories were strategic management, economics, and management. The neighbouring disciplines (partially displayed in Table 9) borrow, with a few notable exceptions, from three main social science areas, specifically economics, sociology, and psychology. The reliance

on borrowed theories is usually driven by the desire of an emerging discipline for legitimacy and a scientific image. However, once domestic theories exist, they should be tested extensively to determine their empirical status. Strategic management has achieved this aim with two domestic theories in its top five: resource-based view and upper echelon theory. The other neighbouring disciplines have not, despite having a strong presence of domestic theories (c.f. Kenworthy & Balakrishnan, 2016; Kenworthy & Sparks, 2016).

Ultimately, the state of project management scholarship may appear lacking in some respects from a scientific realist perspective. However, the discipline may be well-positioned to surge forward with knowledge creation based on its strong empirical drive and abundance of domestic theories. To further focus the efforts, the discipline should take a more protective stance where foreign theories are concerned. We will discuss the merits of a borrowed theory assessment

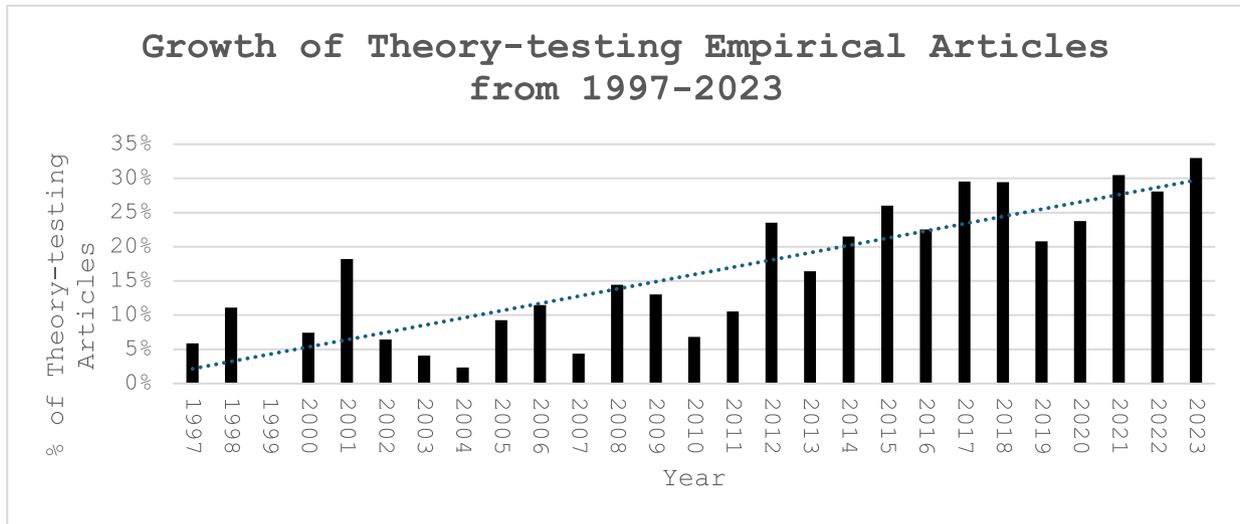


Fig. 3. Growth of Theory-testing Articles (1997–2023).

Table 6
Theories Tested More Than Once.

Theory	Times Tested
Resource-based view (strategic management)	5
Dynamic capabilities theory (strategic management)	4
TCE (economics)	4
Agency theory (economics)	3
Expectation-confirmation theory (marketing)	3
Knowledge management and project performance model (information systems)	3
Conservation of resources theory (psychology)	2
Global project team communication norm alignment, role clarity, and trust model (project management)	2
Job demand–support–control model (psychology)	2
Neo-institutional theory (sociology)	2
Owner–contractor collaboration and project success model (project management)	2
Person-organization fit theory (psychology)	2
Satisfaction, value for money, and repurchase intent model (marketing)	2

Table 7
Home Disciplines of Tested Theories.

Discipline	Total Theories	% of Total
Project Management	298	67.6 %
Information Systems	57	12.9 %
Management	31	7.0 %
Marketing	11	2.5 %
Strategic Management	11	2.5 %
Psychology	8	1.8 %
Innovation	7	1.6 %
Economics	4	0.9 %
Sociology	4	0.9 %
Engineering	3	0.7 %
Finance	3	0.7 %
Operations Management	2	0.5 %
Criminology	1	0.2 %
International Business	1	0.2 %

5.2. Borrowed theory assessment framework

Project management is not a “crossroads discipline,” which would mean diluting its content and making it a “receptacle” or depository of what is produced elsewhere, in other academic disciplines. Project management exists in and for itself, with its own corpus of knowledge,

concepts, organizations, methodologies and lines of thinking. (Garel, 2013, p. 663)

Davies et al. (2018) promote the potential for increased cross-fertilization of meta-theories to probe underlying project assumptions. In operations management, MacCarthy et al. (2013) indicate, “Theories and concepts can and routinely are transported across disciplines [...] This type of cross-fertilization is always valuable and enriching when *done well*” (p. 949). Across the MOS disciplines, however, caution is often thrown to the wind where borrowing theory is concerned, with ‘done well’ little more than an afterthought. For example, Schermann et al. (2016) conclude that “Any doubts about the appropriation of a theory are typically suppressed” and that “this is a practice that should be reviewed” (p. 60).

The project management discipline should value domestic theory and the precious space in its major publishing outlets. Consequently, we propose a theory borrowing framework in Table 10 that scrutinizes foreign theories before their admittance. The scientific realism-derived framework incorporates fundamental philosophical concerns about borrowing that are published in an array of social science disciplines (Aigen, 2005; Amundson, 1998; Floyd, 2009; Ilgen & Klein, 1989; Kenworthy & McMullan, 2018; Kenworthy & Verbeke, 2015; Lutjens & Tiffany, 1994; Malmi & Granlund, 2009; Markóczy & Deeds, 2009; Murray & Evers, 1989; Oswick et al., 2011; Truex et al., 2006; Whetten, 1989). Hence, it is not intended to assess soft paradigm theories developed with, for example, interpretive, critical, or constructivist lenses.

The necessary condition of the foreign theory assessment framework is that a theory must be relevant to the project management discipline. The Project Management Institute (2021) defines project management as “...the application of knowledge, skills, tools, and techniques to project activities to meet project requirements” (p. 4). For a foreign theory to be considered, it should offer insight into important PM processes and outcomes, thereby providing value to stakeholders, such as practitioners, educators, and policymakers. A foreign theory should be ignored if it can only offer insight into peripheral issues, unless critical process and outcome research is well established. In operations management, Kenworthy and Balakrishnan (2016) argue that an exception to this rule “...might be one in which a foreign theory provides more insight into a substantial amount of existing empirical [PM] evidence than do extant [PM] theories. Here, the foreign theory would argue for continuing (in a different direction), or halting, related empirical research” (pp. 2425, brackets added).

The sufficiency condition of the foreign theory assessment framework is that a foreign theory must be powerful for project management scholarship. The first consideration is that a candidate theory must

Table 8
Theory Testing Findings in Neighbouring MOS Disciplines.

	SM 1980–2009	PM 1983–2023	ENTR 1987–2016	OM 1980–2016	MKTG 1980–2010
# Journals	7	3	6	7	5
# Peer-reviewed articles	5317	4033	5953	17,909	5759
# Empirical articles	2612	2382	4508	4469	4435
% Empirical articles	49.1 %	59.1 %	75.7 %	25.0 %	77.0 %
# Theory-testing articles	508	465	940	952	1065
% theory-testing density	19.4 %	19.5 %	20.9 %	21.3 %	24.0 %
# Theories	194	441	494	874	979

Table 9
Top Five Tested Theories by MOS Discipline (# tested).

SM 1980–2009	MKTG 1980–2010	ENTR 1987–2016	OM 1980–2016	PM 1983–2023
<i>Strategy</i> Resource-based view (82)	<i>Psychology</i> Regulatory focus theory (15)	<i>Economics</i> Agency theory (97)	<i>Economics</i> TCE (10)	<i>Strategy</i> Resource-based view (5)
<i>Economics</i> TCE (76)	<i>Economics</i> TCE (12)	<i>Economics</i> Human capital theory (86)	<i>Strategy</i> Resource-based view (8)	<i>Strategy</i> Dynamic capabilities (4)
<i>Economics</i> Agency theory (76)	<i>Psychology</i> Theory of reasoned action (8)	<i>Strategy</i> Resource-based view (59)	<i>Strategy</i> Contingency theory (8)	<i>Economics</i> TCE (4)
<i>Sociology</i> Institutional theory (22)	<i>Economics</i> Signaling theory (7)	<i>Sociology</i> Social capital theory (44)	<i>Information Systems</i> Information processing model (7)	<i>Economics</i> Agency theory (3)
<i>Sociology</i> Resource dependence theory (17) & <i>Strategy</i> Upper echelon theory (17)	<i>Psychology</i> Construal level theory (7)	<i>Sociology</i> Institutional theory (37)	<i>Economics</i> Prospect theory (7)	<i>Management</i> Expectancy confirmation theory (3)

possess strong prediction and explanation, as [Hunt \(1991\)](#) indicates: “The purpose of theory is to increase scientific understanding through a systematized structure capable of both explaining and predicting phenomena” (p. 149). Accordingly, a project management researcher should consider manipulable variables, particularly for practitioners, and the associated costs, to understand the return on investment for changes to each variable.

The second consideration is that a candidate theory allows for testing with minimal changes. A strong theory is supported by a set of epistemological and ontological assumptions. Introducing context-specific variables or adjustments to relationships may disrupt the methodological aspect of a theory, potentially invalidating or nullifying it ([Gillies, 1993](#) the Quine-Duhem thesis). The third consideration focuses on the empirical status of a theory, which can be ascertained via systematic reviews and meta-analyses. It is reasonable to assume that a strategic management theory that suffers from rigorous empirical testing is not likely to be a strong candidate for project management research.

For illustration, we apply the assessment framework to TCE, a firm-level economics theory ([Coase, 1937](#); [Williamson, 1975](#)). TCE focuses on firm performance ([Geyskens et al., 2006](#)) via the minimization of costs incurred by independent economic agents during transactions. The various costs are a function of agents’ limited rationality and opportunistic behavior, environmental uncertainty, frequency of exchange, and asset specificity.

The first factor of the necessary condition of the foreign theory assessment framework is that a theory is relevant to project

Table 10
Borrowed Theory Assessment Framework.

Condition	Definition
Relevant	Explicates core issues in the discipline Explain existing evidence in the discipline
Powerful	Strongly predictive Does not require substantial ad hoc changes Limited concerns about prior testing in home discipline

management. TCE’s criterion variable is overall firm performance. On this account, the theory has merit, given that projects are often outward-facing, involving make-versus-buy decisions, and unquestionably contribute to a firm’s financial success.

The second factor of the necessary condition is that a foreign theory must be able to explain existing evidence in the discipline. Much evidence shows that project management offices often weigh internal and external sourcing options. According to [Martins and Martins \(2012\)](#) “... competencies related to project management, particularly the deployment and operation of PMOs, can be provided through outsourcing, even if they are considered strategic” (p. 69). However, there is also evidence that TCE may not represent an effective theory for knowledge creation in project management. [Table 11](#) presents the results of TCE meta-analyses and systematic reviews.

Three meta-analyses focused on IT project outsourcing provide mixed results for the theory ([Alagheband et al., 2011](#); [Lacity et al., 2011](#); [Schermann et al., 2016](#)). In alignment with [Lacity et al. \(2011\)](#), [Schermann et al. \(2016\)](#) seek to move on from TCE and develop a domestic theory that can more effectively predict and explain disciplinary phenomena.

The sufficiency condition of the screening framework requires a powerful foreign theory. Predictive power, the first factor of this condition, is considered a strength of TCE ([Crook et al., 2013](#)). The second factor of the sufficiency condition is that a theory be fit for use with minor alteration. In our dataset, two articles involve modifications to TCE. [De Schepper et al. \(2015\)](#) extend the theory by adding inter-project spillover effects via “...ex-post features of engaging in a relationship and tendering for public infrastructure projects” (p. 5). The extension does not seem to harm the integrity of the theory. [Tang et al. \(2020\)](#) introduce a new independent variable to the theory to examine “...the underlying effect of risk allocation on conflict negotiation costs” (p. 189). It is unclear to what extent the ad hoc modification jeopardizes the integrity of TCE.

The third factor of the sufficiency condition is strong empirical status in the reference discipline. Researchers subjected TCE to a systematic

assessment, a critical review of the most prominent empirical work, and two meta-analyses with mixed results (Carter & Hodgson, 2006; Crook et al., 2013; David & Han, 2004; Geyskens et al., 2006). Crook et al. (2013) underline the substantive deficiencies of TCE and underscore the need for ad hoc adjustments via real options and resource-based theory variables in the hopes of increasing the viability of the theory.

Ultimately, the comprehensive vetting of TCE by strategic management and project management researchers does not provide strong support for borrowing the theory. Interestingly, the four TCE-testing articles in our dataset were published in 2015, long after all but one of the meta-analyses was published. Yet only two of the articles cite the research. The first, a 2015 IJPM article, cites David and Han (2004) and Crook et al. (2013). This is interesting because the two analyses hardly portray TCE as an empirical success story. The second, a 2021 IJPM article, cites only Geyskens et al. (2006), which is far more favorable to TCE than prior and subsequent work.

6. Limitations

Calls for project management scholars to declare their philosophical and methodological stances (Ika & Bredillet, 2016; Müller & Klein, 2018; Müller & Locatelli, 2023) should result in progress for both research and practice (Smyth & Morris, 2007). Accordingly, we assume a scientific realist stance to examine the nature and extent of theory testing in project management scholarship. We anticipate that our findings will be provocative and insightful for a large contingent of project management scholars. In the context of the broader epistemological dialogue in the discipline, we appreciate that similar research via alternative paradigms, such as pragmatism or constructivism, may yield different interpretations or highlight other dimensions of theory use. For example, advocates of non-realist perspectives could position our findings strictly within a socially constructed reality. We note that our findings should be considered in light of potential methodological deficiencies. First, our full census of the three core project management journals resulted in an incomplete dataset, given that project management articles are published in many outlets, including but not limited to the MOS disciplines. We defend the dataset because the research

methodology and findings aligned with similar studies that focus on discipline-specific journals (c.f. Kenworthy & Sparks, 2016). Further, the core project management journals are well-respected.

The second limitation involves the search for middle-range theories. The process relied on several definitions of theory (Campbell, 1990; Rudner, 1966; Sutton & Staw, 1995; Weick, 1995; Whetten, 2002). Admittedly, each definition is fallible and subject to interpretation and change, despite strong reception in the scholarship literature. Hence, operationalizing a definition of theory without a *true* definition of theory is not without risk. To mitigate concern, our methodology is closely aligned with that of similar published research (c.f. Kenworthy & Sparks, 2016).

7. Conclusion and future directions

Project management scholarship is a scientific research discipline (Gauthier & Ika, 2012; Locatelli et al., 2023) shaped by the hard and soft paradigms and philosophies underpinning them (Pollack, 2007). The scholarly literature provides numerous studies that address intellectual progress. The purpose of our research was to provide additional evidence of disciplinary intellectual progress. Our primary research question was: What is the nature and extent of theory testing in project management scholarship? Our scientific realist approach prioritized empirical testing of middle-range theories, which contain explanatory and predictive theoretical claims. We also addressed the following sub-questions. What theories are tested the most? What are the disciplinary origins of borrowed theories? Our research methodology involved manually analyzing and coding all articles published in the three core project management journals between 1980 and 2023.

Our research offers several contributions to the scholarly project management literature. First, we conclude that realist project management scholarship displays a growing maturity and legitimacy based on observed growth in theory testing and a meaningful level of domestic theorizing. However, we express concern about reliance on foreign theories for knowledge development, i.e., multiple tests of theories.

Second, we reveal the balance of empirical and conceptual articles. Our results show that published research has become increasingly

Table 11
TCE Meta-Analyses and Systematic Reviews.

Authors	Research Method	Findings
Necessary Condition		
Alagheband et al. (2011, p. 125)	Meta Analysis 25 studies published in 19 different journals (1995–2011)	"mixed and unexpected results in terms of the effects of transaction attributes on outsourcing decisions and outcomes."
Lacity et al. (2011, p. 139)	Meta Analysis 31 studies published in 21 different journals (1996–2010)	"only 49 % of the empirical ITO findings supported TCE logic...only slightly better support for TCE when it is used as a normative theory (54 %) than when it is used as a predictive theory (47 %)."
Schermann et al. (2016, p. 32)	Meta Analysis 28 published studies and working papers (2000–2012)	"TCE is of limited relevance in recent ITO research for predicting the choice of contract type."
Sufficiency Condition		
David and Han (2004, p. 39)	Systematic Review 63 studies in well-regarded journals known to publish TCE research, from across a variety of disciplines	"support in some areas (e.g., with regard to asset specificity), we also found considerable disagreement on how to operationalize some of TCE's central constructs and propositions, and relatively low levels of empirical support in other core areas (e.g., surrounding uncertainty and performance)."
Carter and Hodgson (2006, p. 461)	Comprehensive analysis of influential empirical tests 27 studies in prominent academic journals (1981–1997)	"a much more mixed picture, with few studies giving unambiguous support to Williamson's TCE...We conclude that the empirical evidence does not decisively support Williamson's TCE."
Geyskens et al. (2006)	Meta Analysis 200 studies, including 2 in press and 8 unpublished papers. Sample size = 91,006	The analysis found strong support for TCE, though it did not support Williamson's contention that asset specificity is a stronger driver of governance choice than uncertainty.
Crook et al. (2013, p. 73)	Meta Analysis 143 studies, including working papers and dissertations (1980–2011) Sample size = 101,937	"TCE possesses a real yet modest ability to explain how firms organize economic activity... For managers, one key implication of our findings is that transaction costs explain only a fraction of their peers' behavior."

characterized as empirical. The observed ‘empirical turn’ should prove valuable for knowledge creation, though it may come at a cost. The consequence of less purely conceptual articles, which tend to be highly cited and impactful (Hirschheim, 2008), is likely fewer comprehensively developed domestic theories (c.f. Vargo & Lusch, 2004).

The growing dominance of empirical research is likely driven by several factors. For example, scholars are subject to changing priorities in promotion and tenure evaluation and editorial preferences (Yadav, 2010). Another factor is a lack of ‘how-to’ guides with respect to methodology and research design for conceptual papers (Jaakkola, 2020). Further, reviewers can be dismissive of non-empirical essays, characterizing them as opinions that are devoid of deeper scholarship (Hirschheim, 2008). Finally, doctoral programming changes also play a role: “...the Academy may somewhat naturally shift doctoral students’ training to focus on publishing skills that can be leveraged in a more straightforward manner across languages and cultures, such as data analysis.” (King & Lepak, 2011, p. 211).

Our third contribution is the introduction of a borrowed theory assessment framework, which we apply to transaction cost economics. The analysis demonstrates how to implement the assessment framework while revealing concerns about the value of TCE to project management scholarship. We propose the framework as another tool to guide scholars, editors, and doctoral students to make deliberate decisions about theory selection and adaptation.

Ultimately, we hope this work contributes to a more cumulative, contextually sensitive, and critically engaged trajectory for project management scholarship. Future research could build on this work in several directions. The first direction involves the soft paradigm and its theories. There have been calls in the literature to borrow and cross-fertilize with such theories (c.f. Davies et al., 2018; Locatelli et al., 2023). It would be insightful to examine what theories are being used and their origins.

The second future research direction involves scientific realism-based screening of borrowed theories. The examination of TCE reveals concerns about its value. We encourage scholars to apply the assessment framework to fully appreciate the value of other foreign theories before admitting them into project management research. The third direction involves domestic theories, which are specifically developed for project management phenomena. Many domestic theories have been revealed in the literature, with certainly more to come, including, for example, from the investigation of practitioner ‘theories in use’ (Argyris & Schön, 1974). We encourage efforts to determine the most promising domestic theories and subject them to rigorous testing to reveal the empirical status of each one. The shift to domestic theory will serve to reduce reliance on foreign theories and enhance disciplinary progress (Ahern et al., 2014).

The fourth direction is to develop solutions to increase the potential for domestic theory development by slowing the decline in conceptual articles. With exceptions, the bulk of domestic theory development occurs mainly in empirical studies, resulting in sub-optimal theory development. The fifth research direction is to examine the various studies that examine intellectual progress and evaluate disciplinary maturity via the generalized maturity assessment framework (Keathley-Herring et al. (2016).

During the preparation of this work the author(s) used ChatGPT (OpenAI) in order to improve language clarity, structure, and alignment with reviewer feedback. After using this tool, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication.

NOTE: Supplementary materials supporting this manuscript are available online.

During the preparation of this work the author(s) used ProWritingAid and ClaudePro in order to improve language clarity and structure. After using these tools, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication.

CRedit authorship contribution statement

Thomas P. Kenworthy: Writing – review & editing, Writing – original draft, Validation, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Kam Jugdev:** Writing – review & editing, Writing – original draft, Validation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

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References

- Ahern, T., Leavy, B., & Byrne, P. (2014). Knowledge formation and learning in the management of projects: A problem solving perspective. *International Journal of Project Management*, 32(8), 1423–1431. <https://doi.org/10.1016/j.ijproman.2014.02.004>
- Ahlemann, F., El Arbi, F., Kaiser, M. G., & Heck, A. (2013). A process framework for theoretically grounded prescriptive research in the project management field. *International Journal of Project Management*, 31(1), 43–56. <https://doi.org/10.1016/j.ijproman.2012.03.008>
- Aigen, K. (2005). *Music-centered music therapy*. Barcelona Publishers.
- Alaghehband, F. K., Rivard, S., Wu, S., & Goyette, S. (2011). An assessment of the use of transaction cost theory in information technology outsourcing. *The Journal of Strategic Information Systems*, 20(2), 125–138. <https://doi.org/10.1016/j.jsis.2011.04.003>
- American Psychological Association. (2016). *APA databases methodology field values*. Retrieved April 18, 2025 from <https://www.apa.org/pubs/databases/training/method-values>.
- Amundson, S. D. (1998). Relationships between theory-driven empirical research in operations management and other disciplines. *Journal of Operations Management*, 16(4), 341–359. [https://doi.org/10.1016/S0272-6963\(98\)00018-7](https://doi.org/10.1016/S0272-6963(98)00018-7)
- Argyris, C., & Schön, D.A. (1974). *Theory in practice: Increasing professional effectiveness*. Jossey-Bass.
- Artto, K., Martinsuo, M., Gemünden, H. G., & Murtoaro, J. (2009). Foundations of program management: A bibliometric view. *International Journal of Project Management*, 27(1), 1–18. <https://doi.org/10.1016/j.ijproman.2007.10.007>
- Artto, K. A., Gemünden, H. G., Walker, D., & Peippo-Lavikka, P. (2017). Is there only one way of project management theorizing, or are there multiple sector-specific project management domains? *International Journal of Managing Projects in Business*, 10(1), 203–240. <https://doi.org/10.1108/IJMPB-07-2016-0057>
- Bacharach, S. B. (1989). Organizational theories: Some criteria for evaluation. *Academy of Management Review*, 14(4), 496–515. <https://doi.org/10.5465/amr.1989.4308374>
- Baskerville, R. L., & Myers, M. D. (2002). Information systems as a reference discipline. *MIS Quarterly*, 26(1), 1–14. <https://doi.org/10.2307/4132338>
- Betts, M., & Lansley, P. (1995). International Journal of Project Management: A review of the first ten years. *International Journal of Project Management*, 13(4), 207–217. [https://doi.org/10.1016/0263-7863\(95\)00001-7](https://doi.org/10.1016/0263-7863(95)00001-7)
- Biesenthal, C., & Wilden, R. (2014). Multi-level project governance: Trends and opportunities. *International Journal of Project Management*, 32(8), 1291–1308. <https://doi.org/10.1016/j.ijproman.2014.06.005>
- Boisot, M., & McKelvey, B. (2010). Integrating modernist and postmodernist perspectives on organizations: A complexity science bridge. *Academy of Management Review*, 35(3), 415–433. <https://doi.org/10.5465/amr.35.3.zok415>
- Boudon, R. (1991). What middle-range theories are. *Contemporary Sociology*, 20(4), 519–522. <https://www.jstor.org/stable/2071781>.
- Bourgeois, L. J., III (1979). Toward a method of middle-range theorizing. *Academy of Management Review*, 4(3), 443–447. <https://doi.org/10.5465/amr.1979.4289127>
- Bredillet, C. (2008). Exploring research in project management: Nine schools of project management research. *Project Management Journal*, 39(1), 2–6. <https://doi.org/10.1002/pmj.2003>
- Bredillet, C. (2015). Finding a way in Broceliande Forest: The magic domain of project management research. In B. Pasian (Ed.), *Designs, methods and practices for research of project management* (pp. 43–54). Gower.

- Brendel, A. B., Diederich, S., & Niederman, F. (2023). An immodest proposal—going “All in” on replication research in information systems. *European Journal of Information Systems*, 32(2), 277–286. <https://doi.org/10.1080/0960085X.2021.1944822>
- Brunet, M. (2022). On the relevance of theory and practice in project studies. *International Journal of Project Management*, 40(1), 22–24. <https://doi.org/10.1016/j.ijproman.2021.11.006>
- Bunge, M. (1967). *The search for system*. I. Springer-Verlag.
- Campbell, J. P. (1990). The role of theory in industrial and organizational psychology. In M. D. Dunnette, & L. M. Hough (Eds.) (2), *Handbook of industrial and organizational psychology: I. Handbook of industrial and organizational psychology* (pp. 39–74). Consulting Psychologists Press.
- Carter, R., & Hodgson, G. M. (2006). The impact of empirical tests of transaction cost economics on the debate on the nature of the firm. *Strategic Management Journal*, 27(5), 461–476. <https://doi.org/10.1002/smj.531>
- Cartwright, N. (2020). Middle-range theory: Without it what could anyone do? *Theoria: An International Journal for Theory, History and Foundations of Science*, 35(3), 269–323. <https://doi.org/10.1387/theoria.21479>
- Cicmil, S. (2006). Understanding project management practice through interpretative and critical research perspectives. *Project Management Journal*, 37(2), 27–37. <https://doi.org/10.1177/875697280603700204>
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386–405. <https://doi.org/10.2307/2626876>
- Colquitt, J. A., & Zapata-Phelan, C. P. (2007). Trends in theory building and theory testing: A five-decade study of the Academy of Management Journal. *Academy of Management Journal*, 50(6), 1281–1303. <https://doi.org/10.5465/amj.2007.28165855>
- Cornelissen, J., Höllerer, M. A., & Seidl, D. (2021). What theory is and can be: Forms of theorizing in organizational scholarship. *Organization Theory*, 2(3), 1–19. <https://doi.org/10.1177/26317872211020328>
- Cornelissen, J. P., & Durand, R. (2014). Moving forward: Developing theoretical contributions in management studies. *Journal of Management Studies*, 51(6), 995–1022. <https://doi.org/10.1111/joms.12078>
- Crawford, G. C., Aguinis, H., Lichtenstein, B., Davidsson, P., & McKelvey, B. (2015). Power law distributions in entrepreneurship: Implications for theory and research. *Journal of Business Venturing*, 30(5), 696–713. <https://doi.org/10.1016/j.jbusvent.2015.01.001>
- Crawford, L., Pollack, J., & England, D. (2006). Uncovering the trends in project management: Journal emphases over the last 10 years. *International Journal of Project Management*, 24(2), 175–184. <https://doi.org/10.1016/j.ijproman.2005.10.005>
- Crook, T. R., Combs, J. G., Ketchen, D. J., Jr, & Aguinis, H. (2013). Organizing around transaction costs: What have we learned and where do we go from here? *Academy of Management Perspectives*, 27(1), 63–79. <https://doi.org/10.5465/amp.2012.0008>
- David, R. J., & Han, S. K. (2004). A systematic assessment of the empirical support for transaction cost economics. *Strategic Management Journal*, 25(1), 39–58. <https://doi.org/10.1002/smj.359>
- Davies, A., & MacAulay, S. C. (2023). Valuing theory and practice: Using a portfolio lens to publish research on projects. *Project Management Journal*, 54(3), 211–218. <https://doi.org/10.1177/87569728231173647>
- Davies, A., Manning, S., & Söderlund, J. (2018). When neighboring disciplines fail to learn from each other: The case of innovation and project management research. *Research Policy*, 47(5), 965–979. <https://doi.org/10.1016/j.respol.2018.03.002>
- De Schepper, S., Haezendonck, E., & Dooms, M. (2015). Understanding pre-contractual transaction costs for Public–Private Partnership infrastructure projects. *International Journal of Project Management*, 33(4), 932–946. <https://doi.org/10.1016/j.ijproman.2014.10.015>
- DiMaggio, P. J. (1995). Comments on “What theory is not”. *Administrative Science Quarterly*, 40(3), 391–397. <https://doi.org/10.2307/2393790>
- Drouin, N., & Jugdev, K. (2014). Standing on the shoulders of giants to advance organizational project management. *International Journal of Managing Projects in Business*, 7(1), 61–77. <https://doi.org/10.1108/IJMPB-04-2013-0021>
- Drouin, N., Müller, R., & Sankaran, S. (2013). *Novel approaches to organizational project management research: Translational and transformational*. Copenhagen Business School Press.
- Dubin, R. (1976). Theory building in applied areas. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 17–39). Rand McNally.
- Easley, R. W., Madden, C. S., & Gray, V. (2013). A tale of two cultures: Revisiting journal editors’ views of replication research. *Journal of Business Research*, 66(9), 1457–1459. <https://doi.org/10.1016/j.jbusres.2012.05.013>
- Eisenhardt, K. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550. <https://doi.org/10.5465/amr.1989.4308385>
- Florice, S., Bonneau, C., Aubry, M., & Sergi, V. (2014). Extending project management research: Insights from social theories. *International Journal of Project Management*, 32(7), 1091–1107. <https://doi.org/10.1016/j.ijproman.2014.02.008>
- Floyd, S. W. (2009). Borrowing’ theory: What does this mean and when does it make sense in management scholarship? *Journal of Management Studies*, 46(6), 1057–1058. <https://doi.org/10.1111/j.1467-6486.2009.00865.x>
- Frame, J. D. (2016). Philosophy of project management: Lessons from the philosophy of science. *Project Management Journal*, 47(3), 35–47. <https://doi.org/10.1177/875697281604700304>
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Cambridge University Press.
- Garel, G. (2013). A history of project management models: From pre-models to the standard models. *International Journal of Project Management*, 31(5), 663–669. <https://doi.org/10.1016/j.ijproman.2012.12.011>
- Gauthier, J. B., & Ika, L. A. (2012). Foundations of project management research: An explicit and six-facet ontological framework. *Project Management Journal*, 43(5), 5–23. <https://doi.org/10.1002/pmj.21288>
- Geraldi, J., & Söderlund, J. (2018). Project studies: What it is, where it is going. *International Journal of Project Management*, 36(1), 55–70. <https://doi.org/10.1016/j.ijproman.2017.06.004>
- Geraldi, J., Teerikangas, S., & Birollo, G. (2022). Project, program and portfolio management as modes of organizing: Theorising at the intersection between mergers and acquisitions and project studies. *International Journal of Project Management*, 40(4), 439–453. <https://doi.org/10.1016/j.ijproman.2022.03.005>
- Geyskens, I., Steenkamp, J.-B. E., & Kumar, N. (2006). Make, buy, or ally: A transaction cost theory meta-analysis. *Academy of Management Journal*, 49(3), 519–543. <https://doi.org/10.5465/amj.2006.21794670>
- Ghoshal, S. (2005). Bad management theories are destroying good management practice. *Academy of Management Learning and Education*, 4(1), 75–91. <https://doi.org/10.5465/AMLE.2005.16132558>
- Gilbert, G. (1983). Styles of project management. *International Journal of Project Management*, 1(4), 189–193. [https://doi.org/10.1016/0263-7863\(83\)90046-7](https://doi.org/10.1016/0263-7863(83)90046-7)
- Gillies, D. (1993). *Philosophy of science in the twentieth century: Four central themes*. Oxford University Press.
- Gilson, L. L., & Goldberg, C. B. (2015). Editors’ comment: So, what is a conceptual paper? *Group & Organization Management*, 40(2), 127–130. <https://doi.org/10.1177/1059601115576425>
- Green, D., & Shapiro, I. (1994). *Pathologies of rational choice theory: A critique of applications in political science*. Yale University Press.
- Gregor, S. (2006). The nature of theory in information systems. *MIS Quarterly*, 30(3), 611–642. <https://doi.org/10.2307/25148742>
- Hair, J. F., & Sarstedt, M. (2021). Explanation plus prediction—The logical focus of project management research. *Project Management Journal*, 52(4), 319–322. <https://doi.org/10.1177/8756972821999945>
- Hambrick, D. C. (2007). The field of management’s devotion to theory: Too much of a good thing? *Academy of Management Journal*, 50(6), 1346–1352. <https://doi.org/10.5465/amj.2007.28166119>
- Hanson, N. R. (1958). *Patterns of discovery*. Cambridge University Press.
- Hirschheim, R. (2008). Some guidelines for the critical reviewing of conceptual papers. *Journal of the Association for Information Systems*, 9(8), 432–441. <https://doi.org/10.17705/1jais.00167>
- Hunt, S. D. (1991). *Modern marketing theory: Critical issues in the philosophy of marketing science*. South-Western Publishing.
- Hunt, S. D. (2012). Explaining empirically successful marketing theories: The inductive realist model, approximate truth, and market orientation. *AMS Review*, 2(1), 5–18. <https://doi.org/10.1007/s13162-012-0023-8>
- Ika, L. A., & Bredillet, C. N. (2016). The metaphysical questions every project practitioner should ask. *Project Management Journal*, 47(3), 86–100. <https://doi.org/10.1177/875697281604700308>
- Ilgen, D. R., & Klein, H. J. (1989). Organizational behavior. *Annual Review of Psychology*, 40(1), 327–351. <https://doi.org/10.1146/annurev.ps.40.020189.001551>
- Ivory, C., & Alderman, N. (2005). Can project management learn anything from studies of failure in complex systems? *Project Management Journal*, 36(3), 5–16. <https://doi.org/10.1177/875697280503600302>
- Jaakkola, E. (2020). Designing conceptual articles: Four approaches. *AMS Review*, 10(1), 18–26. <https://doi.org/10.1007/s13162-020-00161-0>
- Johnson, N., Creasy, T., & Yang, F. (2016). Recent trends in theory use and application within the project management discipline. *Journal of Engineering, Project & Production Management*, 6(1), 25–52. <https://doi.org/10.32738/jepm.201601.0004>
- Jugdev, K. (2004). Through the looking glass: Examining theory development in project management with the resource-based view lens. *Project Management Journal*, 35(3), 15–26. <https://doi.org/10.1177/875697280403500304>
- Jugdev, K. (2008). Good theory: Developing a foundation for project management. *International Journal of Product Development*, 6(2), 177–189. <https://doi.org/10.1504/IJPD.2008.019239>
- Kaplan, A. (1964). *The conduct of inquiry*. Chandler Publishing Company.
- Karanja, E., Zaveri, J., Miles, A. K., & Day, S. (2024). Theory use in project management research: An exploratory content analysis approach. *Evaluation Review*. <https://doi.org/10.1177/0193841X241279706>
- Keathley-Herring, H., Van Aken, E., Gonzalez-Aleu, F., Deschamps, F., Letens, G., & Orlandini, P. C. (2016). Assessing the maturity of a research area: Bibliometric review and proposed framework. *Scientometrics*, 109(2), 927–951. <https://doi.org/10.1007/s11192-016-2096-x>
- Keil, M. (2022). When good theories backfire. *Project Management Journal*, 53(2), 107–112. <https://doi.org/10.1177/87569728211065682>
- Kenworthy, T., & Balakrishnan, J. (2016). Theory usage in empirical operations management research: A review and discussion. *Management Decision*, 54(10), 2413–2432. <https://doi.org/10.1108/MD-01-2016-0010>
- Kenworthy, T., & Sparks, J. R. (2016). A scientific realism perspective on scientific progress in marketing: An analysis of theory testing in marketing’s major journals. *European Management Journal*, 34(5), 466–474. <https://doi.org/10.1016/j.emj.2016.06.012>
- Kenworthy, T. P., & McMullan, W. E. (2018). In consideration of entrepreneurship theory. *Scientometrics*, 115(2), 767–783. <https://doi.org/10.1007/s11192-018-2699-5>
- Kenworthy, T. P., & Verbeke, A. (2015). The future of strategic management research: Assessing the quality of theory borrowing. *European Management Journal*, 33(3), 179–190. <https://doi.org/10.1016/j.emj.2015.03.007>

- Ketokivi, M., Mantere, S., & Cornelissen, J. (2017). Reasoning by analogy and the progress of theory. *Academy of Management Review*, 42(4), 637–658. <https://doi.org/10.5465/amr.2014.0188>
- Killen, C. P., Jugdev, K., Drouin, N., & Petit, Y. (2012). Advancing project and portfolio management research: Applying strategic management theories. *International Journal of Project Management*, 30(5), 525–538. <https://doi.org/10.1016/j.ijproman.2011.12.004>
- King, A. W., & Lepak, D. (2011). Editors' comments: Myth busting—What we hear and what we've learned about AMR. *Academy of Management Review*, 36(2), 207–214. <https://doi.org/10.5465/amr.36.2.zok207>
- Kloppenborg, T., & Opfer, W. (2002). The current state of project management research: Trends, interpretations, and predictions. *Project Management Journal*, 33(2), 5–18. <https://doi.org/10.1177/875697280203300203>
- Kolltveit, B. J., Karlsen, J. T., & Grønhaug, K. (2007). Perspectives on project management. *International Journal of Project Management*, 25(1), 3–9. <https://doi.org/10.1016/j.ijproman.2005.12.002>
- Konstantinou, E., & Müller, R. (2016). Guest editorial: The role of philosophy in project management. *Project Management Journal*, 47(3), 3–11. <https://doi.org/10.1177/875697281604700301>
- Kwak, Y. H., & Anbari, F. T. (2009). Analyzing project management research: Perspectives from top management journals. *International Journal of Project Management*, 27(5), 435–446. <https://doi.org/10.1016/j.ijproman.2008.08.004>
- Lacity, M. C., Willcocks, L. P., & Khan, S. (2011). Beyond transaction cost economics: Towards an endogenous theory of information technology outsourcing. *The Journal of Strategic Information Systems*, 20(2), 139–157. <https://doi.org/10.1016/j.jsis.2011.04.002>
- Lalonde, P. L., Bourgault, M., & Findeli, A. (2010). Building pragmatist theories of PM practice: Theorizing the act of project management. *Project Management Journal*, 41(5), 21–36. <https://doi.org/10.1002/pmj.20163>
- Layder, D. (1993). *New strategies in social research: An introduction and guide*. Polity Press.
- Leybourne, S. A. (2007). The changing bias of project management research: A consideration of the literatures and an application of extant theory. *Project Management Journal*, 38(1), 61–73. <https://doi.org/10.1177/875697280703800107>
- Locatelli, G., Ika, L., Drouin, N., Müller, R., Huemann, M., Söderlund, J., Gerdali, J., & Clegg, S. (2023). A manifesto for project management research. *European Management Review*, 20(1), 3–17. <https://doi.org/10.1111/emre.12568>
- Lutjens, L. R. J., & Tiffany, C. R. (1994). Evaluating planned change theories. *Nursing Management*, 25(3), 54–57. <https://doi.org/10.1097/00006247-199403000-00013>
- MacCarthy, B. L., Lewis, M., Voss, C., & Narasimhan, R. (2013). The same old methodologies? Perspectives on OM research in the post-lean age. *International Journal of Operations and Production Management*, 33(7), 934–956. <https://doi.org/10.1108/IJOPM-08-2013-0373>
- MacInnis, D. J. (2004). Where have all the papers gone? Reflections on the decline of conceptual articles. *Association for Consumer Research Newsletter*, 21(2), 1–3.
- Malmi, T., & Granlund, M. (2009). In search of management accounting theory. *European Accounting Review*, 18(3), 597–620. <https://doi.org/10.1080/09638180902863779>
- Markóczy, L., & Deeds, D. L. (2009). Theory building at the intersection: Recipe for impact or road to nowhere? *Journal of Management Studies*, 46(6), 1076–1088. <https://doi.org/10.1111/j.1467-6486.2009.00849.x>
- Martins, V. A., & Martins, M. R. (2012). Outsourcing operations in project management offices: The reality of Brazilian companies. *Project Management Journal*, 43(2), 68–83. <https://doi.org/10.1002/pmj.21256>
- McKelvey, B. (1997). Perspective—Quasi-natural organization science. *Organization Science*, 8(4), 351–380. <https://doi.org/10.1287/orsc.8.4.351>
- Meleis, A. I. (2011). *Theoretical nursing: Development and progress* (5th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Mentzer, J. T. (2008). Rigor versus relevance: Why would we choose only one? *Journal of Supply Chain Management*, 44(2), 72–77. <https://doi.org/10.1111/j.1745-493X.2008.00058.x>
- Merton, R. K. (1968). *Social theory and social structure*. Simon and Schuster.
- Merton, R. K. (1973). *The sociology of science: Theoretical and empirical investigations*. The University of Chicago Press.
- Morris, P. W. G. (1994). *The management of projects*. Thomas Telford.
- Müller, R., & Klein, G. (2018). What constitutes a contemporary contribution to project management journal? *Project Management Journal*, 49(5), 3–4. <https://doi.org/10.1177/8756972818791650>
- Müller, R., & Locatelli, G. (2023). Philosophical stances and theoretical perspectives in submissions to Project Management Journal®. *Project Management Journal*, 54(2), 111–115. <https://doi.org/10.1177/87569728231159389>
- Murray, J. B., & Evers, D. J. (1989). Theory borrowing and reflectivity in interdisciplinary fields. *Advances in Consumer Research*, 16(1), 647–652.
- Niederman, F., Müller, B., & March, S. T. (2018). Using process theory for accumulating project management knowledge: A seven-category model. *Project Management Journal*, 49(1), 6–24. <https://doi.org/10.1177/875697281804900102>
- Nikazari, P., & Bourgault, M. (2017). Theories for classification vs. classification as theory: Implications of classification and typology for the development of project management theories. *International Journal of Project Management*, 35(2), 191–203. <https://doi.org/10.1016/j.ijproman.2016.11.002>
- Oswick, C., Fleming, P., & Hanlon, G. (2011). From borrowing to blending: Rethinking the processes of organizational theory building. *Academy of Management Review*, 36(2), 318–337. <https://doi.org/10.5465/amr.2009.0155>
- Packendorff, J. (1995). Inquiring into the temporary organization: New directions for project management. *Scandinavian Journal of Management*, 11(4), 319–333. [https://doi.org/10.1016/0956-5221\(95\)00018-Q](https://doi.org/10.1016/0956-5221(95)00018-Q)
- Padalkar, M., & Gopinath, S. (2016). Six decades of project management research: Thematic trends and future opportunities. *International Journal of Project Management*, 34(7), 1305–1321. <https://doi.org/10.1016/j.ijproman.2016.06.006>
- Pfeffer, J. (2005). Why do bad management theories persist? A comment on Ghoshal. *Academy of Management Learning & Education*, 4(1), 96–100. <https://doi.org/10.5465/amle.2005.16132570>
- Pinder, C. C., & Moore, L. F. (1980). The resurrection of taxonomy to aid the development of middle range theories of organizational behavior. In C. C. Pinder, & L. F. Moore (Eds.), *Middle range theory and the study of organizations* (pp. 187–211). Springer.
- Pinto, J. K. (2022). Avoiding the inflection point: Project management theory and research after 40 years. *International Journal of Project Management*, 40(1), 4–8. <https://doi.org/10.1016/j.ijproman.2021.11.002>
- Pollack, J. (2007). The changing paradigms of project management. *International Journal of Project Management*, 25(3), 266–274. <https://doi.org/10.1016/j.ijproman.2006.08.002>
- Popper, K. (1959). *The logic of scientific discovery*. Harper and Row.
- Popper, K. (1963). *Conjectures and refutations: The growth of scientific knowledge*. Routledge.
- Project Management Institute. (2021). *A guide to the project management body of knowledge (PMBOK® guide)* (7th ed.). Project Management Institute.
- Reich, B. H., Liu, L., Sauer, C., Bannerman, P., Cicmil, S., Cooke-Davies, T., Gemino, A., Hobbs, B., Maylor, H., & Messikomer, C. (2013). Developing better theory about project organizations. *International Journal of Project Management*, 31(7), 938–942. <https://doi.org/10.1016/j.ijproman.2013.07.001>
- Rudner, R. S. (1966). *Philosophy of social science*. Prentice-Hall.
- Ryan, J. B. (2014). Financial accounting reform: The need for a 'back to basics' approach for profit measurement and wealth measurement. *International Journal of Economics and Accounting*, 5(1), 1–50. <https://doi.org/10.1504/IJEA.2014.060915>
- Schermann, M., Dongus, K., Yetton, P., & Krcmar, H. (2016). The role of transaction cost economics in information technology outsourcing research: A meta-analysis of the choice of contract type. *The Journal of Strategic Information Systems*, 25(1), 32–48. <https://doi.org/10.1016/j.jsis.2016.02.004>
- Shenhar, A. J., & Dvir, D. (1996). Toward a typological theory of project management. *Research Policy*, 25(4), 607–632. [https://doi.org/10.1016/0048-7333\(95\)00877-2](https://doi.org/10.1016/0048-7333(95)00877-2)
- Shenhar, A. J., & Dvir, D. (2007). Project management research - The challenge and opportunity. *Project Management Journal*, 38(2), 93–99. <https://doi.org/10.1177/875697280703800210>
- Shepherd, D. A., & Suddaby, R. (2017). Theory building: A review and integration. *Journal of Management*, 43(1), 59–86. <https://doi.org/10.1177/0149206316647102>
- Smith, M. L. (2006). Overcoming theory-practice inconsistencies: Critical realism and information systems research. *Information and Organization*, 16(3), 191–211. <https://doi.org/10.1016/j.infoandorg.2005.10.003>
- Smyth, H. J., & Morris, P. W. (2007). An epistemological evaluation of research into projects and their management: Methodological issues. *International Journal of Project Management*, 25(4), 423–436. <https://doi.org/10.1016/j.ijproman.2007.01.006>
- Söderlund, J. (2004). Building theories of project management: Past research, questions for the future. *International Journal of Project Management*, 22(3), 183–191. [https://doi.org/10.1016/S0263-7863\(03\)00070-X](https://doi.org/10.1016/S0263-7863(03)00070-X)
- Söderlund, J. (2011). Pluralism in project management: Navigating the crossroads of specialization and fragmentation. *International Journal of Management Reviews*, 13(2), 153–176. <https://doi.org/10.1111/j.1468-2370.2010.00290.x>
- Suddaby, R. (2010). Construct clarity in theories of management and organization: Editor's comments. *Academy of Management Review*, 35(3), 346–357. <https://doi.org/10.5465/amr.2010.51141319>
- Sutton, R. I., & Staw, B. M. (1995). What theory is not. *Administrative Science Quarterly*, 40(3), 371–384. <https://doi.org/10.2307/2393788>
- Svejvig, P. (2021). A meta-theoretical framework for theory building in project management. *International Journal of Project Management*, 39(8), 849–872. <https://doi.org/10.1016/j.ijproman.2021.09.006>
- Tang, Y., Chen, Y., Hua, Y., & Fu, Y. (2020). Impacts of risk allocation on conflict negotiation costs in construction projects: Does managerial control matter? *International Journal of Project Management*, 38(3), 188–199. <https://doi.org/10.1016/j.ijproman.2020.03.002>
- Truex, D., Holmström, J., & Keil, M. (2006). Theorizing in information systems research: A reflexive analysis of the adaptation of theory in information systems research. *Journal of the Association for Information Systems*, 7(12), 797–821. <https://doi.org/10.17705/1jais.00109>
- Tsang, E. W., & Kwan, K.-M. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24(4), 759–780. <https://doi.org/10.5465/amr.1999.2553252>
- Turner, R. J., Huemann, M., Anbari, F. T., & Bredillet, C. N. (2010). *Perspectives on projects*. Routledge.
- Tywoniak, S., Ika, L., & Bredillet, C. (2021). A pragmatist approach to complexity theorizing in project studies: Orders and levels. *Project Management Journal*, 52(3), 298–313. <https://doi.org/10.1177/8756972821999501>
- Van de Ven, A. H. (1989). Nothing is quite so practical as a good theory. *Academy of Management Review*, 14(4), 486–489. <https://doi.org/10.5465/amr.1989.4308370>
- Van de Ven, A. H. (2007). *Engaged scholarship: A guide for organizational and social research*. Oxford University Press.
- van Rooij, I., & Baggio, G. (2020). Theory development requires an epistemological sea change. *Psychological Inquiry*, 31(4), 321–325. <https://doi.org/10.1080/1047840X.2020.1853477>
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68, 1–17. <https://doi.org/10.1509/jmk.68.1.1.24036>

- Weick, K. E. (1974). Middle range theories of social systems. *Behavioral Science*, 19(6), 357–367. <https://doi.org/10.1002/bs.3830190602>
- Weick, K. E. (1995). What theory is not, theorizing is. *Administrative Science Quarterly*, 40(3), 385–390. <https://doi.org/10.2307/2393789>
- Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14(4), 490–495. <https://doi.org/10.5465/amr.1989.4308371>
- Whetten, D. A. (2002). Modelling-as-theorizing: A systematic methodology for theory development. In D. Partington (Ed.), *Essential skills for management research* (pp. 46–71). Sage Publications Ltd. <https://doi.org/10.4135/9781849208970.n3>
- Whetten, D. A., Felin, T., & King, B. G. (2009). The practice of theory borrowing in organizational studies: Current issues and future directions. *Journal of Management*, 35(3), 537–563. <https://doi.org/10.1177/0149206308330556>
- Williamson, O. E. (1975). Markets and hierarchies: Analysis and antitrust implications: A study in the economics of internal organization. *University of illinois at urbana-champaign's academy for entrepreneurial leadership historical research referece in entrepreneurship*.
- Winter, M., Smith, C., Morris, P., & Cicmil, S. (2006). Directions for future research in project management: The main findings of a UK government-funded research network. *International Journal of Project Management*, 24(8), 638–649. <https://doi.org/10.1016/j.ijproman.2006.08.009>
- Yadav, M. S. (2010). The decline of conceptual articles and implications for knowledge development. *Journal of Marketing*, 74(1), 1–19. <https://doi.org/10.1509/jmkg.74.1.1>
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Sage Publications.