

Document Version

Final published version

Licence

CC BY

Citation (APA)

Molaei, M., Smit, H. C. A. I., Hermans, M. H., & Bosch-Rekvelde, M. G. C. (2026). Ready, steady, repeat: Unravelling repetition and its potential benefits within public construction programs. *International Journal of Project Management*, 44(4), Article 102861. <https://doi.org/10.1016/j.ijproman.2026.102861>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

In case the licence states "Dutch Copyright Act (Article 25fa)", this publication was made available Green Open Access via the TU Delft Institutional Repository pursuant to Dutch Copyright Act (Article 25fa, the Taverne amendment). This provision does not affect copyright ownership.
Unless copyright is transferred by contract or statute, it remains with the copyright holder.

Sharing and reuse

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.



Ready, steady, repeat: Unravelling repetition and its potential benefits within public construction programs

Maedeh Molaei^{a,*}, Heleen Smit^a, Marleen Hermans^a, Marian Bosch-Rekvelde^b

^a Delft University of Technology, Faculty of Architecture and the Built Environment, Julianalaan 134, 2628 BL Delft, the Netherlands

^b Delft University of Technology, Faculty of Civil Engineering and Geosciences, Stevinweg 1 2628 CN, the Netherlands

ARTICLE INFO

Keywords:

Inter-organisational program
Repetitive activities
Economies of repetition
Public organisations
Construction industry

ABSTRACT

Global societal challenges and limited resources have intensified the need for solutions that accelerate innovation and increase productivity. Repetition, particularly in the construction industry, is widely recognised for achieving efficiency gains and cost reductions. Its realisation, however, remains challenging due to the project-based nature of the industry, which emphasises project uniqueness. In addition, repetition is fragmented across multiple organisations and its recognition is predominantly framed from an intra-organisational perspective. Inter-organisational programs offer a promising setting to enable repetitive activities by strategically bundling interdependent and similar projects. Based on a qualitative multiple-case analysis of three construction programs, the study shows how organisations can identify the potential benefits of repetitive activities earlier, leading to more efficient and effective execution of work and achievement of program goals. The study contributes to literature by providing a conceptual model explaining how repetitive activities manifest and can be leveraged and steered to realise their potential benefits.

1. Introduction

Worldwide, organisations in various industries are confronted with challenges such as digitalisation, climate adaptation, and energy transition (Whyte & Mottee, 2022). Addressing these challenges requires strategic change in how organisations coordinate and organise projects (Vosman et al., 2024), particularly when resources and skilled labour are scarce (Kim et al., 2020). Traditional project-based approaches are characterised by one-off and relatively isolated efforts (Vosman et al., 2024), which may limit opportunities for repetition, learning and continuity across projects (Maylor et al., 2006). Consequently, organisations are increasingly shifting from temporary project approaches to long-term programmatic approaches to achieve strategic goals and to benefit from repetition, despite the uniqueness pursuits.

The construction industry exemplifies these developments, which is traditionally characterised by a project-based approach (Cacciatori & Prencipe, 2021; Vosman et al., 2024; Winch & Maytorena-Sanchez, 2020). In the construction industry, public clients are entities that strategically initiate construction activities and usually engage with private entities through outsourcing and contractual arrangements to generate value (Denicol et al., 2021). In response to growing long-term

demands in the construction industry, public organisations are increasingly adopting programs to achieve strategic objectives (Denicol et al., 2023; Frederiksen et al., 2024; Vosman et al., 2024). Programs involve coordinating multiple interdependent projects and non-project work to achieve higher-order strategic objectives and benefits that cannot be realised if managed separately (Frederiksen et al., 2021; Lycett et al., 2004; Pellegri-nelli, 1997). In the context of public construction, inter-organisational programs include projects aimed at constructing new assets as well as projects related to routine operations and maintenance activities. The latter are increasingly organised and managed as projects to support the achievement of strategic objectives (Hedborg et al., 2024; Nilsson Vestola et al., 2021). The inter-relatedness of projects in an inter-organisational program enhances the likelihood that the projects and their associated activities will display similar characteristics, thereby giving rise to the emergence of repetitive activities within and/or across projects.

The study focuses on asset-based construction programs. In this context, repetitive activities are defined as *(sub)processes and tasks that are executed similarly or identically more than once (repeatedly) during the life cycle of the physical asset(s)*. Examples include developing a similar design plan for schools and pouring concrete for multiple similar floors

* Corresponding author.

E-mail address: Maedeh.molaei@tudelft.nl (M. Molaei).

<https://doi.org/10.1016/j.ijproman.2026.102861>

Received 30 March 2025; Received in revised form 16 April 2026; Accepted 8 May 2026

Available online 9 May 2026

0263-7863/© 2026 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

within and across schools. In our paper, we have chosen the term repetitive “activity”, which is a distinct work step with a clearly defined beginning and end (Mahdi, 2004). This focus reflects insights from operations management research (e.g. Maylor et al., 2018; Roehrich et al., 2024) and innovation and project management (e.g. Davies & Brady, 2000) showing that repetition typically occurs at the level of underlying activities, including (sub)processes, elements, or tasks rather than full repetition of the entire project (Bakker, 2010; Engwall & Miterev, 2025).

Against this background, the aim of the study is to expand the understanding of repetitive activities and their potential benefits by shifting focus from an intra-organisational perspective to inter-organisational programs. Previous studies highlighted that repetitive activities offer potential benefits including increased efficiency, productivity, continuous improvements due to the learning curve (Davies et al., 2009; Godsell et al., 2018), and “economies of repetition” (Davies & Brady, 2000). Much less attention, however, has been paid to how repetitive activities can be identified and interact across multiple projects and organisations within inter-organisational programs. In line with Jacobsson and Jaloča (2025), we argue that repetitive activities can improve efficiency and predictability within organisations compared to numerous short-term projects.

There have been calls for more research on distinguishing repetitive from unique activities (Bakker, 2010) and how repetitive activities enhance learning and (continuous) improvement within a program (e.g. Eriksson et al., 2017), requesting attention to understand repetition beyond projects. In response to these calls, the current study addresses the following research question by studying three on-going construction programs:

How do repetitive activities and their potential benefits manifest within inter-organisational construction programs?

The study has two contributions. Firstly, inspired by operations, project and innovation management research, it broadens the scope of repetitive activities from projects performed within a single organisation to inter-organisational programs. The study identifies focus areas of repetitive activities that are relevant at the program level. Secondly, the study presents a conceptual model illustrating how deliberate identification of repetitive activities can help leverage their potential benefits, ultimately contributing to the achievement of program goals.

The following section provides an overview of the literature on repetitive activities and its relevance to programs. Next, we describe the research design, including a description of the three cases studied, data collection and analysis. This is followed by the empirical findings which provide insights into occurrence of repetitive activities and their associated potential benefits in the studied cases. Finally, the discussion and conclusion reflect on the findings and outline the main contributions to literature.

2. Theoretical background

2.1. Origins of addressing repetition and its potential benefits

Repetition with the aim of capturing its potential benefits has been studied in various neighbouring research fields including operations, project and innovation management research. Historically rooted in operations management, the concept of repetition was more closely associated with non-project, high-volume production settings, such as Henry Ford’s assembly line, where continuous improvement served as a competitive advantage (Davies et al., 2023). With the rise of rapidly changing market conditions, however, firms have increasingly adopted project-based approaches and project management has become an indispensable part of operations management (Davies et al., 2023; Ramasesh & Browning, 2014). Yet, one of the main differences between these two research fields is the way they approach and utilise the concepts of repetition and uniqueness (Roehrich et al., 2024). Operations management research acknowledges that projects often involve tasks,

elements, products or subsystems that can be replicated or reused across different projects (Arto & Turkulainen, 2018; Godsell et al., 2018; Maylor et al., 2018). This research field distinguishes projects from repetitive processes based on production volume and standardisation (variety): projects are one-off efforts producing low-volume, highly varied artefacts, whereas steady-state processes involve the continuous performance of the same task (Hayes & Wheelwright, 1984; Roehrich et al., 2024).

Projects are often defined as temporary endeavours aimed at delivering unique products and services, or at least those that are not identical as the previous ones (Pinto, 2020; Ramasesh & Browning, 2014). Lundin and Söderholm (1995) propose that a task definition is often the *raison d’être* for initiating a temporary project organisation, where the task may be either unique (one-off) or repetitive. Informed by the neo-institutional research stream in project studies, Lundin and Söderholm (1995) argue that temporary organisations encounter pressure from their institutional environment, which refers to historical and organisational context that set conditions on actions within an organisation. Such pressure may lead an organisation towards homogenisation and standardisation of project practices to benefit from advantages of repetitive activities and establish formalised routines (Kadefors, 1995). Projects are embedded in their surroundings and interconnected with other successive and simultaneous projects within an organisation (Engwall, 2003; Engwall & Miterev, 2025).

In the intersection of innovation and project management research, Davies and Brady (2000) challenge the common belief that projects are entirely unique, positing that projects can incorporate elements that are repeated in other projects. Their study suggests that projects and bids are seen as similar when they rely on the repeated use of the same sets of routines and capabilities by a (private) project-based firm (Davies & Brady, 2000). To navigate through innovation trajectories, organisations may engage in an emergent lineage or sequence of projects that share an underlying concept to facilitate knowledge transfer and iterative learning from one project to another (Maniak & Midler, 2014). Organisations can benefit from the cumulative impact of series of projects by making incremental improvements and balancing the exploitation and exploration practices, using knowledge from past projects and combining them in novel ways (Berggren, 2019). Unlike routine industries like manufacturing, where repetition drives economies of scale or scope, project-based firms benefit from repetition by employing “replication strategies” to transfer capabilities in managing a series of inter-related and relatively similar projects (Davies & Brady, 2016).

Scholars emphasise the key role of repetition in leveraging the learning curve to accumulate experiences, whether positive or negative, leading to reduction in cost and improvements in time, quality and productivity (Pollack & Anichenko, 2022). Repetition can facilitate the creation of organisational routines and processes to deliver similar and repeatable activities more efficiently and effectively through exploitation of capabilities and economies of repetition (Davies & Brady, 2000; Denicol & Davies, 2022). Learning from repetition can also occur through knowledge exploration, where knowledge and experiences from other contexts and projects can be recombined to develop one-off solutions (Brady & Davies, 2004; Davies et al., 2009). Table 1 summarises major contributions from various research fields in project studies regarding repetition and its potential benefits, which have primarily been examined within at intra-organisational level.

Existing literature on project studies across various research fields provides insights into repetitive elements, for instance (sub)products, (sub)processes, procedures within and/or across projects. These studies highlight several potential benefits of repetition, including efficiency gains, leveraging the learning curve, increased productivity, and economies of repetition. We next explore extant knowledge regarding the ambiguity of uniqueness and repetition, as well as how these repetitive elements tend to be studied at the activity or project levels.

Table 1

Overview of earlier research addressing repetition and its potential benefits in project studies at intra-organisational level.

Example of literature	Research focus	Research field	Method and empirical context	Key findings regarding addressing repetition	Potential benefits of repetition
Artto and Turkulainen (2018)	Product and organisational sub-system repetition across projects at intra-organisational level	Operations and project management	Single embedded case study of four projects at an oil company	While projects may be unique, they can consist of reused product and/or organisational sub-systems.	Reuse of knowledge and experiences derived from various project components, thereby facilitating standardisation across product and organisational subsystems.
Berggren (2019)	Management of sequences of projects at intra-organisational level	Innovation and project management	Longitudinal study of product improvement projects at an automobile firm	Firms may initiate a sequence of projects with an emphasis on both knowledge creation (exploration) and continuous improvement (exploitation). When an organisation undertakes a novel activity or project, a bottom-up learning process is initiated. Through repeated execution, routines and capabilities are created or adapted across three phases: within the project, project-to-project, and project-to-organisation. The capability building process is completed when the organisation takes top-down strategic decisions to exploit the learning captured across the entire firm.	Enhanced evolutionary inter-project learning through balancing exploration and exploitation, leading to cumulative improvements in product performance of a firm. Development and standardisation of company-specific routines and processes that support organisational learning and enable efficient delivery of increasing numbers of (repetitive) activities (e.g. bids) and projects.
Brady and Davies (2004)	Repeatable activities within and across projects at intra-organisational level	Innovation and project management	Longitudinal two-case study of capital goods suppliers in tele-communications	Repetition occurs even in unique projects. Projects differ in product and process standardisation along a routine-unique continuum.	Improves efficiency, productivity, and effectiveness by combining standardised processes with innovative outcomes. Recombination supports learning from other contexts, whereas replication enables refinement and reuse of successful practices, enhancing performance, and exploiting learning curve advantages.
Davies et al. (2009)	Iterative product-process design across projects at intra-organisational level	Innovation and project management	Single-case study of a megaproject in infrastructure	Organisations can evolve from initiating a first project or bid in a new business domain to building organisational capabilities. Repetition embeds routines and learning processes across bids and projects.	Economies of repetition, improving efficiency and effectiveness in subsequent projects.
Davies and Brady (2000)	Repeated solutions and cycles of activity at intra-organisational level	Innovation and project management	Two-case study of new implementation projects of complex product systems suppliers in tele-communications	Projects are open systems, in which procedures and structures span across previous, simultaneous and future projects. While some procedures are customised for individual projects, others are standardised and largely aligned with the institutionalised norms, values and routines of the organisation. Even new projects include repetitive assignments.	Leveraging existing knowledge, and thereby increasing predictability and efficiency.
Engwall (2003)	Procedure and activity repetition in preceding, parallel, and future projects at intra-organisational level	Project management	Longitudinal two-case study at a major power utility	At the portfolio level, organisations can enhance their portfolio management capabilities by systematically screening and identifying replicable elements, such as design, resources and materials, across various projects. Projects, therefore, can be clustered based on their degree of repetition.	Improved efficiency and effectiveness of organisation's projects by grouping projects based on identified repetitive elements.
Godsell et al. (2018)	(Sub)element repetition across projects at intra-organisational level	Operations and project management	Single instrumental case study of the supply chain of a utility company in water and wastewater infrastructure	Projects are not only entirely unique and situation-specific, rather they incorporate repetitive aspects, e.g. technical components and procedures (standard contracts and tendering system). As temporary organisations, projects, encounter pressures from their institutions.	Standardisation that fosters homogeneity among various temporary organisations and contributes to established institutionalisation within an organisation.
Kadefors (1995)	(formal) Standardisation across projects at intra-organisational level	Project management	Single-case study in the building sector	A project, temporary organisation, may be uniquely created to address a specific situation characterised by uncertainty and unpredictability. On the other hand, a repetitive project is dedicated to actions that are	Institutionalisation of procedures over time.
Lundin and Söderholm (1995)	Project task repetition across consecutive projects at intra-organisational level	Project management	Conceptual paper		

(continued on next page)

Table 1 (continued)

Example of literature	Research focus	Research field	Method and empirical context	Key findings regarding addressing repetition	Potential benefits of repetition
Maniak and Midler (2014)	Management of sequences of projects at intra-organisational level	Innovation and project management	Multiple longitudinal case studies in the automobile sector	primarily “more of the same” rather than being limited to a one-time event and will be repeated in the future. Repetition is structured through project lineages, where successive related projects enable project-to-project learning via the “carry-over” of existing components and the “carry-back” of new solutions.	Exploitation through component reuse and standardisation, combined with exploration through the integration of innovative solutions, resulting in efficiency gains and the development of a coherent innovation trajectory.

2.2. Ambiguous distinction between unique and repetitive

The traditional notion that projects are the “antithesis of repetition” (Pinto, 2020, p. 26) and inherently singular (Flyvbjerg, 2021), comprising merely unique tasks, has been challenged by several scholars (e.g. Artto & Turkulainen, 2018; Davies & Brady, 2000; Engwall & Miterev, 2025). There is, however, an ongoing debate in project studies regarding tensions between customisation and standardisation of projects (Miterev et al., 2017), partly due to a lack of clarity about at which levels and in which elements repetition can be identified.

A distinction can be made between the activities at the (temporary) project level and (permanent) organisational level, with the former characterised by customisation and uniqueness, while actions at the organisational level are generalised through standardised procedures and routines that support a large number of projects (Gann & Salter, 2000). Projects performed by an organisation can be seen along a continuum from repetitive to unique, rather than as dichotomous entities (Lundin & Söderholm, 1995; Papachristos et al., 2024). A project is repetitive when it is performed in a relatively predictable and stable environment likely to occur again in the future, whereas it is exploratory when the elements from other contexts and domains are recombined in new ways (Davies & Brady, 2016; Papachristos et al., 2024). Exploitation projects rely on repetitive activities, while exploration projects are defined by their non-recurring activities (Papachristos et al., 2024). Yet, exploration projects (even radically unique ones) may incorporate non-unique elements or standardised procedures (Davies & Brady, 2016; Engwall, 2003).

The so-called repetitive projects have been widely studied in the construction industry, particularly in domains such as road construction (Hegazy et al., 2014), housing communities and tunnel projects (Yang & Chang, 2005). These studies aim to optimise resource (labour and equipment) allocation, scheduling, and control systems by taking advantage of the repetitive nature of units across the project. In this context, a unit is defined as a clearly delineated, repeatable component of a project within which a set of activities is carried out in relation to the asset during the execution phase, e.g., floor, house (Mahdi, 2004), and road section (Hegazy et al., 2014). The repetition of an activity can occur both within a unit and between units. Such repetitive activities can be classified as similar (performed multiple times with variations, for example, in scope or conditions), or identical (performed multiple times under the same conditions). Conceptualising projects as systems with interconnected subsystems allows identification of repetitive elements at the component or activity level, within and across projects of an organisation, such as design, material, and equipment, rather than the project level (Artto & Turkulainen, 2018; Godsell et al., 2018). To determine whether an activity is unique or repetitive, temporary organisations need to be viewed as open systems across time and organisational space with activities connected to past experience, parallel and future projects, and embedded routines and procedures of the organisation (Engwall, 2003). In line with Bakker (2010) and Mahdi (2004), our study focuses on activities, discrete and finite work steps (i.e., having a beginning and end), that can be repeated within and across

projects. In this study, we define repetitive activities as (sub)processes and tasks that are executed similarly or identically more than once (repeatedly) during the life cycle of the physical asset(s).

Previous studies, mostly adopting a (private) intra-organisational perspective (see Table 1), have identified repetition within and across projects of an organisation over time and revealed the potential benefits associated with it. This paper extends the relevance of repetitive activities to inter-organisational programs, involving multiple organisations, e.g. public clients and supply partners.

2.3. Relevance of repetitive activities in programs

Multi-project management has gained increasing attention as a means for organisations to achieve their strategic objectives and make effective use of limited resources (Martinsuo & Ahola, 2022). It is discussed through various notions, including project lineages (Maniak & Midler, 2014), project networks (Kujala et al., 2021), project ecologies (e.g. Hedborg et al., 2020), and programs (e.g. Martinsuo & Hoverfält, 2018). Previous studies on multi-project management, particularly project lineages, have addressed the potential benefits of harnessing repetition in innovation trajectories to facilitate incremental and continuous improvement through iterative inter-project learning (e.g. Berggren, 2019). Programs, however, differ from project lineages in that the former involves an ex ante strategy that typically involves multiple organisations, whereas the latter usually relies on an emerging strategy to facilitate innovative expansion within a single organisation (Maniak & Midler, 2014).

A program is defined as a group of interdependent projects and other non-project activities, orchestrated to facilitate the realisation of tactical and/or strategic objectives that would not be achieved if these projects were managed individually (Lycett et al., 2004; Maylor et al., 2006; Thiry, 2002). This definition implies that a program encompasses a wide range of activities both within discrete projects and ongoing operations (Thiry, 2002). Program management involves bundling interdependent projects and operations with a long-term perspective, thereby enabling resource and knowledge sharing (Turkulainen et al., 2015). Programs often involve both public and private organisations (Frederiksen et al., 2024; Martinsuo & Ahola, 2022). For instance, in the construction industry, public clients usually rely on various supply partners in executing such programs. Such an inter-organisational setting creates multiple organisational levels in which communication, coordination, and organising activities across organisations take place (Frederiksen et al., 2021). Programs can be organised and managed using a combination of parallel projects (executed simultaneously) and sequential projects (carried out one after another) (Martinsuo & Ahola, 2022; Martinsuo & Hoverfält, 2018). The interconnected nature of projects within a program, which share a common strategic objective (Frederiksen et al., 2024; Pellegrinelli, 1997), increases the likelihood of recurring characteristics and activities, highlighting the importance of recognising repetitive activities. In contrast to individual temporary project organisations, which lack sufficient continuity in activities and actors to facilitate effective repeatability (Cacciatori & Prencipe, 2021),

the embeddedness of interconnected projects within a program can enhance the occurrence of repetitive activities. This, in turn, supports the development of organisational routines across project iterations (Addyman et al., 2020; Cacciatori & Prencipe, 2021).

Despite the attention devoted to repetitive activities, we argue that these activities remain undervalued within programs and their full benefit potential is yet to be realised. Changing the analytical lens from an intra-organisational perspective to an inter-organisational program, can result in the identification of previously unrecognised repetitive activities. Considering the long-term, multi-project and inter-organisational nature of construction programs which enhances the likelihood of identifying and creating repetitive activities, the involved organisations can leverage the potential benefits of repetitive activities and make improvements at project, program, and (permanent) parent organisation levels.

3. Method

3.1. Research design and case description

This study adopts a qualitative multiple case study approach (Yin, 2018) to expand the knowledge concerning repetitive activities and their potential benefits, shifting the focus from the project level within a single organisation to the program level involving multiple organisations. To provide a comprehensive overview of various focus areas of repetitive activities, we studied multiple and varied cases (i.e. different asset type and asset life cycle phase). The unit of analysis for this research is the temporary program organisation, including public client and tier one supply partners. The study focused on cases that were most likely to provide examples of repetitive activities within programs allowing us to identify focus areas of repetitive activities. Both similarities and differences in these cases would help towards building theory in focus areas of repetitive activities, and their potential benefits within inter-organisational programs.

Following Eisenhardt and Graebner (2007), theoretical sampling principles were used to select the case studies, resulting in three on-going programs in the construction industry, each managed by a different client organisation in the Netherlands. We purposefully included programs in which repetitive activities occur at various life cycle phases of assets, including (i) operations and maintenance of existing assets contracted through regional projects (program Alpha, hereafter Alpha), (ii) design and delivery of new assets through multiple projects (program Beta, hereafter Beta), and (iii) a combination of operations and maintenance contracted through regional projects and sustainable upgrading projects (program Gamma, hereafter Gamma). Given the dynamic nature of programs, cases in the early phases of the program were selected to ensure comparability. At the time of data collection, all cases were within two years after awarding contracts to supply partners. Finally, case selection was based on access to the client organisation and supply partners (consortium of enterprises). The characteristics of the cases, represented by pseudonyms for confidentiality reasons, are summarised in Table 2.

In Alpha, floodplain maintenance was divided into three regional lots and awarded to three different supply partners for a period of at least four years, resulting in repetition in the preparation and execution of operations and maintenance activities. The strategic overarching objective is to achieve safe and natural floodplains for all inhabitants more efficiently and effectively through coordination across the three lots (regional maintenance projects).

In Beta, three supply partners were awarded framework agreements to design and build a minimum of nine and a maximum of thirty primary school buildings over a ten-year period, with the distribution of projects conducted through mini-competitions. This approach leads to repetitive activities in the design and delivery of new assets. The objective is to transition to a supply-driven market approach, prioritising sustainability, flexibility, and quality in the realisation of school buildings as social

Table 2
Characteristics of the case studies.

	Alpha	Beta	Gamma
Sector	Water and road infrastructure	Public school	Public housing
Program description	Operations and maintenance of the river floodplains	Construction of 9 to 30 new primary school buildings	Operations and maintenance and sustainable upgrading of existing housing complexes
Contract length	Four years with two possible extensions of three years	Ten years	Seven years with a possible extension of three years
Total (estimated) contract value	€200 million	€200–400 million	€1 billion
Criteria considered for bundling projects/activities	Geographical location (three regional lots)	Construction of new primary school buildings in a municipality	Geographical location and type of activities (Seven regional lots and three work packages)
Number of tier one supply partners involved	Three supply partners	Three supply partners	Seven supply partners

facilities.

In Gamma, integral maintenance consisting of (un)planned maintenance and sustainable upgrading of public housing was divided into regional lots and discipline-related work packages and awarded to seven supply partners for a minimum of seven years. This approach creates condition for repetition in both the preparation and execution of maintenance and upgrading activities on existing assets. The objective is to achieve and maintain the desired property condition in an effective and efficient manner, with the residents and users at the centre of the process.

In Alpha and Gamma, each supply partner is responsible for multi-year regional operations and maintenance, which can be considered as separate projects (Hedborg et al., 2024) and requires coordinated management to achieve overarching strategic program goals. In all cases, a steering group was established to align activities across the inter-related projects.

3.2. Data collection

Data was collected from archival documents of the cases, semi-structured interviews with key informants, and participant observations, hence adopting triangulation principles (Yin, 2018). In addition to public documents including tender and contract documents, we received relevant internal reports such as meeting presentations. The main data collection relied on 20 semi-structured interviews, conducted both on-line and face-to-face by two researchers. Since the informants' interpretations have a crucial influence on the data and ultimately the results, we selected the informants based on their roles and knowledge about the program (Gioia et al., 2012). Key informants at the tactical level from both public client and supplier sides, who were involved in preparing the tender or the bid and the formation of the program, were interviewed (see Table 3).

To aid data collection and ensure consistency during the interviews, an interview guide was developed. In the first part of the interview, we focused on how the program goals were developed and their relation to the strategy of the parent organisation (public client or supply partner). This was followed by questions about interviewees' definitions of repetitive activities, accompanied by examples, their associated potential benefits, and the development of specific work procedures by

Table 3
Overview of interviewees across the cases.

#	Code	Case	Interviewee's role	Organisation	Interview duration (mins)
1	Alpha.C1	Alpha	Project manager	Client organisation	65
2	Alpha.C2		Contract manager	Client organisation	75
3	Alpha.C3		Contract manager	Client organisation	55
4	Alpha.S4		Project manager	Contractor	105
5	Alpha.S5		Project manager	Contractor	60
6	Alpha.S6		Project manager	Contractor	60
7	Beta.C1	Beta	Contract manager	Client organisation	90
8	Beta.C2		Education housing director	Client organisation	70
9	Beta.C3		Procurement specialist	Client organisation	90
10	Beta.S4		Deputy director	Contractor	75
11	Beta.S5		Director	Contractor	55
12	Beta.S6		Tender manager	Contractor	70
13	Beta.C7		Client	Owner - School board	60
14	Gamma.C1	Gamma	Procurement and contract specialist	Client organisation	95
15	Gamma.C2		Strategic contract advisor	Client organisation	70
16	Gamma.C3		Business controller	Client organisation	80
17	Gamma.S4		Deputy director	Contractor	75
18	Gamma.S5		Process manager	Contractor	60
19	Gamma.S6		Account manager	Contractor	70
20	Gamma.S7		Operational director	Contractor	80

Note: Each interviewee is assigned an ID based on the case and organisation role (C: client and S: supply partner) followed by a number. For instance, 'Alpha.C1' refers to an interviewee from the client organisation in Alpha.

participating organisations within the program. All the interviews were audio-recorded and transcribed.

In addition to semi-structured interviews, we gathered data during participant observations. Our research team received assignments from public clients in Beta and Gamma to provide support, facilitate the steering group meetings and to reflect on the progress of collaboration within these two programs. While researchers were directly involved in the studied context through participant observations in these two cases, the findings discussed in this paper relate to a conceptual level different from the advisory practices in which they were involved (Langley & Klag, 2019). Moreover, at the end of the data collection phase, we organised four sessions to reflect on the results with selected experts who have experience working in inter-organisational programs (at the tactical and strategic levels) but were not directly involved in the three studied cases. The goal of these sessions was to discuss how the findings could be valuable for and be used by experts in their practice (Martinsuo & Huemann, 2021).

3.3. Data analysis

The empirical data was analysed in four steps inspired by Eisenhardt (2021) and Gioia et al. (2012). The data was coded following a systematic and iterative approach. The first step involved a thorough review of the raw data for each case, taking into account the program context, to facilitate the emergence of initial open codes. This phase was highly inductive through the informant's understanding of repetitive

activities and their potential benefits within a program (Gioia et al., 2012). All initial first-order codes were revised (Eisenhardt, 2021; Yin, 2018), resulting in a more manageable number of codes.

In the second step, we performed axial coding by looking more in-depth into codes, comparing them with each other, and grouping them into second-order themes (Strauss & Corbin, 2014). These second-order themes are interpretations that reveal the underlying meanings embedded in first-order codes, thereby facilitating a structured approach to organising and analysing the data (Gioia et al., 2012; Van Maanen, 1979). To develop second-order themes, we continuously compared the empirical data with existing literature. For instance, the first-order code "repetition in (sub)products or (sub)processes" was grouped under the second-order theme "type of delivery", following Davies et al. (2009), who distinguish between repetition and uniqueness across a matrix of products and processes. Similarly, the second-order themes "economies of repetition" and "economies of recombination" were informed by studies such as Davies and Brady (2000) and Maniak and Midler (2014). Some themes emerged from the empirical data, such as "organisational level". This iterative process allowed us to transition from the empirical data to the theoretical realm, ensuring coherence and relevance throughout the analysis (Gioia et al., 2012; Locke et al., 2022).

In the third step, the themes were aggregated into two dimensions capturing the overarching conceptual contribution across the cases: (1) focus areas of repetitive activities and (2) potential benefits of repetitive activities. To enhance the reliability of the analysis and ensure that all relevant constructs were identified, the two researchers responsible for coding conducted a thorough examination of the data (Miles & Huberman, 1994). This was followed by a discussion among the researchers to address any similarities and differences and purposive reflection on previous literature, leading to reconciliation of the interpretations (Gioia et al., 2012; Sankaran et al., 2024).

In the fourth and final step, we conducted a cross-case analysis by examining similarities and differences in the focus areas of repetitive activities and their associated benefits as manifested across the three cases, given their different program designs. Fig. 1 depicts a summary of the coding structure. In Appendix A, a table of illustrative quotations from the data is presented.

4. Results

4.1. Focus areas of repetitive activities

The empirical evidence suggests that repetitive activities can be classified into three analytical focus areas: (1) organisational level, (2) type of delivery, and (3) temporal occurrence. These analytical focus areas are not mutually exclusive, as a repetitive activity may simultaneously manifest across multiple areas. They are intended to capture and understand the characteristics of repetitive activities.

4.1.1. Organisational level

Given the multi-level setting of inter-organisational programs, repetitive activities manifest differently at various organisational levels. At the strategic level, public clients articulate the challenge to be addressed and bundle projects into a program aimed at achieving a common goal. Similar activities related to comparable assets are bundled within a client's portfolio, thereby creating opportunities for repetitive activities emerging and enabling their optimisation. In Alpha, for instance, the focus was exclusively on floodplain maintenance, while in Beta, new primary school buildings were bundled. The public client (parent) organisation of Beta further professionalised its commissioning role by iterative refining and eventually standardising and institutionalising the mini-competition process. Supply partners also engaged at the strategic level, allowing them to acquire relevant knowledge and experience that support capability building and enable the performance and optimisation of repetitive activities over time.

At the program level, the inter-organisational temporary

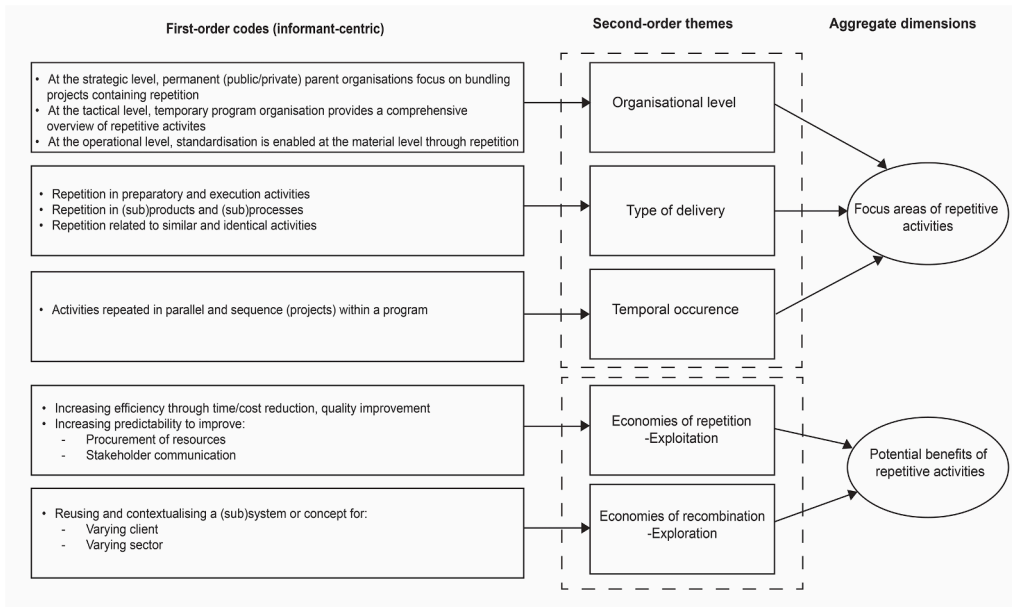


Fig. 1. Coding structure for identifying focus areas of repetitive activities and their potential benefits within an inter-organisational program.

organisation can then be designed in such a way that more repetitive activities emerge across projects. In Alpha, each lot team was responsible for developing an asset management system aimed at facilitating coordination and providing an overview of the repetitive activities within the program. To facilitate the implementation of standardised solutions (building concepts) for supply partners in Beta while ensuring uniformity across projects, the municipality established general functional requirements within the framework agreements. Following the first mini-competition, these requirements were further tailored to reflect the specific needs of each school board. In addition, the municipality adopted a strategy known as “*Factory Thinking*”, which aims to create efficiency by establishing 10-year framework agreements with supply partners. This strategy requires supply partners to set up arrangements at the program level with a long-term perspective within their own supply chains. In Gamma, supply partners were asked to take on a directing and advisory role by developing a 15-year maintenance plan, extending beyond the 10-year program duration. This led to the active participation in asset management of the public client, “*allowing [supply partners] to guide decision-making and propose a repetitive approach*” (Gamma.S6). In all three programs, early involvement of supply partners within the (temporary) inter-organisational program marks an innovative approach for all the parties involved. The public client made this choice to use the technical expertise and knowledge of the supply partners by engaging them in the challenge and “*asking functional questions*”, rather than asking them to provide solutions to a specific problem. An informant elaborated on this, demonstrating repetition at the (tactical) program level:

“*By being more closely organised together [public client and supply partner], the supply partner moves further up the supply chain. Decisions that were previously made solely by the client are now taken jointly, allowing the contractor to be more involved in the decision-making process, and thereby creating greater opportunities to realise potential improvements [resulted from repetition]*” (Alpha.C3).

Repetitive activities were predominantly identified on the supply partner side. The reason may be that a public client is dependent on supply partners to execute and eventually leverage the potential benefits of certain repetitive activities.

At the operational level repetition can be manifested in scheduling and preparation activities as well as execution activities by construction crews. Supply partners in Beta explained that the expected repetitions

would allow them to develop a standardised implementation plan at the material level for each school building: “*We now have documented 400 details of different standard joints that are required [...] These work plans will be fully standardised, ensuring uniform execution*” (Beta.S4).

4.1.2. Type of delivery

Early involvement of supply partners led to the creation of repetitive activities both during the preparatory phase and the subsequent execution phase. Informants provided examples of repetitive preparatory activities, including scheduling, administration, and preparing the annual plan. The annual plan, for example, is created in Alpha to provide an overview of the floodplain maintenance activities that are needed and feasible across different regional lots. Examples of repetitive activities during execution are the maintenance of channels in Alpha, assembling prefabricated elements in Beta, and (void) repairs in Gamma.

Moreover, repetitive activities were identified in (sub)products (e.g. prefabrication of components) and (sub)processes (e.g. standardisation of asset management system). As the following quote demonstrates, although the end product differs among various housing complexes, the renovation process can be an example of a repetitive activity: “*When organised properly, it becomes [a] repetitive [process]. Every time a bathroom [product], every time the same sequence. While not all bathrooms are the same, it [the steps followed] is always the same: demolition first, then plastering, then tiling [...]*” (Gamma.S4). Hence, repetition does not preclude achieving a unique result and it enables adoption of process and product standardisation, as noted in the following quote: “*With standard building blocks, you can create almost any unique design as long as you make smart combinations*” (Beta.C3). This approach ultimately enables alignment with project-specific needs and enhances customisation.

The level of homogeneity among activities is also influential in categorising activities as repetitive, which may extend to performing similar or identical activities in one or various locations. Performing the same activity at the same location multiple times is categorised as an identical activity, whereas performing the same activity at a different location is categorised as a similar activity (requiring context-specific customisation). Both, however, are considered repetitive, as illustrated by the following reflection: “*Repetition implies recurrence, which can take two forms. First, in our ten-year contract, some tasks require returning to the same area each year to perform identical activities. This represents standard maintenance, characterised by high repetition. Second, tasks such as dredging*

[...] the work itself is repetitive, but the location changes. Rather than returning to the same site, we carry out similar activities in different areas. This [so-called] variable maintenance occurs less frequently [...], yet the same type of process is repeated multiple times" (Alpha.C1).

4.1.3. Temporal occurrence

Repetitive activities also vary in their representation of the progression of time. Sometimes, repetitive activities have interdependencies with their past and future activities within the program, thereby resulting in repetition occurring in sequence. Examples are cyclical maintenance of assets in one location, such as mowing grass on embankments every year. An informant reflected on the temporal occurrence aspect of repetitive activities: "For instance, you perform maintenance activities on each trench once every ten years. However, since you have a total of 30 trenches to manage, this indicates that each year, one or two trenches require maintenance" (Alpha.S5).

While the term repetition inherently suggests sequential recurrence, activities may also be repeated in parallel. In Alpha, for example, all three supply partners performed the same or similar activities (dredging of trenches) in different locations. Therefore, horizontal knowledge exchange among supply partners using bi-weekly cross-(lot)team session was considered essential as they might encounter the same challenges. In contrast, while Beta and Gamma also feature supply partners engaged in similar activities across parallel projects, this aspect of repetition was not noted by the informants.

4.2. Potential benefits

Two main themes regarding the potential benefits of repetitive activities were identified: economies of repetition (exploitation) and economies of recombination (exploration).

4.2.1. Economies of repetition - exploitation

Economies of repetition, including increased efficiency (time and cost reduction) and improved quality, was perceived as an evident potential benefit of repetitive activities, depending on the objective being pursued at the program level. In addition, the knowledge and experience gained from repetitive activities within a program can enhance predictability, which, in turn, facilitates more efficient procurement of resources (materials and personnel) and provides stakeholders with more comprehensive information.

"You do not always have to get it [a repetitive activity] right the first time. [...] It is precisely the repetitive nature that greatly increases the learning potential". (Alpha.C1)

In addition, in Alpha, knowledge concerning repetitive activities and identified improvements is shared among all three supply partners concurrently, even if the activity has not yet been repeated by the partners involved. As the following quote illustrates, such knowledge sharing helps prevent the recurrence of mistakes: "When we just started, lot X made some changes in a GIS layer. It turned out we had it wrong as well and then the project manager [of lot X] told us to stop, because they had mown all grasses that did not belong to them. [...] But if you do not share that, then we have done it all wrong" (Alpha.S4).

4.2.2. Economies of recombination - exploration

Economies of recombination involve transferring successful practices and solutions from repetitive activities and adapt them to different contexts, including other clients and sectoral settings. For example, one supply partner in Alpha introduced a novel approach to mowing floodplains, addressing limitations of traditional mowing that disrupts local wildlife habitats. Developed through a pilot project to enhance ecological resilience and maintain water flow management, this new method offers a more efficient and targeted approach, which the supply partner intends to upscale to similar activities for other public clients. Similarly, a supply partners in Beta adapted the current building concept

for school buildings to be applicable to public office buildings. Furthermore, the public client in Beta aspires to serve as a source of inspiration for other clients engaged in public school projects, as reflected by an informant:

"But part of our strategy was also to turn this mini-competition into an independent European tender. So that any municipality or school board in the Netherlands could tender in line with our concept as well as with the building concepts of our three supply partners". (Beta.C3)

Apart from the potential benefits, several informants note that, repetitive activities could have disadvantages such as "repeating the mistakes", "tending towards the monotony", "hindering flexibility", and "reduced inclination towards changes". It was suggested that iterative critical reflection and evaluation was important to mitigate these disadvantages and to address (pre)assumptions or automatic responses.

4.3. Cross-case comparison

The three cases reveal that repetitive activities occur across different phases of the asset life cycle and program designs. Alpha focuses on maintenance (e.g., dredging trenches, mowing ditches), Beta on design and construction of new primary schools, and Gamma on maintenance and sustainable upgrading of public housing (e.g., void repairs, enhancing energy labels).

In Alpha and Gamma, each supply partner is responsible for regional multi-year maintenance. The maintenance of assets within each region can be regarded as a single project during the contract period, with repetitive activities occurring both within and between projects (e.g. annual cycles of mowing of ditches in specific locations). In contrast, Beta and sustainable upgrading activities in Gamma consist of multiple projects during the contract period, where each asset (e.g. school building or housing complex) is treated as a separate project. Despite these differences in program design, repetitive activities manifest across all three focus areas (organisational level, type of delivery, and temporal occurrence) and occur both within and across projects. The cross-case analysis shows that bundling assets, whether in new construction, sustainability upgrade, or bundling regional operations and maintenance activities in a long-term program, increases the probability of repetitive activities emerging over time.

Repetitive activities were identified across different organisational levels involved in coordinating projects and managing the program. At the strategic level, public clients provided a sufficient flow of work by maintaining a pipeline of repetitive activities, which ensured continuity and established operational approaches for the supply partners. At the tactical level, inter-organisational programs need to be managed to ensure coordination between projects and maintain uniformity among repetitive activities to harness the potential benefits associated with repetition. The operational level primarily focuses on optimising the scheduling of resources. While repetition can occur across various organisations involved in a program (parent organisations of client and supply partner as well as inter-organisational temporary organisation), repetitive activities were primarily acknowledged in the inter-organisational and supplier domains. Only in Beta, the client recognises the repetitive nature of activities through participation in such a program within their own parent organisation. Specifically, repetitive activities were recognised in organising mini-competitions to ensure that the potential benefits of repetition, in terms of efficiency, could be realised.

Across the cases, repetitive activities emerged in both preparatory and execution phases, encompassing (sub)processes and (sub)products. Some activities were identical, repeated at the same location over time (e.g., annual maintenance in Alpha), whereas others were similar, performed across different locations or contexts with some adaptation (e.g., dredging in Alpha or renovations in Gamma). In all cases, repetitive activities enabled standardisation while allowing for context-specific adjustments.

Repetition was predominantly recognised as a sequential process across the cases studied. Only in Alpha, parallel projects performed by supply partners were acknowledged specifically through knowledge sharing sessions. In both Beta and Gamma, although supply partners may have engaged in parallel projects that are similar in nature, informants did not explicitly recognise them. In Beta, the use of mini-competitions may have hindered the recognition of repetitive activities in parallel projects of other supply partners, limiting the leveraging of the potential benefits of repetition at the program level.

Repetitive activities can be leveraged to reduce production costs, increase profits, or enhance quality. The long-term nature of the studied inter-organisational programs, combined with the inter-connectedness of the embedded projects, provide opportunities for public clients and supply partners to contribute to continuous improvement through repetitive activities. These improvements can extend beyond the benefits of managing projects individually and align with the overall program goals. Economies of recombination and the potential for utilising knowledge gained from engaging in such novel approach have been primarily recognised by informants from Alpha and Beta. Specifically, they highlighted economies of recombination by actively exploring ways to apply knowledge gained from the program to leverage the benefits of repetitive activities within their parent organisations.

5. Discussion

In line with the growing need to address societal challenges globally, there is an emerging stream of research on program management (Denicol & Davies, 2022; Martinsuo & Hoverfält, 2018). Previous research argues that repetition within and across projects at the intra-organisational level can be leveraged to realise their potential benefits (Davies & Brady, 2000; Denicol & Davies, 2022). The current study advances knowledge by identifying repetitive activities and their potential benefits within inter-organisational programs, drawing on insights from various research fields. By highlighting analytical focus areas of repetitive activities and their potential benefits, we seek to bring the concept of repetition to the inter-organisational program level. Our research has two main theoretical contributions, which are discussed below.

5.1. Extending current knowledge of repetition to inter-organisational program

Scholars argue that neighbouring research fields offer opportunities for sharing concepts and ideas (Maylor et al., 2018). Following the call to combine insights from adjacent literatures to develop new theoretical contributions (Roehrich et al., 2024), the first contribution of our study is to enhance literature by demonstrating the relevance of repetitive activities at the program level, drawing on operations, project, and innovation management research. Operations management often places too much focus on repetition, whereas project/program management overemphasises uniqueness (Maylor et al., 2018). Previous research acknowledges that projects comprise some standardised elements and repetitive activities (Davies et al., 2009; Engwall & Miterov, 2025; Godsell et al., 2018), but repetition is mostly considered at the project level (e.g. Hegazy et al., 2014) or intra-organisational level (e.g. Davies & Brady, 2000; Godsell et al., 2018). Our findings show that inter-organisational programs, composed of multiple interdependent projects, offer opportunities to leverage the benefits of repetitive activities across projects and organisations.

Our research reveals three analytical focus areas of repetitive activities that facilitate their identification within a program. First, the findings show that repetitive activities occur in various organisational levels. Previous studies have mainly addressed repetition at the intra-organisational level (Davies & Brady, 2000; Engwall, 2003; Godsell et al., 2018). Programs, however, often span multiple organisational levels, requiring coordination mechanisms across these levels

(Frederiksen et al., 2021). Our findings extend this literature by showing that repetitive activities can be identified at strategic (parent public/private organisations), tactical (temporary program organisation), and operational (project) levels. For example, repetition can be enabled at the strategic level through the bundling of activities within a program, and at the tactical level through coordination that supports the identification and alignment of repetitive activities.

Second, the type of delivery is another focus area for identifying repetitive activities. Prior research has shown repetition in both products and processes, including the reuse of (engineering) knowledge (Verhagen et al., 2012), and in construction through standardisation and modularisation (Kadefors, 1995; Köhler et al., 2025; Woodier & Thuesen, 2026). These approaches emphasise structured reuse of solutions, designs, and practices across projects. Our findings complement this perspective by showing that repetition is not limited to standardised outputs but can also occur in similar or functionally equivalent activities, for instance dredging in various locations.

Finally, the results demonstrate that repetitive activities occur across both sequential and parallel projects within a program. This aligns with literature on project sequences and inter-project learning (Berggren, 2019) and studies highlighting how projects are connected over time to enable learning and efficiency gains in intra-organisational (Engwall, 2003) and inter-organisational contexts (Martinsuo & Ahola, 2022). We extend this view by showing that repetitive activities can be identified across parallel and sequential projects within a program.

These three analytical focus areas enable the identification of work steps that are likely to be repetitive rather than unique and to realise their potential benefits within the inter-organisational program. Following Davies et al. (2009), we acknowledge that the outcome of repetitive activities may still be unique. Our findings indicate that determining whether an activity is unique or repetitive needs to be considered in a broader institutional and organisational context (supporting Engwall, 2003; Kadefors, 1995). Identifying repetitive activities can inform the design of inter-organisational programs to promote occurrence of repetition and leverage their potential benefits during the program initiation and execution. This requires adopting a broader institutional perspective and recognising the uniqueness bias (Flyvbjerg, 2021).

5.2. Unlocking potential benefits of repetitive activities within inter-organisational programs

Once repetitive activities have been identified, improvements to these activities can be made. In this context, the following definition of the potential benefits of repetitive activities at the program level has been formulated: *The possibility that these activities – when repeated – will be improved and that the improvements will then be applied each time and contribute to more efficient and effective achievement of [the overall program goals].* This improvement process is also referred to as refinement learning (Lundin & Söderholm, 1995), continuous learning (Eriksson et al., 2017; Nilsson Vestola et al., 2021), or iterative learning (Maniak & Midler, 2014).

The findings of our study demonstrate that repetitive activities within the context of public construction programs, can yield potential benefits for both private and public organisations. While private organisations often deploy repetitive activities to form routines and build capabilities to achieve competitive advantage, public organisations utilise repetitive activities to develop routines and capabilities in pursuit of performance improvement (O'Flynn, 2013). Therefore, it is important to clearly determine the overall program goals, ensuring that all program members are aligned on the intended goals. The overarching program goals can be purely economic (increasing efficiency by executing the same or similar activities in less time and lower cost), or they can be complemented or replaced by societal challenges such as sustainability. The interpretation of the goals is contingent on the type of organisation (i.e. public or private) and the contemporary developments

and challenges, thereby determining the extent to which improvement of a repetitive activity is possible and what steering is required to achieve this. We enrich the understanding of economies of repetition (Davies & Brady, 2000) by adopting an inter-organisational program perspective that extends beyond a single (private) project-based organisation.

Our study highlights the importance of recent move in the project studies toward pursuing repetitive operations over traditional project-based approach with the aim of achieving long-term efficiency rather than focusing on short-term benefits (Jacobsson & Jalocha, 2025). The proposed definition of potential benefits of repetitive activities highlights the power of these activities and the importance of recognising their occurrence in the initial stages of a program. In line with Berggren (2019), we suggest that implementing minor changes at the outset of a program can lead to continuous improvements and significant (incremental) transformations over time.

The studied cases provide the opportunity to identify repetitive activities and leverage their potential benefits within inter-organisational programs, ultimately contributing to the program goals, as illustrated in Fig. 2.

The conceptual model first emphasises the identification of repetitive activities through three analytical focus areas: organisational level (*where do repetitive activities occur?* — parent organisation, program, or project), type of delivery (*what activities are repeated?* — preparatory or execution activities, sub-processes or sub-products, similar or identical activities), and temporal occurrence (*when/how often do repetitive activities occur?* — sequential or parallel activities). This systematic identification enables recognition of repetitive activities that might otherwise be overlooked, including repetition across projects or between organisations. Once identified, repetitive activities can be leveraged to generate potential benefits, with the program goals informing how these benefits, captured through exploitation and exploration, are prioritised and realised. Consistent with earlier studies (e.g. Denicol & Davies, 2022), our results show that repetitive activities enable participating organisations within a program to increase efficiency, enhance predictability, leverage the advantages of the learning curve, and exploit innovative approaches. Knowledge and learning from previous repetitive activities can also be explored and recombined in new situations (Davies et al., 2009; Lobo & Whyte, 2017), facilitating the reuse of (sub) systems or concepts across different contexts, including those with a different client or sector. By explicitly linking repetitive activities to these benefits, the model shows how deliberate recognition and management of such activities contribute to the achievement of the program goals. Subsequently, the evaluation of repetitive activities and their realised benefits helps to identify further activities with repetitive

characteristics, supporting continuous improvement within the program.

The findings showed that identifying repetitive activities and their potential benefits within a program context can be seen as a preliminary step towards forming routines. Routines are characterised by recurring patterns (happening more than once) of action (Addyman et al., 2020), where the frequency of repetition is a necessary condition for the pattern to occur (Becker, 2004; Cacciatori & Prencipe, 2021). Previous research argues that when an organisation engages in projects containing repetitive activities, inter-project learning (positive and negative) gained from these repetitions can enable the development of new routines or adaptation of existing ones (Gann & Salter, 2000; Kadefors, 1995).

6. Conclusion

Repetition has often been associated with operations and earlier research in project studies has primarily explored repetitive activities from the intra-organisational perspective. This study addressed the research question: *How do repetitive activities and their potential benefits manifest within inter-organisational construction programs?* Based on a multiple-case study approach, the study conceptualised repetitive activities at the program level by identifying three focus areas of repetition: organisational level, type of delivery, and temporal occurrence. The findings showed that repetitive activities manifested differently across these focus areas, depending on where these activities occurred across organisational levels, what was repeated, and when/how often repetition occurred over time. The study found that the deliberate identification of repetitive activities across these focus areas enabled the leveraging of potential benefits, including exploitation and exploration, aligned with overarching program goals. This, in turn, can inform the design of inter-organisational programs that purposefully steer repetitive activities and enable their potential benefits.

6.1. Practical implications

The insights from this research are particularly relevant in light of current challenges such as circularity, shortages of resources, and the growing interest in realising strategic value through inter-organisational programs. The findings can inform public clients and supply partners involved in such programs, who seek to enhance program performance and outcomes. By adopting the three focus areas, previously overlooked repetitive activities can be identified. The conceptual model enables organisations to deliberately identify repetitive activities across multiple levels of a program, thereby optimising their potential benefits. It also facilitates discussion across these levels, clarifying what activities are

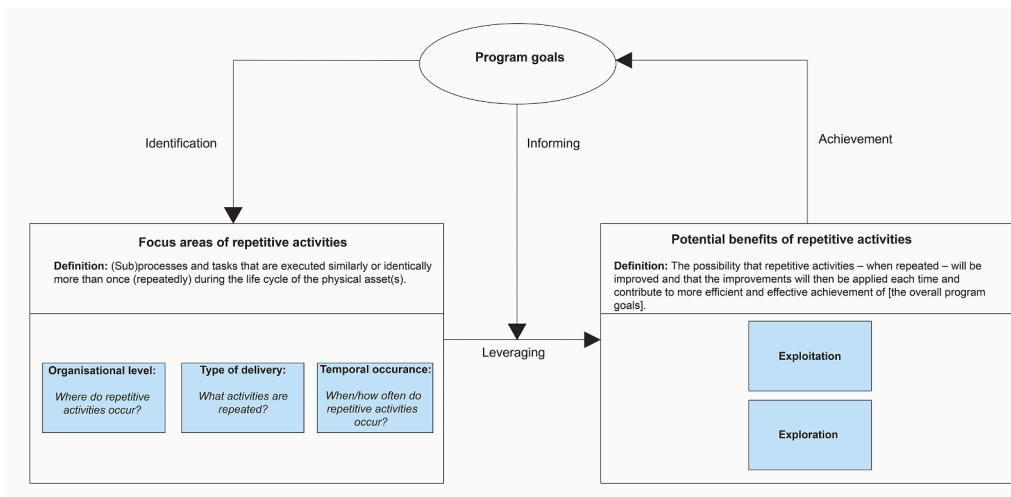


Fig. 2. Conceptual model for identifying repetitive activities and leveraging their potential benefits within inter-organisational programs.

repeated, when they occur, and where efficiency gains or learning opportunities may arise, ultimately supporting the achievement of program goals.

For private organisations, leveraging repetitive activities supports competitive advantage through economies of repetition. Moreover, the benefits of these activities can inform the identification and optimisation of repetitive activities in other programs at the strategic level, particularly amid recent developments in the adoption of programmatic approach in the construction industry.

Bundling interdependent projects (whether related to the construction of new assets or the maintenance of existing ones) into programs is a strategic approach adopted by public clients in the construction industry. Such programs create opportunities to leverage the potential benefits of repetitive activities for both public and private organisations. The effectiveness of repetitive activities depends on the goal(s) pursued through repetition, therefore identifying the overall program goals early on is important. This enables organisations to determine whether and how repetitive activities can be integrated into program design, maximising efficiency and learning within and across projects.

6.2. Limitations and future research agenda

The findings were based on three case studies in the construction industry, each with its specific context, which may introduce limitations to the validity of the research. The study focuses on programs comprising repetitive activities across varying configurations of project and operations-related activities. We provided background information on the case studies, including asset types, to suggest potential opportunities for transferability of the findings to other contexts. In line with qualitative research, generalisation was not the aim of this study.

Data was collected during the early stages of the cases, meaning that several potential benefits that had not yet been realised in the cases were not addressed and capability building had not yet fully taken place. A longitudinal study can enhance understanding of the learning curve by taking an inter-organisational routine formation perspective at the program level. Furthermore, future research could investigate how temporary program organisations build (dynamic) capability related to repetitive activities and leverage their potential benefits at the level of parent organisations involved.

In addition, programs can also be conceptualised as networks of various organisations. Adopting a network perspective for the design and coordination of inter-organisational programs could open another avenue to harness the potential benefits of repetition at the program level. Future research could also examine how governance mechanisms within such networks are designed to manage repetitive activities efficiently and effectively, ensuring alignment and coordination across participating organisations.

While we primarily focused on the advantages of repetitive activities, the findings indicate that repetition may also have negative sides. Future studies could investigate disadvantages of repetitiveness within programs and explore mitigation mechanisms.

Author statement and ethical approval

This study was approved by the Human Research Ethics Committee of Delft University of Technology.

CRedit authorship contribution statement

Maedeh Molaei: Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Heleen Smit:** Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Marleen Hermans:** Writing – review & editing, Supervision, Resources,

Methodology, Funding acquisition, Formal analysis, Conceptualization. **Marian Bosch-Rekvelde:** Writing – review & editing, Supervision, 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.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.ijproman.2026.102861](https://doi.org/10.1016/j.ijproman.2026.102861).

References

- Addyman, S., Pryke, S., & Davies, A. (2020). Re-creating organizational routines to transition through the project life cycle: A case study of the reconstruction of London's bank underground station. *Project Management Journal*, 51(5), 522–537. <https://doi.org/10.1177/8756972820943436>
- Arto, K., & Turkulainen, V. (2018). It takes two to tango: Product-organization interdependence in managing major projects. *International Journal of Operations & Production Management*, 38(6), 1312–1339. <https://doi.org/10.1108/ijopm-12-2016-0767>
- Bakker, R. M. (2010). Taking stock of temporary organizational forms: A systematic review and research agenda. *International journal of management reviews*, 12(4), 466–486. <https://doi.org/10.1111/j.1468-2370.2010.00281.x>
- Becker, M. C. (2004). Organizational routines: A review of the literature. *Industrial and Corporate Change*, 13(4), 643–678. <https://doi.org/10.1093/icc/dth026>
- Berggren, C. (2019). The cumulative power of incremental innovation and the role of project sequence management. *International Journal of Project Management*, 37(3), 461–472. <https://doi.org/10.1016/j.ijproman.2019.01.014>
- Brady, T., & Davies, A. (2004). Building project capabilities: From exploratory to exploitative learning. *Organization Studies*, 25(9), 1601–1621. <https://doi.org/10.1177/0170840604048002>
- Cacciatori, E., & Prencipe, A. (2021). Project-based temporary organizing and routine dynamics. *Cambridge Handbook of Routines Dynamics*, 407–420. <https://doi.org/10.1017/9781108993340.034>
- Davies, A., & Brady, T. (2000). Organisational capabilities and learning in complex product systems: Towards repeatable solutions. *Research Policy*, 29(7–8), 931–953. [https://doi.org/10.1016/S0048-7333\(00\)00113-X](https://doi.org/10.1016/S0048-7333(00)00113-X)
- Davies, A., & Brady, T. (2016). Explicating the dynamics of project capabilities. *International Journal of Project Management*, 34(2), 314–327. <https://doi.org/10.1016/j.ijproman.2015.04.006>
- Davies, A., Gann, D., & Douglas, T. (2009). Innovation in megaprojects: Systems integration at London Heathrow Terminal 5. *California Management Review*, 51(2), 101–125. <https://doi.org/10.2307/41166482>
- Davies, A., Lenfle, S., Loch, C. H., & Midler, C. (2023). Introduction: Building bridges between innovation and project management research. *Handbook on innovation and project management* (pp. 1–34). Edward Elgar Publishing.
- Denicol, J., & Davies, A. (2022). The megaproject-based firm: Building programme management capability to deliver megaprojects. *International Journal of Project Management*, 40(5), 505–516. <https://doi.org/10.1016/j.ijproman.2022.06.002>
- Denicol, J., Davies, A., & Pryke, S. (2021). The organisational architecture of megaprojects. *International Journal of Project Management*, 39(4), 339–350. <https://doi.org/10.1016/j.ijproman.2021.02.002>
- Denicol, J., Davies, A., & Whyte, J. (2023). Call for papers: Program management of major infrastructure projects. *International Journal of Project Management*, 41(7), Article 102517. <https://doi.org/10.1016/j.ijproman.2023.102517>
- Eisenhardt, K. M. (2021). What is the Eisenhardt Method, really? *Strategic Organization*, 19(1), 147–160. <https://doi.org/10.1177/1476127020982866>
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25–32. <https://doi.org/10.5465/amj.2007.24160888>
- Engwall, M. (2003). No project is an island: Linking projects to history and context. *Research Policy*, 32(5), 789–808. [https://doi.org/10.1016/S0048-7333\(02\)00088-4](https://doi.org/10.1016/S0048-7333(02)00088-4)
- Engwall, M., & Miterev, M. (2025). What is the “project”? A typology of approaches to the core concept in project studies. *Scandinavian Journal of Management*, 41(2), Article 101422. <https://doi.org/10.1016/j.scaman.2025.101422>
- Eriksson, P. E., Leiringer, R., & Szentes, H. (2017). The role of Co-creation in enhancing explorative and exploitative learning in project-based settings. *Project Management Journal*, 48(4), 22–38. <https://doi.org/10.1177/875697281704800403>
- Flyvbjerg, B. (2021). Top ten behavioral biases in project management: An overview. *Project Management Journal*, 52(6), 531–546. <https://doi.org/10.1177/87569728211049046>
- Frederiksen, N., Gottlieb, S. C., & Leiringer, R. (2021). Organising for infrastructure development programmes: Governing internal logic multiplicity across organisational spaces. *International Journal of Project Management*, 39(3), 223–235. <https://doi.org/10.1016/j.ijproman.2021.01.004>

- Frederiksen, N., Hetemi, E., & Gottlieb, S. C. (2024). Dynamics of routine creation and transfer in strategic programs. *International Journal of Project Management*, 42(5), Article 102606. <https://doi.org/10.1016/j.ijproman.2024.102606>
- Gann, D. M., & Salter, A. J. (2000). Innovation in project-based, service-enhanced firms: The construction of complex products and systems. *Research Policy*, 29(7), 955–972. [https://doi.org/10.1016/S0048-7333\(00\)00114-1](https://doi.org/10.1016/S0048-7333(00)00114-1)
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15–31. <https://doi.org/10.1177/1094428112452151>
- Godsell, J., Masi, D., Karatzas, A., & Brady, T. M. (2018). Using project demand profiling to improve the effectiveness and efficiency of infrastructure projects. *International Journal of Operations & Production Management*, 38(6), 1422–1442. <https://doi.org/10.1108/IJOPM-02-2017-0095>
- Hayes, R. H., & Wheelwright, S. C. (1984). *Restoring our competitive edge: Competing through manufacturing*. Wiley.
- Hedborg, S., Eriksson, P.-E., & Gustavsson, T. K. (2020). Organisational routines in multi-project contexts: Coordinating in an urban development project ecology. *International Journal of Project Management*, 38(7), 394–404. <https://doi.org/10.1016/j.ijproman.2020.01.003>
- Hedborg, S., Nilsson Vestola, E., & Kadefors, A. (2024). Struggling with strategizing in public client organisations: Managing strategic projects in inter-organisational contexts. *International Journal of Project Management*, 42(7), Article 102645. <https://doi.org/10.1016/j.ijproman.2024.102645>
- Hegazy, T., Abdel-Monem, M., & Atef Saad, D. (2014). Framework for enhanced progress tracking and control of linear projects. *Engineering, Construction and Architectural Management*, 21(1), 94–110. <https://doi.org/10.1108/ecam-08-2012-0080>
- Jacobsson, M., & Jaiocha, B. (2025). An essay on deprojectification: Drivers and consequences. *International Journal of Project Management*, 43(2), Article 102693. <https://doi.org/10.1016/j.ijproman.2025.102693>
- Kadefors, A. (1995). Institutions in building projects: Implications for flexibility and change. *Scandinavian Journal of Management*, 11(4), 395–408. [https://doi.org/10.1016/0956-5221\(95\)00017-p](https://doi.org/10.1016/0956-5221(95)00017-p)
- Kim, S., Chang, S., & Castro-Lacouture, D. (2020). Dynamic modeling for analyzing impacts of skilled labor shortage on construction project management. *Journal of Management in Engineering*, 36(1), Article 04019035. [https://doi.org/10.1061/\(asce\)me.1943-5479.0000720](https://doi.org/10.1061/(asce)me.1943-5479.0000720)
- Köhler, J., Egarter, A. M., Hall, D. M., & Thuesen, C. (2025). Product platforms as enablers for the circular economy in construction: An integrative review. *Computers & Industrial Engineering*, 207, Article 111277. <https://doi.org/10.1016/j.cie.2025.111277>
- Kujala, J., Aaltonen, K., Gotcheva, N., & Lahdenperä, P. (2021). Dimensions of governance in interorganizational project networks. *International Journal of Managing Projects in Business*, 14(3), 625–651. <https://doi.org/10.1108/ijmpb-12-2019-0312>
- Langley, A., & Klag, M. (2019). Being where? Navigating the involvement paradox in qualitative research accounts. *Organizational Research Methods*, 22(2), 515–538. <https://doi.org/10.1177/1094428117741967>
- Lobo, S., & Whyte, J. (2017). Aligning and reconciling: Building project capabilities for digital delivery. *Research policy*, 46(1), 93–107. <https://doi.org/10.1016/j.respol.2016.10.005>
- Locke, K., Feldman, M., & Golden-Biddle, K. (2022). Coding practices and iterativity: Beyond templates for analyzing qualitative data. *Organizational Research Methods*, 25(2), 262–284. <https://doi.org/10.1177/1094428120948600>
- Lundin, R. A., & Söderholm, A. (1995). A theory of the temporary organization. *Scandinavian Journal of Management*, 11(4), 437–455. [https://doi.org/10.1016/0956-5221\(95\)00036-u](https://doi.org/10.1016/0956-5221(95)00036-u)
- Lycett, M., Rassau, A., & Danson, J. (2004). Programme management: A critical review. *International Journal of Project Management*, 22(4), 289–299. <https://doi.org/10.1016/j.ijproman.2003.06.001>
- Mahdi, I. M. (2004). A new LSM approach for planning repetitive housing projects. *International Journal of Project Management*, 22(4), 339–346. [https://doi.org/10.1016/S0263-7863\(03\)00071-1](https://doi.org/10.1016/S0263-7863(03)00071-1)
- Maniak, R., & Midler, C. (2014). Multiproject lineage management: Bridging project management and design-based innovation strategy. *International Journal of Project Management*, 32(7), 1146–1156. <https://doi.org/10.1016/j.ijproman.2014.03.006>
- Martinsuo, M., & Ahola, T. (2022). Multi-project management in inter-organizational contexts. *International Journal of Project Management*, 40(7), 813–826. <https://doi.org/10.1016/j.ijproman.2022.09.003>
- Martinsuo, M., & Hoverfält, P. (2018). Change program management: Toward a capability for managing value-oriented, integrated multi-project change in its context. *International Journal of Project Management*, 36(1), 134–146. <https://doi.org/10.1016/j.ijproman.2017.04.018>
- Martinsuo, M., & Huemann, M. (2021). Reporting case studies for making an impact. *International Journal of Project Management*, 39(8), 827–833. <https://doi.org/10.1016/j.ijproman.2021.11.005>
- Maylor, H., Brady, T., Cooke-Davies, T., & Hodgson, D. (2006). From projectification to programmatication. *International Journal of Project Management*, 24(8), 663–674. <https://doi.org/10.1016/j.ijproman.2006.09.014>
- Maylor, H., Meredith, J. R., Söderlund, J., & Browning, T. (2018). Old theories, new contexts: Extending operations management theories to projects. *International Journal of Operations & Production Management*, 38(6), 1274–1288. <https://doi.org/10.1108/IJOPM-06-2018-781>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage Publications.
- Miterev, M., Engwall, M., & Jerbrant, A. (2017). Mechanisms of isomorphism in project-based organizations. *Project Management Journal*, 48(5), 9–24. <https://doi.org/10.1177/875697281704800502>
- Nilsson Vestola, E., Eriksson, P. E., Larsson, J., & Gustavsson, T. K. (2021). Temporary and permanent aspects of project organizing—operation and maintenance of road infrastructure. *International Journal of Managing Projects in Business*, 14(7), 1444–1462. <https://doi.org/10.1108/ijmpb-09-2020-0279>
- O'Flynn, J. (2013). Crossing boundaries: The fundamental questions in public management and policy. *Crossing boundaries in public management and policy* (pp. 11–44). Routledge.
- Papachristos, G., Papadonikolaki, E., & Morgan, B. (2024). Projects as a speciation and aggregation mechanism in transitions: Bridging project management and transitions research in the digitalization of UK architecture, engineering, and construction industry. *Technovation*, 132, Article 102967. <https://doi.org/10.1016/j.technovation.2024.102967>
- Pellegrinelli, S. (1997). Programme management: Organising project-based change. *International Journal of Project Management*, 15(3), 141–149. [https://doi.org/10.1016/S0263-7863\(96\)00063-4](https://doi.org/10.1016/S0263-7863(96)00063-4)
- Pinto, J. K. (2020). *Project management: Achieving competitive advantage* (5th ed.). Pearson Education Limited.
- Pollack, J., & Anichenko, E. (2022). The ten differences between programs and projects, and the problems they cause. *Engineering Management Journal*, 34(2), 314–328. <https://doi.org/10.1080/10429247.2021.1900661>
- Ramasesh, R. V., & Browning, T. R. (2014). A conceptual framework for tackling knowable unknown unknowns in project management. *Journal of operations management*, 32(4), 190–204. <https://doi.org/10.1016/j.jom.2014.03.003>
- Roehrich, J. K., Davies, A., Tyler, B. B., Mishra, A., & Bendoly, E. (2024). Large interorganizational projects (LIPs): Toward an integrative perspective and research agenda on interorganizational governance. *Journal of Operations Management*, 70(1), 4–21. <https://doi.org/10.1002/joom.1280>
- Sankaran, S., Clegg, S. R., Killen, C. P., Smyth, H., & Scales, J. (2024). Enabling collaborative research in project management by creating Gioia data structures as a boundary object. *Project Management Journal*, 55(3), 281–296. <https://doi.org/10.1177/87569728231212411>
- Strauss, A., & Corbin, J. (2014). *Basics of qualitative research techniques: Techniques and procedures for developing grounded theory* (4th ed.). SAGE Publications, Inc.
- Thiry, M. (2002). Combining value and project management into an effective programme management model. *International Journal of Project Management*, 20(3), 221–227. [https://doi.org/10.1016/S0263-7863\(01\)00072-2](https://doi.org/10.1016/S0263-7863(01)00072-2)
- Turkulainen, V., Ruuska, I., Brady, T., & Arto, K. (2015). Managing project-to-project and project-to-organization interfaces in programs: Organizational integration in a global operations expansion program. *International Journal of Project Management*, 33(4), 816–827. <https://doi.org/10.1016/j.ijproman.2014.10.008>
- Van Maanen, J. (1979). The fact of fiction in organizational ethnography. *Administrative Science Quarterly*, 24(4), 539–550. <https://doi.org/10.2307/2392360>
- Verhagen, W. J. C., Bermell-Garcia, P., van Dijk, R. E. C., & Curran, R. (2012). A critical review of knowledge-based engineering: An identification of research challenges. *Advanced Engineering Informatics*, 26(1), 5–15. <https://doi.org/10.1016/j.aei.2011.06.004>
- Vosman, L., Deken, F., & Volker, L. (2024). Boundary work in a project-based organization: Flow across interdependent boundaries in interorganizational programs. *International Journal of Project Management*, 42(5), Article 102622. <https://doi.org/10.1016/j.ijproman.2024.102622>
- Whyte, J., & Mottee, L. (2022). Projects as interventions. *International Journal of Project Management*, 40(8), 934–940. <https://doi.org/10.1016/j.ijproman.2022.10.007>
- Winch, G. M., & Maytorena-Sanchez, E. (2020). Institutional projects and contradictory logics: Responding to complexity in institutional field change. *International Journal of Project Management*, 38(6), 368–378. <https://doi.org/10.1016/j.ijproman.2020.08.004>
- Woodier, D., & Thuesen, C. (2026). An ecosystem perspective of programme commercial strategy: The case of railway infrastructure renewal in Denmark from 1991 to 2024. *International Journal of Project Management*, 44(1), Article 102793. <https://doi.org/10.1016/j.ijproman.2025.102793>
- Yang, I.-T., & Chang, C.-Y. (2005). Stochastic resource-constrained scheduling for repetitive construction projects with uncertain supply of resources and funding. *International Journal of Project Management*, 23(7), 546–553. <https://doi.org/10.1016/j.ijproman.2005.03.003>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (5th ed.). Sage publications.