

PSYCHOLOGICAL AND STRUCTURAL DETERMINANTS OF SILO MENTALITY: A MULTI-LEVEL SCOPING REVIEW

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Silo mentality significantly impedes organizational effectiveness through psychological and behavioral mechanisms. This scoping review identifies key determinants at the individual and work unit levels by synthesizing 11 empirical studies. Findings show that defensive attitudes, limited emotional awareness, and role-based status perceptions contribute to silo formation at the individual level, while hierarchical structures, fragmented communication, and competitive incentive systems reinforce silos at the work unit level. Moving beyond categorisation, we integrate these determinants into a multi-level process model in which silo mentality emerges as a self-reinforcing property of the interaction between organisational structure, work-unit dynamics, and individual psychology, linked across levels by social-identity processes and sustained by a bottom-up feedback loop. The model reframes silo mentality as an emergent, cross-level phenomenon rather than a sum of isolated causes, and implies that effective interventions must target the reinforcing loop at multiple levels simultaneously. The review also identifies the absence of a validated individual-level measure and the under-representation of public-sector contexts as priorities for future research.

INTRODUCTION

Contemporary organizational psychology research increasingly recognizes silo mentality as a complex psychological phenomenon that significantly impacts employee behavior, team dynamics, and organizational effectiveness. From a psychological perspective, silo mentality represents the manifestation of individual cognitive biases, group dynamics, and organizational behavioral patterns that create barriers to cross-functional collaboration and information sharing (Cilliers & Greyvenstein, 2012).

Silo mentality can be understood as a psychological state where employees develop strong in-group identification with their immediate work unit while simultaneously developing negative attitudes or

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indifference toward other organizational units. This psychological phenomenon involves both conscious and unconscious processes that influence employee motivation, behavior, and decision-making in ways that ultimately impede organizational collaboration and effectiveness.

The empirical literature has identified the multidimensional implications of silo mentality on various organizational levels. Stone (2004) revealed that the silo mentality results in the repetition (redundancy) of work, ineffective communication, and decreased employee productivity. Furthermore, Sy & D'Annunzio (2005) found that silo mentality contribute to increased operational costs and decreased customer satisfaction due to poorly coordinated services.

At the individual level, silo mentality involves several key psychological mechanisms. Social identity theory provides a foundational framework for understanding how employees develop strong identification with their immediate work groups while viewing other departments as out-groups (Tajfel & Turner, 1979). This in-group/out-group categorization triggers various cognitive biases including in-group favoritism, out-group derogation, and intergroup anxiety that can manifest as reluctance to collaborate across departmental boundaries.

Research in organizational psychology has identified defensive psychological responses as central to silo formation. When employees perceive threats to their job security, status, or professional identity, they may engage in protective behaviors including information hoarding, territorial defense, and resistance to cross-functional initiatives (Bunderson & Reagans, 2011). These defensive responses represent adaptive strategies at the individual level but create significant barriers to organizational collaboration and learning.

The consequences of silo mentality extend beyond the individual. They accumulate across the work-unit and organizational levels, affecting collaboration and performance throughout the organization. At the individual level, Research by Bunderson & Reagans (2011) shows that employees who work in a siloed environment will experience decreased motivation, limitations in career development, and reduced cross-functional learning opportunities. Turner et al (2018) also found that silo mentality also contribute to increased work stress and decreased employee job satisfaction as a result of barriers in collaboration and communication.

Silo mentality has equally serious consequences at the work-unit or department level. A study by Serrat (2017) notes that isolated work units tend to experience decreased team performance, difficulties in achieving targets, and obstacles to innovation. de Waal et al. (2019) add that the silo mentality causes the work unit to lose a holistic perspective on organizational goals, which leads to sub-optimal decision-making. Meanwhile, at the organizational level, Vatanpour, et al. (2013) found that silo mentality have an impact on operational inefficiency, waste of resources, and decreased organizational competitiveness. Research by de Waal et al. (2019) further indicates that organizations with a high level of silo mentality have difficulty adapting to market changes and show lower innovation than competitors.

Seeing the impact caused by the silo mentality requires researchers and practitioners to better understand and minimize the silo mentality that is increasing for several critical reasons, such as 1) in the context of

innovation and competitiveness, Tett (2015) identifies that silo mentality significantly limits the exchange of ideas and knowledge that is essential to create innovation; 2) from the perspective of organizational culture, Diamond & Allcorn (2004) emphasized that silo mentality create conflicts between work units or departments that can damage employee relationships and morale; 3) in the era of digital transformation, Serrador & Pinto (2015) emphasized that the silo mentality becomes a serious barrier in the implementation of integrated technology and adaptation to change.

Although much research has been done on the negative impact of silo mentality, a comprehensive understanding of the factors that contribute to the emergence of this phenomenon is still limited. Several previous studies have identified various potential factors, such as fragmented organizational structures (Wilmot, 2020), *reward* systems that do not encourage collaboration (Schütz & Bloch, 2006), and ineffective leadership in building a collaborative culture (Gulati, 2007).

At the work unit level, group psychological processes play crucial roles in silo formation and maintenance. Team cohesion, while generally beneficial for within-group performance, can inadvertently contribute to between-group competition and conflict. Research in group dynamics demonstrates that high levels of within-group cohesion can increase resistance to external influence and reduce willingness to engage in inter-group cooperation (Lee & Kramer, 2016).

Social psychological research on intergroup contact theory suggests that limited interaction between work units can reinforce stereotypes and negative attitudes between groups. Without regular, meaningful contact across departmental boundaries, employees may develop inaccurate perceptions of other units capabilities, motivations, and contributions to organizational success.

Existing research on silo mentality is limited in both scope and approach. Many studies examine the phenomenon through a single disciplinary lens, such as management or organizational psychology, which yields a fragmented and incomplete understanding of a phenomenon that spans organizational behavior, communication, leadership, and culture. Studies are also frequently confined to a single organization or industry, restricting the extent to which their findings can illuminate the broader dynamics of silo mentality.

Although several *systematic reviews* and meta-analyses have been conducted on related topics, such as organizational collaboration barriers (Wilson et al., 2021), departmental isolation (Lee & Park, 2020), and cross-functional team effectiveness (Brown & Johnson, 2019), there has been no *comprehensive scoping review* that specifically identifies the determinants of silo mentality with a multi-level approach. Previous reviews tend to focus on a single aspect such as structural barriers or individual factors, without integrating a holistic perspective that spans the individual, departmental, and organizational levels simultaneously.

This limitation is a significant *gap* because the silo mentality is a complex phenomenon that involves dynamic interactions between various organizational levels. Therefore, a *scoping review approach* is needed that can comprehensively map the determinants of silo mentality from

various perspectives and levels of analysis to provide a more holistic understanding.

This scoping review aims to systematically identify, analyze, and synthesize empirical evidence regarding the psychological and behavioral determinants of silo mentality at individual and work unit levels. By focusing on these psychological foundations of silo formation, this review seeks to provide insights that can inform the development of psychologically-informed interventions for enhancing cross-functional collaboration.

The primary research question guiding this review is: "What are the key individual and work unit psychological and behavioral determinants contributing to silo mentality formation in organizational contexts?"

METHOD

This study uses a *scoping review* method by following the framework developed by Arksey & O'Malley (2005) and updated by Levac et al. (2010) and Peters et al. (2020). The type of study used is scoping review because of its ability to map key concepts and identify research gaps in areas that have not been systematically explored, and summarize findings from different types of literature in the field under study. Based on Arksey & O'Malley (2005), the stages of this research are:

1. Identify research questions.

The main purpose of *this scoping review* is to identify the factors that lead to the emergence of silo mentality within organizations. Therefore, the question in the research that is the main focus is "What are the key individual and work unit psychological and behavioral determinants contributing to silo mentality formation in organizational contexts?". This question is quite broad, so it can include various factors that cause the formation of silo mentality within organizations.

2. Identify sources of literature relevant to the topic

The search for literature sources was carried out systematically on various leading electronic academic databases starting on October 20, 2024 using the search strategy. The search strategy employed combination of keywords using Boolean operators, as detailed in Table 1.

Table 1. Keywords and Boolean Operators for Literature Search

Concept	Keywords	Boolean Operator
Silo Mentality	"silo mental*" OR "silo think*" OR "silo behav*" OR "silo effect" OR "organizational silo*"	AND
Determinants	determinant* OR factor* OR cause* OR antecedent* OR predictor* OR driver*	AND
Organization	organi?ation* OR workplace OR company OR corporation OR institution OR employee*	AND
Collaboration Barriers	"collaboration barrier*" OR "communication barrier*" OR "cross-functional" OR "inter-departmental"	OR

The inclusion criteria will include studies that explicitly address the factors that cause silo mentality within organizational context. The search on the electronic database consists of:

- Web of Science
- Scopus
- Science Direct,
- Sage Pub
- PubMed
- Proquest
- JStor
- EBSCO

In addition to these databases, researchers also search databases (not registers), such as:

- Google Scholar (manual search limited)
- IEEE Xplore (for technical literature)

3. Conduct literature selection by topic

After conducting a literature search, the author checks duplicate articles using the Zotero.org application. In assessing the article, the author is assisted by ABR and DN as an independent assessor who assists the author in selecting titles and abstracts. Before starting the main *screening process*, the two reviewers (AF and ABR) conducted a calibration session by independently evaluating 10% of the total article sample to ensure consistency in the interpretation of the inclusion and exclusion criteria. Both reviewers conducted independent title and abstract screening. For articles that have disagreements, an open discussion is held. If consensus cannot be reached, a third reviewer (DN) is involved as an arbitrator. The entire selection process is systematically documented to allow for reproduction of the research. The research protocol is listed in the Open Science Framework (OSF): <https://osf.io/msv73>.

Furthermore, a check is carried out on the article in its entirety using the inclusion and exclusion criteria according to the following table. The inclusion and exclusion criteria are presented in Table 2.

Table 2. Inclusion and Exclusion Criteria

PCC	Inclusion	Exclusion
Population	Employee in organizations	Not about employee
Concept	Silo Mentality	Not about silo mentality
Context	The study is conducted within organizational context	Non organizational context
	Peer-reviewed empirical journal article (study)	Editorials OR letters OR reviews OR meta-analysis paper OR conference OR proceeding OR theoretical paper OR discussion paper
	Language in English	Not in English
	Publication after 2014	Publication year in 2014 and below

4. Performs mapping, collecting, and summarizing literature

Articles that have been in accordance with the purpose of the study, then extracted are carried out. The extracted data include 1). Writer; 2). Title; 3). Year of issue; 4). Gap/problem; 5). Topic/focus/research objective/hypothesis; 6). Concept/*theoretical framework*; 7). Variable; 8). Method (analysis technique, measuring instrument used, etc.); 9). Setting/concept/sample; 10). Findings; 11). Limitations and suggestions for further research. This data will be presented in the form of a table or matrix that facilitates the analysis and synthesis process.

5. Compile and report the results of the analysis

The main findings of the extracted article were then a synthesis analysis was carried out using a comprehensive multi-method approach to understand the factors that influence the emergence of silo mentality in organizations. The synthesis process begins with thematic analysis that is carried out inductively to identify the themes and patterns of determinants that emerge from the literature without using a predetermined theoretical framework. This inductive approach allows researchers to capture nuances and variations of determinants that may not have been anticipated within existing theoretical frameworks, resulting in a more holistic understanding of the complexity of silo mentality.

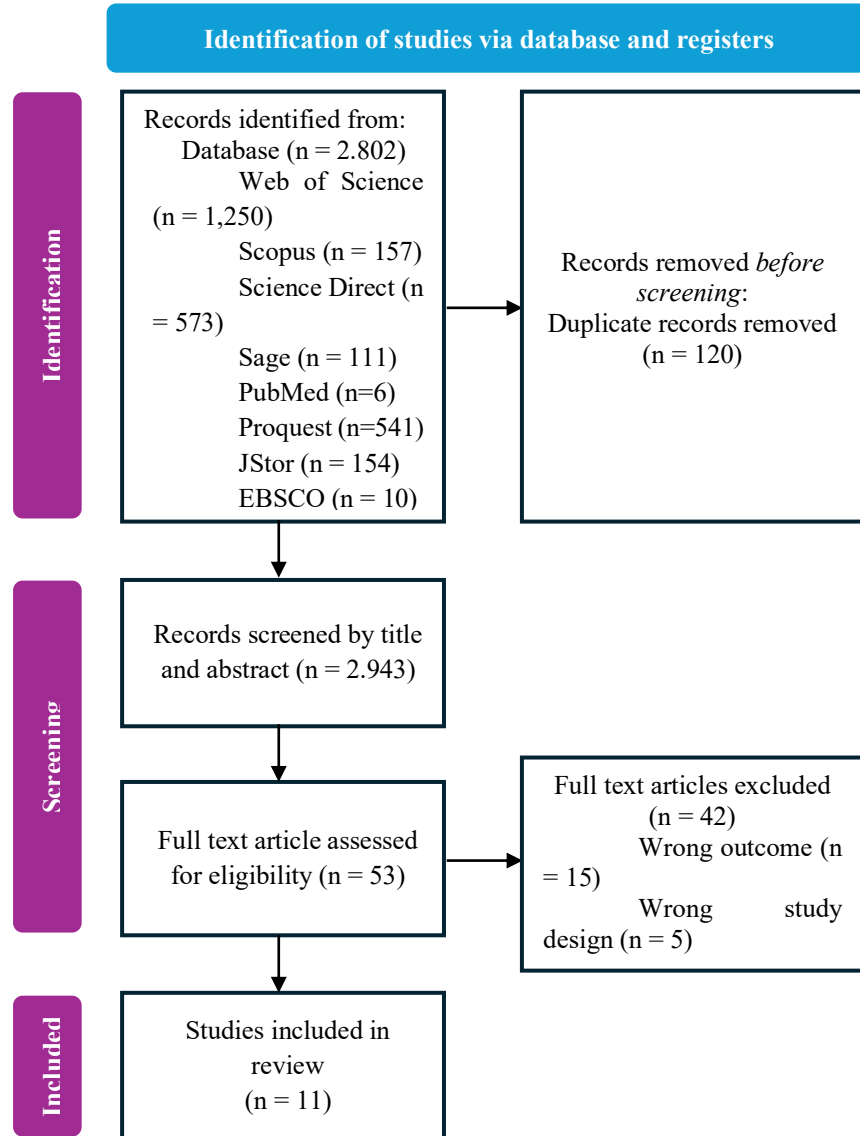
After the main themes were identified through thematic analysis, *a synthesis framework was carried out* to organize the findings into a systematic structure based on the level of analysis. The grouping of determinant factors is divided into three main levels: the individual (employee) level which includes psychological and behavioral factors, the work unit/department level which includes structural and relational factors, and the organizational level which includes systemic and contextual factors. This three-level framework was chosen because it is able to capture the complexity of interactions between various determinants in different organizational contexts.

The synthesis process is followed by *narrative synthesis* which aims to integrate the findings of various studies into a comprehensive description that can be easily understood. This narrative approach allows researchers to present findings in a coherent form with the support of tables and diagrams that facilitate visualization of relationships between determinants. In addition, *a cross-case analysis* was conducted to compare findings between studies by considering differences in organizational context, research methodology, and sample characteristics. This comparative analysis is important to understand the consistency of findings across various organizational settings and identify contextual factors that can moderate relationships between determinants.

To ensure the reliability and accuracy of the synthesis process, this study applies several strict quality assurance strategies. *Dual coding* was performed on 20% of the extraction data by two independent researchers (AF and ABR) to verify consistency of interpretation and coding. This process begins with a calibration session to ensure a common understanding of the categorization framework and coding criteria. *Regular team meetings* are scheduled periodically to discuss findings, resolve interpretation disagreements, and ensure consistency throughout the synthesis stage. *Member checking* is conducted with a supervisor (SH) to validate key findings and ensure that the resulting interpretations are in accordance with the available data and are unbiased.

The systematic literature search and selection process is illustrated in Figure 1, which presents the PRISMA 2020 flow diagram showing the identification, screening, and inclusion of studies.

Figure 1. Prisma 2020 Flow



RESULT

Based on a systematic search conducted using the PCC framework over a period of 10 years (2014-2024), 2,943 articles were identified to provide an overview of the latest developments related to the phenomenon of silo mentality. From the entire *screening* and feasibility evaluation process, 11 studies finally met the inclusion criteria and were analyzed in this scoping review. Analysis revealed a comprehensive framework of psychological and behavioral determinants operating at individual and work unit levels, with complex interconnections between these levels affecting silo mentality formation and persistence.

The included studies demonstrated considerable geographic diversity, spanning nine countries with representation from various organizational contexts. The United States and South Africa each contributed two studies, while Malaysia, Sri Lanka, Brazil, Belgium, Nigeria, the United Kingdom, and Ireland each contributed one study. Regarding organizational context, the majority of studies were conducted in the private sector (6 studies, 55%), followed by mixed or non-specific contexts (3 studies, 27%), and the public sector (2 studies, 18%). Methodological quality assessment using the *Mixed Methods Appraisal Tool* (MMAT) showed that the majority of studies were of good quality, with 7 studies (64%) achieving high quality ($\geq 80\%$), 3 studies (27%) of medium quality (60-79%), and only 1 study (9%) being of low quality ($< 60\%$).

The dominance of studies from the private sector (55%) indicates a significant research gap in the public sector, even though this sector has unique characteristics such as complex bureaucratic structures, strict regulations, and different organizational cultures from the private sector. The limitation of public sector representation is one of the limitations in the generalization of findings, especially for the context of government and non-profit organizations that may have specific determinants of silo mentality. Nonetheless, the geographic and methodological diversity of the included studies provides a solid foundation for identifying the determinants of silo mentality that can be applied across various organizational contexts.

The MMAT quality ratings were used to weight confidence in the synthesised determinants rather than to exclude studies. The core determinants that recurred across the evidence base, namely hierarchical and fragmented structures, competitive incentive systems, and cross-unit communication barriers, were each reported in multiple studies rated as high quality ($\geq 80\%$ on the MMAT), and appeared consistently across studies of differing methodological quality and design. This convergence across independent, higher-quality studies indicates that these determinants are relatively robust findings. The detailed appraisal for each study is presented in Table 3. By contrast, determinants reported in only one or two studies, or in the single study rated as low quality, should be interpreted with greater caution and treated as candidate rather than established determinants. Quality ratings therefore informed the relative emphasis placed on each determinant in the synthesis and model that follow.

Table 3. MMAT Quality Assessment of Included Studies.

Study (Author, Year)	Design category	C1	C2	C3	C4	C5	Overall quality
Haris (2020)	Mixed methods	✓	✓	?	✓	✓	High (80%)
Mouta & Meneses (2021)	Quantitative descriptive	✓	✓	✓	✓	✓	High (100%)
Jeske & Olson (2024)	Qualitative	✓	✓	✓	✓	✓	High (100%)
Shakir et al. (2023a)	Quantitative non-randomized	✓	X	X	X	✓	Low (40%)
Shakir et al. (2023b)	Quantitative descriptive	✓	✓	✓	✓	✓	High (100%)
Boroş et al. (2016)	Quantitative RCT	✓	✓	✓	✓	✓	High (100%)
Kowalski (2017)	Mixed methods	✓	X	✓	✓	?	Moderate (60%)
Jeleel-Ojuade (2024)	Mixed methods	✓	✓	X	X	✓	Moderate (60%)
Briody & Erickson (2014)	Qualitative	✓	✓	✓	✓	✓	High (100%)
Adams & Nelson (2022)	Qualitative	✓	✓	X	X	✓	Moderate (60%)
Motingoe & Langerman (2019)	Qualitative	✓	✓	✓	X	✓	High (80%)

Note.

* Each study was appraised against the five design-appropriate criteria of the Mixed Methods Appraisal Tool (MMAT, 2018). Cells show whether each criterion was met (✓ = yes, X = no). Overall quality is the proportion of criteria met (high ≥ 80%, moderate 60–79%, low < 60%).

* C1–C5 correspond to the five MMAT criteria for the relevant design category.

For qualitative studies: C1 appropriateness of the qualitative approach; C2 adequacy of data-collection methods; C3 derivation of findings from data; C4 interpretation substantiated by data; C5 coherence among data, analysis, and interpretation. For quantitative (descriptive, non-randomized, and randomized) studies: C1 relevance of the sampling/measurement strategy; C2 representativeness of the sample / appropriate randomization; C3 appropriateness of measurements; C4 completeness of data / low risk of bias; C5 appropriateness of the statistical analysis. For mixed-methods studies: C1 adequacy of the rationale for a mixed design; C2 effective integration of the qualitative and quantitative components; C3 adequate interpretation of integrated findings; C4 attention to divergences between components; C5 adherence to the quality criteria of each tradition. Two screening items (clarity of research question and adequacy of data to address it) were met by all included studies and are therefore not tabulated.

A comprehensive summary of the reviewed studies is presented in Table 4, including author details, study context, methodology, identified factors, and recommendations for overcoming silo mentality.

Table 4. Summary of the Research Journals that are a Review

Author, Year, and Title	Country and Sample	Research Methods	Factors related to the emergence of silo mentality
Parvez I. Haris (2020) The Covid-19 pandemic: An urgent need to remove silo mentality in science and tackle global health challenges through coordination, cooperation and collaboration	United Kingdom The sample consisted of approximately 100-150 respondents who were selected <i>purposively</i>, i.e. based on certain criteria relevant to the research, such as experience in cross-disciplinary collaboration or involvement in COVID-19 research projects.	This study uses a <i>mixed-method design</i>	Communication and coordination barriers Lack of knowledge and resource sharing Physical isolation due to the pandemic Limitations of standardization of procedures Limited equipment and facilities
Cristina Mouta; Raquel Meneses (2021) The impact of CEO characteristics on organizational culture and on the silo effect	Brazil This study involved 185 respondents selected from various companies in the industry sectors (<i>hospitality and beverage</i>)	Quantitative approach using survey methods to collect data	Characteristic of the CEO Organizational Culture
Debora Jeske; Deborah Olson (2024) Silo mentality in teams: Emergence, Repercussions and Recommended Options for Change	South Africa Consisting of 318 workers from different financial organizations in Johannesburg	Qualitative approach	Psychological Team Organisasi
Muzaina Shakir; Mazuki Jusoh; S. M. Ferdous Azam (2023) Decoding Silo Mentality Amongst Millennials	Malaysia Millennial employees were chosen because they are often familiar with technology and have a different perspective on collaboration and communication in the workplace.	Quantitative method using the <i>Cross-sectional approach</i>	Hierarchical and fragmented organizational structure Lack of communication and knowledge sharing across departments A layered perception of status and roles between formally educated employees and support staff The characteristics of the millennial generation who want collaboration and meaningful work, as opposed to the silent organizational structure

Muzaina Shakir; Mazuki Jusoh; S. M. Ferdous Azam (2023) The Ripple Effect: Silo Mentality's Influence on Communication and Collaboration Patterns in the IT Industry of Sri Lanka.	Sri Lanka The millennial generation is known to have a more collaborative and technology- savvy way of working. This study involved 382 respondents who were selected using <i>the random sampling method</i>.	Quantitative methods, descriptive and correlational research	Hierarchical and departmentalized organizational structure Lack of effective communication channels and information sharing between departments Different goals, priorities, and cultures across departments Low group emotional awareness
Smaranda Boros; Brecht Cardoen (2016) Breaking Silos: A Field Experiment on Relational Conflict Management in Cross-Functional Teams	Belgium The sample consisted of 40 participants, recruited from MBA students and executives at Vlerick Business School.	Field experiment methods to explore the impact of conflict management in cross- functional teams.	Perception of "not my job" among employees Rigid hierarchy and status views between librarians and support staff Limitations of technology and information systems that are not integrated
Meghan Kowalski (2017) Breaking Down Silo Walls: Successful Collaboration Across Library Departments	United States The study used <i>purposive sampling</i> to select approximately 50- 100 respondents who were considered to have relevant understanding and experience related to collaboration and silos in organizations.	The <i>mix methods</i> method which is a combined approach between qualitative and quantitative	Hierarchical and departmentalized organizational structure Incentives that encourage inter-departmental competition Lack of group emotional awareness Authoritarian and hierarchical leadership style
Aishat Jeleel- Ojuade (2024) The Role of Information Silos in Financial Institutions	Nigeria The sampling technique used is purposive sampling, where respondents are selected based on certain criteria, such as having at least two years of work experience in a financial institution (n = 100)	Mixed <i>Methods</i>, combining qualitative and quantitative approaches.	Hierarchical and departmentalized organizational structure Lack of effective communication channels Competing priorities across departments Competition and rivalry between departments Legacy technology systems that are not integrated
Elizabeth K. Briody; Ken C. Erickson (2014) Success despite the Silos: System-Wide	United States Participants consist of employees from various levels and	Qualitative method with an ethnographic approach	Function-based organizational structure Organizational culture focuses on work units

Innovation and Collaboration	functions in the three organizations, namely Intimate Clothing Companies; Global Automotive Companies; Hospital		Lack of coordination and communication across units Differences in incentives and reward systems between units
Zoey Adams; Alexander Nelson (2022) Breaking Down Silos: Integrating Big Data Across Organizational Functions	Ireland Samples include: - 5-7 Organization: With varying sizes and structures to get a comprehensive perspective. -15-20 Respondents: Individuals from different levels and departments to ensure diversity of views.	Qualitative method	Function-based organizational structure Organizational culture focuses on work units Lack of coordination and communication across units
Mahlomola Motingoe; Josef J. Langerman (2019) New Organisational Models That Break Silos in Organisations to Enable Software Delivery Flow	South Africa Involve 15-30 participants from various organizations to obtain sufficient and representative data on the issues being studied.	Qualitative method	Function-based organizational structure Organizational culture focuses on work units Lack of coordination and communication across units Differences in incentives and reward systems between units Specialization and technical expertise Lack of skills

Based on the results of the review that has been carried out in the study, the researcher then summarizes the factors that cause the emergence of silo mentality in the organization. The researcher divides these factors into three category levels, the individual (employee) level, the work unit/department level, and the organizational level.

The determinants of silo mentality are systematically categorized and presented in Table 5, which organizes factors at individual and work unit levels based on empirical evidence from the reviewed studies

Table 5. Matrix of Factors Causing the Emergence of Silo mentality in Organizations

Category Level	Factors Causing the Emergence of Silo mentality
Individual	Psychological breach of contract encourages employees to withdraw and focus only on their own roles (Jeske & Olson, 2024)

	The threat of change makes individuals take a defensive stance (Jeske & Olson, 2024) The pandemic and <i>work from home</i> reduce personal interaction and encourage isolation (Haris, 2020) Lack of cross-functional attention limits understanding of the role of other teams (Jeske & Olson, 2024) Defensive attitude and reluctance to share information or collaborate with colleagues outside their unit, for fear of losing power or prestige. Silos often arise because an employee or department considers the task 'not my job' (Kowalski, 2017) Lack of emotional awareness and the ability to manage conflict constructively. Group emotional awareness allows team members to recognize negative emotions triggered by controversy and discord early, as well as act to prevent their potential harm. (Kowalski, 2017) The perception of status and roles is multi-layered between formally educated employees (librarians) and support staff (non-librarians)." Roles in libraries have traditionally been divided by title and non-title lines. (Kowalski, 2017) In-depth technical specialization and expertise in a particular field (Motingoe & Langerman, 2019) Lack of interpersonal skills and inter-functional understanding (Motingoe & Langerman, 2019)
Work Unit	Teams with a mix of internal-external employees are more prone to forming silos (Jeske & Olson, 2024) Competition between teams encourages an "<i>us vs them</i>" attitude (Jeske & Olson, 2024) Monopolization of information in the team, whether intentional or unintentional (Haris, 2020) Lack of coordination leads to duplication of work (Waalet al., 2019; cited in Jeske & Olson, 2024) Organizational structure that is too hierarchical and fragmented into departments/functions that are too rigid. Hierarchical and departmentalized structures have been identified as fertile ground for silos. (Motingoe & Langerman, 2019) Incentives and performance evaluation systems that encourage inter-departmental competition rather than cooperation. The incentive structure in the organization plays an important role. When employees are primarily rewarded for individual or departmental achievements, rather than collaborative efforts, silos will be more likely to emerge. (Motingoe & Langerman, 2019) Lack of effective communication channels and information sharing between departments. Interdepartmental competition and territorial wars can trigger the formation of information barriers within financial institutions. (Ojuade, 2024) Focus on the local goals and priorities of the work unit/department (Adams & Nelson, 2022) Typical use of language and technical terms in work units/departments (Kowalski, 2017) Lack of interaction and collaboration between work units/departments (Adams & Nelson, 2022)

Organizational	The psychological characteristics of CEOs influence culture and silos (Mouta & Meneses, 2021) Company size and rapid growth contribute to the formation of silos (Motingoe & Langerman, 2019) Complex organizational structures hinder coordination (Jeske & Olson, 2024) Department-based awards encourage competition vs collaboration (Briody & Erickson, 2014) The departmental subculture inhibits identification with the organization (Jeske & Olson, 2024) Organizational culture that tends to be individualistic, closed, and does not encourage collaboration. "A culture that emphasizes individualism, competition, and departmentalism over cooperation has been shown to foster silo thinking." (Motingoe & Langerman, 2019) Limitations of technology and information systems that are not integrated, hinder the flow of information across departments. "Outdated or incompatible technology systems can create barriers that hinder communication and collaboration between departments." (Motingoe & Langerman, 2019) Lack of effective leadership in facilitating cultural change and breaking down silo mentality. "Leaders who apply a transformational style, characterized by inspiration, intellectual stimulation, and individual consideration, tend to mitigate the formation of silos." (Motingoe & Langerman, 2019) Differences in incentives and reward systems between work units/departments (Adams & Nelson, 2022)
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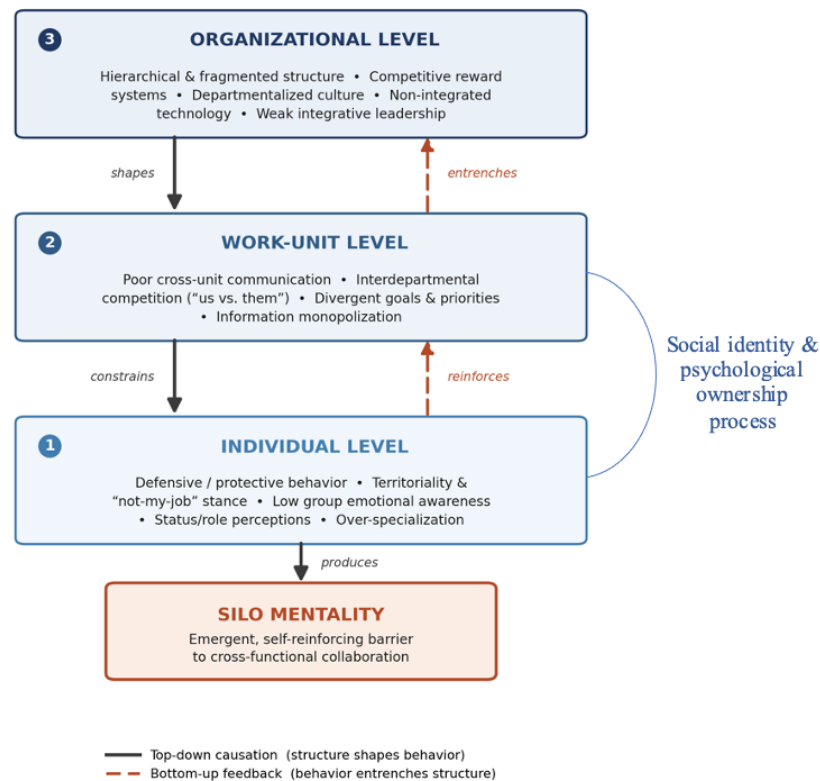
The research revealed complex psychological interactions between individual and work unit factors that amplify silo formation effects. Individual defensive responses become reinforced by competitive work unit cultures, creating self-perpetuating cycles where personal and group psychology mutually strengthen silo boundaries. Similarly, work unit communication barriers exacerbate individual perspective-taking limitations, reducing opportunities for psychological development that could support collaborative behavior.

DISCUSSION

The findings of this scoping review reveal that silo mentality represents a complex psychological phenomenon involving interconnected individual and work unit factors that create and maintain barriers to cross-functional collaboration. From an organizational psychology perspective, these results demonstrate that silo formation involves fundamental psychological processes including social identity development, defensive coping mechanisms, cognitive specialization effects, and group dynamics that must be understood and addressed for effective intervention development. In interpreting these findings, we draw on established theoretical frameworks, including social identity theory (Tajfel & Turner, 1979) and related work on intergroup dynamics and psychological ownership; these are used as explanatory lenses and are distinct from the

eleven empirical studies that constitute the reviewed evidence base. Beyond cataloguing the determinants identified in those studies, the central contribution of this synthesis is to show how they are causally linked across levels. Rather than three independent inventories of factors, the reviewed evidence points to a single, integrated process in which structural conditions at higher levels shape psychological and behavioural responses at lower levels, which in turn feed back to entrench the very structures that produced them. We therefore propose a multi-level process model of silo mentality (Figure 2), which organises the synthesis that follows and articulates what is novel about it: silo mentality is not the sum of isolated causes but an *emergent, self-reinforcing* property of the interaction between organisational structure, work-unit dynamics, and individual psychology. The model specifies three interlocking mechanisms. First, top-down causation: organisational-level conditions, namely hierarchical and fragmented structures, competitive reward systems, departmentalised cultures, and non-integrated technologies, establish the conditions under which work units come to pursue divergent goals and restrict cross-unit communication (Motingoe & Langerman, 2019; Briody & Erickson, 2014). Second, a social-identity bridge links the levels: as communication across units declines and reward structures pit units against one another, employees identify more strongly with their immediate in-group and perceive greater social distance from out-groups (Tajfel & Turner, 1979). This intergroup categorisation is the psychological mechanism that converts structural separation into the defensive, territorial, and “not-my-job” behaviours observed at the individual level (Kowalski, 2017; Jeske & Olson, 2024). Thus a communication barrier is not merely “associated with” silos; it reduces information exchange, strengthens subgroup identification, and increases perceived social distance, thereby lowering willingness to collaborate across boundaries. Third, and critically, bottom-up reinforcement: the individual defensive behaviours generated by this process, such as information hoarding and territorial protection, feed back upward to harden the communication barriers and competitive climates at the work-unit level, which in turn legitimise and reproduce the organisational structures and cultures that initiated the cycle (Boroş et al., 2016; Haris, 2020). It is this feedback loop that explains the persistence of silos noted across the included studies and that distinguishes the present model from earlier descriptive categorisations: silos endure because the system is self-sealing, not because any single determinant is unusually strong.

Figure 2. A multi-level process model of silo mentality formation. Solid arrows denote top-down causation; dashed arrows denote bottom-up feedback that renders the system self-reinforcing.



Individual Level

Literature review findings indicate that individual-level factors, particularly those related to employee attitudes and behaviors, serve as primary contributors to silo mentality formation within organizations. Rather than acting as discrete causes, these factors share a common psychological core: they are expressions of self-protective and identity-preserving motivation. The specific behaviours reported across studies, summarised below, are best read as surface manifestations of that underlying motivational dynamic rather than as an inventory of independent determinants. Employees who are defensive and reluctant to share information or collaborate with colleagues outside of their unit tend to do this for fear of losing power or prestige (Kowalski 2017). In addition, the lack of emotional awareness and the ability of employees to manage conflicts constructively can also trigger the formation of silos (Boroš et al. 2016). Furthermore, the existence of multiple perceptions of status and roles between formally educated employees (librarians) and support staff (non-librarians) can be a factor that forms a silo mentality (Langley et al. 2006).

Psychological aspects and personal characteristics are also factors that can contribute to the emergence of silo mentality. Jeske and Olson (2024) highlight the importance of psychological factors such as psychological contracts and individual protective responses, where fear of change and uncertainty can drive defensive attitudes that lead to the formation of silos. Haris (2020) added that individual reluctance to share information and knowledge, as well as resistance to cross-field collaboration are also driving factors for the emergence of silos.

In addition, in-depth technical specialization and expertise in certain areas, as well as a lack of interpersonal skills and understanding between functions can also be contributing factors to the formation of silo mentality. Employees who are overly specialized in one area tend to focus on developing technical competencies and overlook cross-functional collaboration capabilities. This can exacerbate isolation and lack of understanding between work units (Narayan, 2015). Read against the proposed model (Figure 2), these individual-level factors are best understood not as independent causes but as the psychological end-point of higher-level pressures. Defensive behaviour, territoriality, and the “not-my-job” stance are the predictable consequences of strong in-group identification: when social identity is anchored in the immediate unit, protecting that unit’s resources and boundaries becomes self-relevant, and information sharing across boundaries is experienced as a cost rather than a contribution (Tajfel & Turner, 1979). Over-specialisation and low group emotional awareness compound this by reducing both the opportunity and the capacity to take the perspective of other units. Crucially, these behaviours do not remain at the individual level: information hoarding and territorial defence feed back into the work unit, deepening the communication barriers and competitive climate from which they arose.

Department Level

At the department/work unit level, an organizational structure that is too hierarchical and fragmented into rigid departments/work units can be the main trigger for the formation of silo mentality (Boroş et al. 2016; Jeleel-Ojuade 2024). In addition, incentives and performance evaluation systems that encourage inter-departmental competition rather than cooperation, can also trigger the emergence of silos (Boroş et al. 2016; Jeleel-Ojuade 2024). Lack of effective communication channels and information sharing between departments is another factor that can lead to the formation of silos (Shakir et al. 2023b; Jeleel-Ojuade 2024). Differences in goals, priorities, and cultures between departments can also be the cause of silo mentality (Shakir et al. 2023b).

Interpersonal and structural dynamics play a crucial role in the formation of silos. A study conducted by Jeske and Olson (2024) reveals that team composition, especially when involving a mix of internal and external employees, can create a subculture that encourages “us vs them” thinking. Haris (2020) emphasized that the lack of coordination between teams, the lack of data and resource sharing, and the lack of standardization of work procedures also contribute to the formation of silos. Mouta and Meneses (2021) in their research found that an overly strong team culture versus weak organizational identification, coupled with competition

between units and unclear responsibilities, further strengthens the formation of silos within the organization.

In addition, excessive focus on goals and priorities between work units also contributes to the cause of the emergence of silo mentality. The use of language and technical terms is typical of each unit, as well as the lack of interaction and collaboration between work units (Vatanpour et al., 2013; Narayan, 2015). When each work unit is only oriented towards achieving its own departmental goals and does not consider the overall organizational goals, this can trigger competition and the formation of "silos" (Vatanpour et al., 2013; Narayan, 2015; Stewart, 2014). Within the model, the work unit is the pivotal level at which structure is translated into psychology. Poor cross-unit communication and competitive incentive structures do not merely co-occur with silos; they actively reduce the frequency and quality of intergroup contact, which, consistent with intergroup contact theory, allows stereotypes and distrust between units to consolidate unchecked. Divergent goals and unit-specific language then function as identity markers that sharpen the in-group/out-group boundary. In this way the work-unit level converts the organisational conditions above it into the individual defensive responses below it, while simultaneously transmitting those responses back upward as entrenched barriers, the central feedback dynamic that sustains the silo.

Organizational Level

At the organizational level, organizational structure itself can give rise to silo mentality. Departmental/unit-based organizational structures, organizational culture that tends to focus on work units, lack of coordination and communication across units, and differences in incentives and reward systems between work units are factors that contribute to the formation of silo mentality (Vatanpour et al., 2013; Narayan, 2015; Stewart, 2014). Rigid and hierarchical organizational structures, as well as cultures that encourage isolation of work units, can hinder collaboration and cross-functional information exchange (Narayan, 2015; Stewart, 2014). Differences in reward and recognition systems between units can also trigger internal competition and strengthen silos (Narayan, 2015; Stewart, 2014).

The broader structural, systemic, and situational aspects of the organization are also factors that can give rise to silo mentality. Mouta and Meneses (2021) identify that the size of the company and the complexity of the organizational structure have a significant effect on the formation of silos, especially in the context of rapid growth and restructuring processes. Research by Jeske and Olson (2024) shows that the inefficiency of organizational communication systems, unclear *ownership*, and process fragmentation also contribute to the emergence of silos. Haris (2020) reinforces these findings by underlining the importance of structural barriers between departments, limited facilities and shared resources, and weak integrated coordination systems that further worsen the situation. External factors such as the COVID-19 pandemic and the VUCA (*Volatility, Uncertainty, Complexity, Ambiguity*) environment also affect organizational dynamics and can reinforce the tendency to form silos.

The limitations of technology and information systems that are not integrated, thus hindering the flow of information across departments, are also organizational factors that contribute to the formation of silos (Boro s

et al. 2016; Jeel-Ojuade 2024). In addition, a lack of effective leadership in facilitating cultural change and breaking down silo mentality can be the cause of persistent silos in organizations (Boroş et al. 2016). Resistance to change from employees who have become accustomed to silent structures and processes can also be an organizational factor that maintains silos (Kowalski 2017). The organisational level both initiates and closes the cycle described by the model. Structures, reward systems, and cultures at this level establish the initial conditions for unit-level fragmentation; yet they are also the level at which the accumulated defensive behaviours and inter-unit barriers become normalised and institutionalised. Employee resistance to change and the persistence of “the way things are done” are precisely the mechanism by which bottom-up behaviour hardens back into top-down structure. This reciprocal relationship explains why interventions aimed at a single level tend to fail: addressing structure without altering the social-identity processes that animate it, or addressing individual attitudes without changing the incentive and communication structures that reward them, leaves the reinforcing loop intact.

Overall, the factors that cause the silo mentality at the individual, work unit, and organizational levels are interrelated and mutually reinforcing each other. Transformations in these elements, such as structure, culture, leadership, and HR management systems, are needed to overcome silo problems and encourage cross-functional collaboration within the organization (Vatanpour et al., 2013; Narayan, 2015; Stewart, 2014).

The implications of silo mentality can have a negative impact on the organization, such as limited communication, lack of information and knowledge exchange, and poor coordination between work units (Langworth, 2016; Fox, 2010). This can lead to duplication of work, unintegrated decision-making, and a less than satisfactory customer experience (Vatanpour et al., 2013; Stewart, 2014). Furthermore, silo mentality can also lead to low employee motivation and job satisfaction, as well as increased turnover rates in organizations (Fenwick et al., 2009; Fox, 2010).

A comprehensive understanding of the interaction between factors at these three levels, according to Jeske and Olson (2024), is important for developing effective strategies in preventing and overcoming silo mentality in organizations. A holistic approach that considers individual, team, and organizational aspects simultaneously is necessary to create sustainable change.

Therefore, understanding the factors that cause silo mentality and managing their negative impacts is essential for organizations to be able to perform optimally and adapt well in a competitive environment. Further research is needed to develop a comprehensive approach to addressing the challenges of silo mentality in various organizational contexts.

CONCLUSIONS AND SUGGESTIONS

This scoping review of 11 studies employing diverse research methodologies identified that factors contributing to silo mentality emergence can be categorized into three primary levels. At the individual level, contributing factors include defensive attitudes and reluctance to share information, limited emotional awareness, excessive specialization without balanced interpersonal skills, and multilayered perceptions of

status and roles. Psychological aspects such as psychological contracts and individual protective responses represent critical factors in silo mentality formation. At the departmental level, overly hierarchical and fragmented structures, incentive systems that encourage competition between departments, and lack of effective communication channels are the main triggers for the formation of silos. Meanwhile, at the organizational level, factors such as rigid organizational structures, limitations of technology and information systems, lack of effective leadership, and organizational culture that encourages isolation of work units are significant contributors to the emergence of silo mentality.

Although several explanations of silo mentality have been proposed, research on the phenomenon in government agencies remains limited. This is a significant gap considering that government agencies have unique characteristics such as complex bureaucratic structures, strict regulations, and different organizational cultures from the private sector. This gap is consequential, given the impact of silo mentality on the effectiveness of public services and on coordination between government agencies. Rigid hierarchical structures, fragmented division of authority, and complex bureaucratic systems within government agencies can be unique contextual factors in the formation and strengthening of silo mentality.

This scoping review has several limitations that need to be noted, including a relatively limited number of articles, as well as possible bias against the literature review conducted by researchers. The reduction from nearly 3,000 initial records to 11 included studies warrants explicit justification. This attrition reflects the conceptual specificity of the construct rather than overly restrictive screening. A large proportion of records retrieved by the search referred to collaboration, communication, or coordination barriers in general terms without explicitly conceptualising or examining “silo mentality” as the phenomenon of interest; these were excluded at the full-text stage as “wrong concept” ($n = 22$) because they did not address the review question. Restricting inclusion to peer-reviewed empirical studies (excluding editorials, theoretical and discussion papers, and reviews) further narrowed the pool, consistent with our aim of synthesising primary evidence. A small final corpus is common and accepted in scoping reviews of emerging or narrowly defined constructs, where the objective is to map the existing evidence base and identify gaps rather than to provide an exhaustive aggregation. We nonetheless treat the limited number of studies as a genuine constraint on the strength of the conclusions, and the determinants synthesised here should be read as a map of the current evidence rather than a definitive account. This bias may arise from the results of the assessment conducted by the researcher after conducting a review of the full article without involving other researchers to check the suitability of the information and the quality of the article used as a reference by the researcher. The involvement of independent assessors can be considered in order to maintain the quality of the articles that are referenced in the research.

In addition, another disadvantage of *this scoping review* is that the researcher applies the context only to English-language articles, so research other than English is not included in *this scoping review* process. Other limitations are related to access to paid articles used in search criteria. This condition allows researchers to miss perspectives, different

contexts about silo mentality, and other factors that may be mentioned in the article. The *review* also does not include *grey literature* such as unpublished organizational reports, theses, or policy documents, which may contain valuable information about organizational practices in dealing with silo mentality. From an organizational psychology perspective, addressing silo mentality requires understanding and intervention at multiple psychological levels, recognizing the complex interactions between individual cognitive and emotional processes and the group dynamics that shape collaborative behavior in organizational contexts. The findings provide a foundation for developing psychologically-informed interventions that address the underlying psychological mechanisms rather than simply targeting behavioral symptoms of silo mentality.

Practical and Theoretical Implications

Practically, organizations should design interventions that simultaneously address individual attitudes and structural barriers. Theoretically, this review bridges individual-level psychology with organizational design, offering a framework for future research on collaboration and integration within complex systems. The novel contribution of this review lies not in the individual determinants it identifies, several of which are well established, but in integrating them into a single cross-level process model in which silo mentality emerges from, and is sustained by, the interaction between organisational structure, work-unit dynamics, and individual psychology. To our knowledge, no previous scoping review has explicitly integrated these determinants by specifying the social-identity bridge linking structural and individual factors together with the bottom-up feedback loop that accounts for the persistence of silos. This reframing carries direct implications. Theoretically, it positions silo mentality as an emergent, multi-level property rather than a trait of individuals or a defect of structures, and provides testable propositions, for example, that the strength of unit-level identification mediates the relationship between competitive reward structures and individual information hoarding. Practically, the model implies that interventions must target the reinforcing loop at more than one level simultaneously: restructuring incentives toward cross-unit collaboration, creating structured opportunities for meaningful intergroup contact to weaken in-group/out-group boundaries, and developing leadership that actively bridges units. Single-point interventions, however well designed, are predicted to be absorbed by the remaining components of the loop. For future research, the model offers a foundation for developing and validating an individual-level measure of silo mentality, an instrument currently absent from the literature, and for testing the proposed mechanisms in public-sector and government contexts, which remain markedly under-represented in the present evidence base.

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