RESEARCH ISSUES IN PROGRAMME MANAGEMENT: A SYSTEMATIC REVIEW OF LITERATURE

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Purpose: The aim of this article is to provide a systematic review of empirical research in the area of programme management, to recognise research patterns relating to the methods and techniques used and to identify current research issues.

Design/methodology/approach: A systematic review of 39 selected articles published in project management journals was used to achieve this objective. The research potential was classified under three areas, including context, knowledge management and competencies and processes initiated in the programme life cycle.

Findings: The authors acknowledge the shortcomings of the research process conducted, which are mainly due to the decisions made regarding the methodological approach. Firstly, the research focused only on empirical articles directly related to the programme. There may be studies using other terminology for the word "programme". Secondly, the analysis focused only on articles published in prominent project management journals. Thirdly, the scope of the selection of publications was limited both to the word "programme" in different variations and to the assumption regarding the timeliness of publications (not earlier than 2010).

Research limitations/implications: The needs of current research issues in the area of programme management were defined, identifying 21 potential knowledge gaps that could serve as a starting point for further in-depth research.

Originality/value: The article is addressed to scientists and practitioners, presenting the current research issues in program management.

Keywords: Program management, program context, program value, competences, program integration.

Category of the paper: Literature review.

1. Introduction

Over the past 30 years, programmes have evolved from extensions of projects or unmanaged entities into mechanisms for integrating and coordinating strategic activities to drive transformation and change targeted by business benefits. Standards have also emerged

(PMI, 2017; PSP, 2014) distinguishing programme management from portfolio and project management. Current literature shows that project management is a widely known and understood area (Ozmen, 2019), although it is still subject to development resulting from the adaptation of organisations to changes in the environment and new trends in management. On the other hand, the notion of programme is still ambiguous (Pellegrinelli, 2011; McGrath, et al., 2019) and in business practice it is most often used interchangeably with the notion of project, especially strategic project (Lycett et al., 2004). As a consequence, organisations manage programmes like projects, which usually leads to a failure to meet the required expectations (Shao et al., 2012).

By reviewing the literature in terms of the characteristics that a programme should have, it can be assumed that it is a group of interrelated projects (Shao et al., 2011) that share a common pool of resources (Martinsuo et al., 2018; Frederiksen et al., 2021), aim to achieve business benefits in a coordinated way (Breese et al., 2015; Fernandes et al., 2021) and are managed by the programme organisation to achieve one or a set of strategic objectives (Angus, Kittler, 2012; Miterev et al., 2020). The purpose of a programme is to deliver outcomes and benefits related to the strategic objectives of the organisation (Sanchez et al., 2009). From a programme management perspective, the outcomes delivered by projects are only a pathway to what the programme manages. The programme "looks" from the perspective of achieving a certain state, a benefit, through the use of projects results (Levin, 2016). The programme's orientation is to realise benefits through the outcome achieved, not to deliver the outcomes themselves (PMI, 2017; PSP, 2014). It should be emphasized that programme management does not replace project management, which should be effectively implemented at its own level (Martinsuo, Hoverfält, 2018). The authors define the result as the effect of change, having an impact on the real situation and/or circumstances occurring in the company or its environment. The result, on the other hand, is a tangible or intangible product created as a result of a planned activity.

Programme management encompasses activities undertaken to coordinate the organisation, direction and implementation of a set of projects that together lead to strategically important outcomes and benefits. Ritson et al. (2012) highlight that successful programme implementation will in practice be an elusive concept that requires flexibility in terms of strategic and environmental adaptation, thus drawing attention to aspects of developing strategic plans for their approval and management. Van Buuren et al. (2010) and Görög (2011) emphasise that identifying the most problematic areas in programme management leads to the identification of those interrelationships that link a group of projects as one programme during implementation. Programmes deal with outputs and projects deal with outcomes. Programme management and project management are complementary approaches. During the programme life cycle, projects are initiated, implemented and closed. The programme provides an umbrella under which projects can be coordinated.

The aim of this article is to provide a systematic review of empirical research in the area of programme management, to recognise research patterns relating to the methods and techniques used and to identify current research issues. The authors aim to identify current trends by revealing research opportunities for the future direction of programme management research. Given that programmes come in different forms and involve different contexts (Boppel et al., 2013; Martinsuo, Hoverfält, 2018), the analysis conducted focuses attention only on empirical articles.

2. Method and overview

The study involves a systematic literature review of published empirical research on programme management practice. Unlike traditional reviews, a characteristic of the systematic review method is that the entire process of literature acquisition, assessment and synthesis is carefully documented and follows strict standards (Tranfield et al., 2003).

First, a list of scientific journals in the field of project management was compiled. Subsequently, using the keyword "programme" defined by the title, abstract or keywords and an assumption regarding the timeliness of the publication (not earlier than 2010), a preliminary literature of a total of 261 articles was retrieved for further analysis. The titles and abstracts of the publications were then reviewed in a full search. Only those articles that directly addressed programme management issues (56 in total) were considered for further analysis. However, some of the articles rejected at this stage were taken into account in developing the conceptual framework for this article. In addition, articles that dealt with programming or a specific programme (development, training, government, research programmes) or that appeared comma-delimited in a general nature were deliberately excluded.

In line with the process of systematic literature analysis (Booth et al., 2012), following a search that was full within the stated assumptions, additional steps were taken to complete the list of programme management studies. For this purpose, other publications that would discuss the use of programme management were analysed. The search additionally identified 39 publications of which 7 met the above criteria.

Following a selection process (analysis of full texts), the actual literature analysis focused on a total of 39 publications, which were grouped into three areas covering programme context, knowledge management and competences, and processes initiated during the programme life cycle.

3. Results and discussion

3.1. Programme context

The literature emphasises the role of programme context. Lycett et al. conducting a critical analysis of the literature stated that "an effective approach to programme management should be dynamic and flexible, adaptable to changing context and relationship-based" (Lycett et al., 2004). Subsequently, Pellegrinelli et al. conducting a study of 6 programmes through interviews and study visits observed that contextual factors often attract a lot of attention and effort from programme managers, causing them to compromise and reshape the programmes they manage (Pellegrinelli et al., 2007). The authors defined programme context as: "the dynamic cultural, political and business environment in which a programme operates" (Pellegrinelli et al., 2007). Shao et al. (2009) then hypothesised a preliminary research model on the relationship between programme manager leadership competencies and programme success. As a result of their interviews, they developed constructs for program context and program success while confirming the validity of the hypothesis. In addition, they also found that the constructs of programme context include its typology, scope and characteristics (Shao, 2018). The above observations were also confirmed by Näsholm and Blomquist (2015) when analysing the 2014 European Capital of Culture Programme in Umeå. Subsequently, Shao et al. proposed four dimensions of programme context, namely: organisational fit, programme flexibility, organisational stability and resource availability (Shao et al., 2012). They also found that programme context does not directly relate to programme success, but there is a more complex relationship between three variables: leadership competencies of programme managers, programme success and programme context.

Table 1.
Summary of empirical research to date in the area of programme context

Author	Research method	Research context	Potential for further research
[30]	Case study: Transition and merger programme of an Australian telecommunications company	Applying programme management practice to the strategic management of initiatives such as mergers and acquisitions	Application of programme management in the context of acquisitions and mergers in the SME sector.
[49]	Survey research: 119 people involved in delivering construction programmes in the UK. Interviews: 7 interviews with people involved in delivering programmes outside the construction industry	Challenges facing the management of the construction programme	Further research into the challenges facing programme management in other industries. Verification of identified challenges in wider international studies.

Cont. table 1.

[17]	Case study: Shanghai urban major infrastructure development programme	Program management organization maturity integrated model for MCPs	Conduct verification of the developed model. Assess the maturity of programme management.
[46]	Interviews with 15 programme managers from different industries and countries	Develop a construction of the programme context and programme success.	Conduct research on a large international sample to develop constructs for the context and success of the programme
[43]	Survey research: 110 programme and project management professionals. Interviews: 6 programme management experts.	The authors have explored the development of a program management alignment theory.	Understand the impact of structural, incremental and contextual learning. Identify effective practices and approaches that support effective programme design.
[47]	Survey of 172 persons involved in project implementation under the programmes	Development of key measures of programme success	Identify measures, areas, models for evaluating programme success in different contexts
[42]	Case study: Flood protection programme in the Netherlands	Opportunities to use programme management for effective planning and implementation of mega-projects	Carry out wider research into the development of appropriate approaches to programme management.
[29]	Case study: European Capital of Culture 2014 programme in Umeå	Exploring co-creation as an alternative strategic approach to programme management	Co-creation as an alternative strategic approach to programme management in different programme contexts.
[18]	Case study: New product development programme in the machinery manufacturing industry	Program impact management in a real-life R&D context.	Are the advanced performance measures and the collective processes of sensemaking - related to them -supplementary or complementary to each other?
[28]	Case study: Spatial change programme at media company Media Inc. Observation of 9 programme board meetings	Define dominant discursive patterns through which context is constructed.	Identify ways of constructing the context of a circumstance-dependent programme especially in the context of a programme group.
[8]	Case study: IT programme "Omega" adapted to Agile methods. 12 interviews with 24 people. 277 pages of reports	Establish coordination mechanisms for teams working with an agile approach	Mechanisms and modes of programme coordination and their adaptation to the context
[52]	Case study of 5 IT programmes implemented by German organisations internationally active in ICT, industry and consumer electronics	Challenges in IT programme management. Development of recommendations for IT programme management.	Management and operation of IT programmes.
[59]	Case study: China National Programme N (hydraulic structures)	Determinants of timely decision-making from the perspective of collaboration network dynamics.	Behavioural dimensions of programme decision-making and the impact of collaborative dynamics on decision-making effectiveness in different programme contexts.
[19]	Case study: Public cultural programme Aarhus 2017	Exploring value creation in cultural programmes	Deeper exploration of the use of logics associated with entrepreneurship in project decision making.

Cont. table 1.

[21]	Case study: Multi Water Works (MWW) programme of the Dutch Ministry of Infrastructure and Environment	Study on stakeholder co-creation of programme value	Research on dynamic, context-dependent value processes in programs, with a special emphasis on transitions between different program phases.
[24]	Interviews with 21 experienced project management practitioners from various industries and disciplines in Australia	Establish appropriate terminology for the duration of the programme and distinguish it from the project and portfolio.	Identify the boundaries between programme and project and portfolio.

Although programme management practice provides the means for strategic management (Nogeste, 2010), the empirical studies presented in Table 1 illustrate the need to adapt approaches, methods, tools, mechanisms to the programme context (McGrath, Whitty, 2019; Teubner, 2018). As highlighted by Rijke et al. (2014) high programme performance is achieved by adapting to contextual changes. Moreover, programme success cannot be attributed to effective programme management alone, but also to the contextual changes that have positively influenced it.

Programmes have both deliberate and emergent strategies that require designing, organising and managing them as complex adaptive systems (Ritson et al., 2012). As the authors Jia et al. (2011) recognise, emerging issues arise from the management of programme organisation and processes. Näsänen and Vanharanta (2016), observing 9 meetings of spatial change programme boards at media company Media Inc. indicated that a temporary organisation whose hierarchical position is ill-defined, and which operates within the established hierarchical structure of a permanent organisation, seems to constantly negotiate the division of labour between permanent and temporary organisations. Consequently, successful programme implementation will require flexibility in strategic and environmental adaptation (Ritson et al., 2012). Whereas in the environmental aspect, it becomes crucial to balance the dilemmas of multiple stakeholders (Näsholm, Blomquist, 2015), which not only enables understanding and extending the impact of the programme (Laine et al., 2016), but also contributes to faster decision-making (Wen et al., 2018). On the other hand, in the strategic nature, there should be a balance regarding performance and strategy that enables adaptation (Rijke et al., 2014) while at the same time a flexible programme organisation with guiding values and criteria for balancing different projects that can be used to achieve programme objectives (Näsholm, Blomquist, 2015).

In the articles analysed, case studies were the predominant research method. Considering the contextual nature of the programme, it seems appropriate to use such a method. However, many studies suggest verification of theses, hypotheses or developed models on a larger sample and in different contexts. The main research gaps identified in this area include:

- Identify the boundaries between programme and project and portfolio.
- Management and operation of IT programmes - development of consistent guidelines for the management of IT programmes.
- Programme coordination mechanisms and modes and their adaptation to the context.
- Identification of ways to construct a programme context depending on circumstances especially in the context of a programme group.
- The application of programme management in the context of acquisitions and mergers in the SME sector.
- Behavioural dimensions of programme decision-making and the impact of collaborative dynamics on decision-making effectiveness in different programme contexts.
- Research on dynamic, context-dependent value processes in programmes, with particular emphasis on transitions between different programme phases.
- Assessment of programme management maturity.
- Understanding the impact of structural, incremental and contextual learning.
- Identify models for evaluating programme success in different contexts.

3.2. Knowledge management and competencies in programme management competencies

Research on programme management competencies has been carried out for many years (Partington et al., 2005; Pellegrinelli, 2002; Thiry, 2002) which concluded that the competencies a programme manager should have are different from those of a project manager. Furthermore, experienced project managers should not perform the role of programme manager. For example, Partington et al. (2005) performing a multi-organisational study of programme management competencies observed that experienced project managers who have been promoted to the programme manager role tend to reproduce project approaches and environments. As Shao and Müller (2011) point out Project management principles can be an obstacle to higher level programme management concepts. Project managers primarily focus on short-term tactical results based on project performance indicators (time, cost, scope, quality). Program managers, on the other hand, focus on long-term business results based on the achievement of the set outcomes and the realization of business benefits. These differences lead to different competency requirements. A comprehensive programme management competency framework was developed by Parington et al. (2005) and Pellegrinelli (2008) and included in the standard "MSP - Managing Successful Programmes" (MSP, 2014).

As Crawford (2005) points out, competence is a broad concept covering not only people's basic personality traits or skills, but also knowledge issues and knowledge management. The study and use of knowledge is needed in a turbulent environment. Where a programme is not just a coordination mechanism for relatively independent projects, but an organisational mechanism for achieving a major strategic goal or change, its component projects need to be managed as much as possible to achieve both adequate performance and the use of existing knowledge (Pellegrinelli et al., 2015).

Table 2.

Summary of empirical research to date in the area of knowledge management and programme management skills

Authors	Research method	Research context	Potential for further research
[16]	Case study: Analysis of 6 different programmes in different sectors	Transfer of knowledge from single project management to programme management	Indicate features that distinguish programme from project and portfolio
[33]	Interviews with 98 programme participants from 38 IT outsourcing providers located in India	Assess the impact of interdependence in the program environment to achieve collective success.	Structuring management competencies to increase programme performance by promoting collaborative behaviour
[12]	Survey of 69 mega-project managers employed by oil and gas companies	Exploring the impact of information sources used by project managers on the strategic value delivered by the programme.	Develop an information management system focusing primarily on supporting the programme manager's decision-making process
[40]	Case study: An organisational change programme for an Australian finance and insurance sector organisation	Knowledge management and organisational change programmes for an ageing workforce.	Matching different project management approaches to different contexts.
[51]	Case study: Panama Canal Expansion Programme (PCEP)	Ways in which programme partners respond to contractually agreed cooperation	Exploring social phenomena in project management in different contexts.
[11]	Case study: 12 telecoms deployment programme managers in a multinational company in the UK	What are the mechanisms for, drivers of, and barriers to programme-based learning	Conduct research on the impact of different cultures and market sectors on programme-based learning.
[14]	Case study: A programme to design and deliver a large-scale integrated information system for the public sector	Its purpose was to investigate whether shared understanding existed amongst those working together to develop the system.	Development of consistent guidelines for IT programme management
[37]	Case study: Business transformation programme. Retail bank	Facilitating organizational ambidexterity through the complementary use of projects and programs.	Understand the limitations and contextual factors involved in their complementary use in change processes.
[26]	Case study: 10 programmes of different size, complexity and phase in the life cycle implemented in a pharmaceutical company	Programme management competence survey	The impact of programme contextual features on competence areas.
[45]	2 survey questionnaires to 79 programme managers	The moderating effect of program context on the relationship between leadership competences of program managers and program success.	Exploring the fit between competencies and different types of programmes and their contexts.
[10]	Case study: Construction programme, 23 people involved from 6 companies	The purpose of this paper is to determine the extent to which service design (SD) is addressed by the client and its supply chain at a program level into one functional capability, knowledge management (KM), to share knowledge across projects and organizational actors.	Research on knowledge management at organisational level.

The empirical studies presented in Table 2 highlight the role of managerial competency models in the context of programme management, which must explicitly include programme characteristics Moreover, different types of programmes will require different management styles (Pollack, 2012) and competency sets (Miterev et al., 2016). Although, as Fortune et al. point out, strategic awareness cannot be assumed to exist, even at high levels of the organisation (Fortune et al., 2015). It is important to note that the decisions of programme project managers have an impact on the value of the assets delivered by the programme (Eweje et al., 2012), thus generating a kind of area of uncertainty that may affect the long-term success of the programme. Similar observations have been observed by Shao (2018) stating that the relationship between programme manager competencies and programme success is moderated by the programme context. Moreover, a programme manager's intellectual and managerial competencies play a more direct role in success compared to emotional competencies.

Given this and the insights of Duryan and Smyth (2019), senior management needs to develop a holistic approach to implementing knowledge management, which should be seen as a programme management capability that needs investment, leadership and robust human resource management processes. Moreover, the identification of the most decisive problem areas experienced in programme management leads to the identification of those interrelationships that link a group of projects as one programme during implementation (Görög, 2011).

The main research gaps identified in this area, among others, include:

- Structuring management competencies to increase programme performance.
- Development of an information management system focusing primarily on supporting the programme manager's decision-making process.
- Exploring social phenomena in project management in different contexts.
- The relationship between organisational culture and programme benefits management while considering the embedding of business change in organisational culture.
- Understanding the limitations and contextual factors associated with their complementary use in change processes.
- The impact of programme contextual features on competency areas.

3.3. Processes initiated in the programme life cycle

A programme, like a project, has a life cycle, although it is more complex than for a project it still clearly defines the structure and sequence in which the programme should be implemented. The programme life cycle aims not only to meet the needs of corporate governance but also to deliver the expected benefits in a predictable and coordinated way. Corporate governance is understood as the process by which an organisation directs and controls its operational and strategic activities and, by which an organisation responds to the legitimate rights, expectations and desires of its stakeholders (PMI, 2017). If the programme is

to succeed it will require a governance that is understandable and open to change (Ritson et al., 2012), which provides appropriate guidance and tools for the processes initiated within the programme. I this regard, it is important to ensure that appropriate mechanisms are in place to integrate the programme into the normal business operations of an organisation (Vuorinen, Martinsuo, 2018; Turkulainen et al., 2015).

The empirical research presented in Table 3 focused primarily on processes such as managing benefits, risk, integration, value and programme organisation.

Table 3.
Summary of empirical research to date in the area of processes initiated in the programme life cycle

Authors	Research method	Research context	Potential for further research
[57]	Case study: Amsterdam metropolitan region (Defining the programme)	The level of integration on the three aspects of content, organization and processes will be the outcome of a dynamic interplay between project forces and program interventions.	Interaction between programme management and project management as a coopetitive way of creating value
[2]	Case study: 5 departments responsible for 80% of public sector capital infrastructure spending in the UK	Identification of risks shared or reinforced by the implementation of the programme	Recognition of typical programme risks independent of its context.
[1]	Case study: 2 information system based change programmes in the UK	Programme structure as a dimension of programme strategy within the context.	Verification of the developed uniformity-authority matrix based on structural contingency theory.
[5]	Case study: Programmes of regeneration of neglected sites in the north of England, mainly funded by the UK government	Determinants underlying benefits management that have practical implications and must be taken into account in the development of BRM theory.	The link between organisational culture and the management of programme benefits while considering how business change is embedded in organisational culture
[50]	Case study: Guangzhou 2010 Asian Games	Verification of the developed approach to assess supply risk	Programme risk management and identification of effective risk measures, typical risk areas found in a given programme context.
[56]	Case study: Operational expansion programme at Neste Oil. Expansion of operations to include 4 new factories	An empirical examination of integration in the context of a global operational expansion programme	Conducting research on external integration across formal organisational boundaries
[58]	Case study: 2 programmes (Local government public sector organisation and Medium sized private sector company)	Investigate the programs actors' use of integration mechanisms and agency in program integration in different change programs.	Further research on programme integration in different programme contexts. Conduct quantitative research on the competencies and knowledge areas of programme managers
[9]	Case study: Infrastructure programme of a large public sector PBO	The purpose of this paper is to address hierarchies in a large program of projects.	Programme knowledge transfer and the impact of cultures and market sectors on programme-based learning.
[27]	Case study: A programme in the Swedish transport sector.	The interplay between organization designs and value processes in the context of programs.	Identification and verification of dimensions of programme organisation in different contexts.

Cont. table 3.

[13]	Case study: Collaboration Programme of collaboration between Large universities and industry (UIC) implemented by the University of Minho and Bosch Car Multimedia Corporation and co-funded by the Portuguese government.	Present a structured framework to support benefits management in university-industry collaborative programmes.	Modelling the benefits management process in different programme contexts. Quality management in programmes and the social impact of programme implementation
[15]	Case study: A building programme involving 40 building projects within a typology of schools and childcare facilities.	The considerations and choices available to a programme organisation when confronted with multiple institutional logics.	Identifying the conditions in which organisational spaces can emerge that protect the actors involved from the dominant institutionalised prescriptions and allow them to move away from conventional ways of doing things.
[55]	Interviews with 21 energy industry experts	Verification of the programme management areas subject to the monitoring and control process and identification of the methods, techniques and tools used in this process	Carry out in-depth research into the methods, techniques and tools used in the programme management process

Benefits management identifies a set of key activities to be performed, with a clear set of controls, inputs, outputs and resources (Fernandes, O'Sullivan, 2021). The more ambiguous and uncertain the benefits are, the more important it should be to focus on them and address the assumptions and risks that may affect their realisation (Breese, 2012). Moreover, one of the elements that distinguish a programme from a project is precisely the process of benefits management, which is carried out in parallel to the process of delivering results by the projects that comprise it. As highlighted by Shi et al. (2014) effective programme management is not possible without effective risk management. Moreover, the competencies required to structure programme risks must be different from those needed to deal with the risks of a single project (Aritua et al., 2011).

Miterev et al. (2020) defined program value as „perceived ability of a product, service or system to meet the target user/stakeholder needs". The authors also emphasise that as a result of different shapes of programme organisation, different value creation processes are possible. The above considerations are also confirmed by van Buuren et al. (2010) additionally drawing attention to the interactions between the programme and the projects included in it, which also create value creation.

The effective and efficient implementation of a project programme is made possible by making appropriate decisions based on reliable information and a flexible management regime (Trzeciak, Jonek-Kowalska, 2021). Programme organisation represents the key elements of the organisation, understood as a hierarchy of organisational relationships necessary for effective programme management. Appropriate programme organisation means clearly defined and

described roles, unambiguously assigned responsibilities for these roles, and a governance structure that is appropriate to the type, size and complexity. Moreover, the strategic choice of centralising or decentralising the programme structure should depend on the level of authority of the programme sponsor and the level of homogeneity of business processes in the participating organisations (Angus, Kittler, 2012; Duryan, Smyth, 2019).

The main research gaps identified in this area, among others, include:

- Modelling the benefits management process in different programme contexts.
- Programme risk management and identification of effective risk measures, typical risk areas found in a programme context.
- Programme integrity process (internal, external) taking into account competencies and knowledge areas.
- Interaction between programme management and project management as a coopetitive way to create value.
- Quality management in programmes and the social impacts resulting from programme implementation.

4. Conclusions

The study presented in this paper, which includes a systematic literature review of 39 selected publications, has a theoretical contribution. The value brought to the literature focuses on two main contributions. Firstly, current research trends relating to context, knowledge and competencies and processes initiated in the programme life cycle were identified. Secondly, the needs of current research issues in the area of programme management were defined, identifying 21 potential knowledge gaps that could serve as a starting point for further in-depth research.

The analysis of the research patterns relating to the methods and techniques used indicated that in the vast majority a single or longitudinal case study is used for the study. Taking into account the characteristics of the operation of the programmes, it seems reasonable to use this method. However, many of the analysed articles simultaneously emphasise the need to conduct large cross-sectional studies using both qualitative and quantitative methods. Moreover, there is also a need to extend the articulated research in different programme contexts.

The authors acknowledge the shortcomings of the research process conducted, which are mainly due to the decisions made regarding the methodological approach.

Firstly, the research focused only on empirical articles directly related to the programme. There may be studies using other terminology for the word "programme".

Secondly, the analysis focused only on articles published in prominent project management journals.

Thirdly, the scope of the selection of publications was limited both to the word "programme" in different variations and to the assumption regarding the timeliness of publications (not earlier than 2010).

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