Proposal

Master Thesis Research Proposal – A Simple One-pager Abstract
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Author – David Bobek
Title – SAIL: A Scalable AI Lifecycle Framework for Coordinated AI Adoption in Software Organizations
Purpose – The purpose of this paper is to develop and evaluate SAIL, a structured framework that enables software
organizations to adopt AI in a coordinated, scalable, and reusable manner. The expected outcome is a plug-and
play AI adoption model with clear guidelines for use case mapping, staged implementation (Awareness → Pilot
→ Scale → AI-Native), governance, and cross-team reuse—providing practical value for CTOs, engineering leads,
and innovation managers.
Research gap – While literature addresses enterprise architecture (Bernard, 2012), Digital Transformation (Warner
& Wäger, 2019), innovation diffusion (Rogers, 2003), dynamic capabilities (Teece, 2007), and resource-based
view (Barney, 1991), there is no integrated, use-case-driven framework designed specifically for scalable AI
adoption across software teams. Existing models focus on isolated AI pilots or generic transformation strategies,
lacking mechanisms for coordination, reuse, and progressive scaling. This study fills that gap by proposing and
conceptually validating SAIL as a practical, theory-informed framework tailored for software organizations.
Research question – How should AI adoption in software organizations be structured to ensure scalability,
coordination, and reusability across diverse use cases?

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Theoretical lens – The study is grounded in five key theoretical foundations: (1) Enterprise Architecture (EA)
(Bernard, 2012) for systemic integration; (2) Digital Transformation (Matt et al., 2015) for organizational
readiness; (3) Innovation Diffusion Theory (Rogers, 2003) to understand adoption dynamics; (4) Dynamic
Capabilities (Teece, 2007) for strategic agility in sensing, seizing, and transforming AI opportunities; and (5)
Resource-Based View (RBV) (Barney, 1991) to treat AI assets (models, data, knowledge) as valuable, rare, and
hard-to-imitate resources. These lenses collectively inform SAIL's design and evaluation.
Design/methodology/approach – This research follows a conceptual, theory-driven methodology using design
based research (Hevner et al., 2004). The approach includes: (1) a comprehensive literature review synthesizing

theories on AI adoption and organizational change; (2) framework development defining SAIL's pillars (use case
identification, adoption staging, governance, implementation roles, evaluation & reuse); and (3) conceptual
evaluation through theoretical application to realistic AI use cases (e.g., code generation, documentation
automation, sprint planning). For each use case, I will outline step-by-step how SAIL guides: identification →
prioritization → pilot design → scaling path → governance → reuse. This demonstrates SAIL's internal coherence,
scalability, and practical utility without primary data collection.
Time plan – Submit proposal: End of this week
• Finish literature review and start empirical part: By the end of September
• Submit your master thesis: By the End of the year
Expected challenges & limitations – As a conceptual study, the main limitation is the absence of real-world
validation. However, the use case walkthroughs are designed to simulate realistic organizational contexts,
enhancing practical plausibility. A key challenge is ensuring the framework remains both theoretically rigorous
and accessible to practitioners, which will be addressed through iterative refinement and alignment with industry
relevant examples.

Master Thesis

Title: SAIL – A Scalable AI Lifecycle Framework for Coordinated AI Adoption in Software Organizations
Author: [Your Name]
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Institution: IMC University of Applied Sciences, Krems
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- Expected impact for academia and practice.

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6. Use Case Walkthroughs
7. Conclusion & Future Work
   References
   Appendices

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1. Introduction

1.1 Background

- Role of AI in modern software organizations.
- Industry applications (development, project management, decision-making).
- Drivers of adoption (efficiency, cost reduction, innovation).
- Pressures: regulatory, competitive, customer expectations.

SAIL – A Scalable AI Lifecycle Framework for Coordinated AI Adoption in Software Organizations

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Abstract

- Purpose and research problem
- Research gap in AI adoption frameworks
- Theoretical lenses applied
- Methodology (Design Science Research)
- Key contributions (framework + evaluation)
- Expected impact for academia and practice

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- Fragmented AI initiatives; isolated pilot projects.
- Lack of scalability and systematic governance.
- Coordination issues across departments/teams.
- Risks: inefficiency, duplication, lack of standardization.

1.3 Research Gap

- Existing frameworks address transformation broadly but not AI adoption specifically.
- AI maturity models focus on levels, not lifecycle coordination.
- Limited guidance on reuse and knowledge transfer across teams.
- Need for an integrated, lifecycle-based adoption framework.

1.4 Research Question and Objectives

- *RQ: How should AI adoption in software organizations be structured to ensure scalability, coordination, and reusability across diverse use cases?*
- Objectives:
    - Develop SAIL framework.
    - Integrate multiple theoretical lenses.
    - Apply framework to use case walkthroughs.
    - Highlight theoretical and practical contributions.

1.5 Structure of the Thesis

- Overview of chapters and flow of arguments.

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2. Literature Review

In order to ground the SAIL framework in established theory, this chapter will focus on the current state of research across five key theoretical lenses relevant to AI adoption in software organizations. The concept of AI adoption is multifaceted, involving technological, organizational, and strategic dimensions. The main challange is the lack of an integrated framework which is addressing the concept of "Full Lifecycle" adoption of AI in a coordinated and scalable manner. The aspect of AI being a very new technology, hinders the existence of established frameworks and supportive literature. Therefore, this chapter will rather review individual theories and models that are going to be synthesized later throughou the theoretical framework chapter.

2.1 Enterprise Architecture and AI Integration [REF]

- EA as systemic integration mechanism.
- EA’s role in aligning IT with strategy.
- Potential for supporting AI alignment and scaling.

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In order to ground the SAIL framework in established theory the focus on Enterprise Architecture (EA) is crucial. Enterprise Architecture is providing a holistic approach to the problem of aligning IT with business strategy and goals. The principle of EA and its utilization in organizations is well documented in literature [REF]. However the not so well pointed out aspect is the type of company to which EA is applied. Different types of companies have different needs and requirements and technological readiness. Software organizations are typically more agile and introduction of major changes is easier to implement and does not create a lot of resistance. In contrast to this, traditional industries such as manufacturing or banking are more rigid and changes are harder to implement, thus EA frameworks in these industries are more rigid and bureaucratic.

EA does not work as a silver bullet and it is not solving all problems by itself. There are several frameworks and methodologies which are used in practice. The most well known and implemented in companies are the frameworks are The Open Group Architecture Framework (TOGAF) and Zachman Framework. The mentioned frameworks are the current state of the art in EA and are widely used in practice. Each of the frameworks has its strengths and weaknesses and the choice of the framework depends on the context of the organization.

TOGAF being more dominant in the cases where the organization is more agile and dynamic, while Zachman Framework is more suitable for traditional and rigid organizations.

In the current Digital Transformation era, TOGAF is more suitable as more and more organizations are becoming agile and dynamic and the usage of AI can be implemented in a way that is more aligned with TOGAF principles while still keeping the structure and rigor of EA. The usage and value extraction of AI in organizations is not a trivial task and it requires a structured approach. EA can provide the necessary structure and rigor to ensure that AI initiatives are aligned with business strategy and goals.

EA is therefore crucial for AI integration and scaling :

- It alligns AI initiatives with business strategy, ensuring that isolated pilots are connected to broader organizational goals and prevents existance of "siloed" AI projects.
- It provides a systemic view of the organization while having established governance mechanisms, which is crucial for managing the complexity of AI adoption across multiple teams and departments.
- It facilitates reuse of AI assets (models, data, knowledge) across teams by establishing common standards and repositories, thus preventing duplication of efforts and promoting efficiency.

On contrast the framework of Zachman is more rigid and bureaucratic and it is not so suitable for the dynamic nature of AI adoption. The Zachman points out that the architecture is a schema for organizing architectural artifacts (for example, design documents, specifications, and models) that takes into account both who the artifact targets (for example, business owner and builder) and what particular issue (for example, data and functionality) is being addressed. The Zachman framework is more suitable for traditional and rigid organizations where changes are harder to implement. The usage of AI in such organizations is more challenging as the adoption of AI requires a more agile and dynamic approach.

Both of the frameworks have their strengths and weaknesses and the choice of the framework depends on the context of the organization. However, for the purpose of this thesis, TOGAF is more suitable as it is more aligned with the principles of Digital Transformation and AI adoption.
Both of them were developed in the times of "pre-AI" era and therefore do not address the specific challenges and requirements of AI adoption. However, the principles and concepts of EA can be adapted and extended to address the specific needs of AI adoption in software organizations.
The SAIL framework will therefore build upon the principles of EA and adapt them to the specific context of AI adoption in software organizations.

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2.2 Digital Transformation and Organizational Readiness [REF]

- Definition and scope of Digital Transformation.
- Barriers to readiness (skills, culture, infrastructure).
- Stages of transformation maturity.
- Lessons for AI adoption.

The concept of Digital Transformation is closely related to the adoption of AI in organizations. Digital Transformation refers to the integration of digital technologies into all areas of a business, fundamentally changing how the organization operates and delivers value to customers. Year by year, more and more organizations are undergoing Digital Transformation in order to stay competitive in the market and the prevalence of AI is only amplifying this successful digital revolution. The proof of the fact that Digital Transformation is in fact a successful concept can be seen by comparing the amount of companies which have undergone Digital Transformation in the last decade and the revenue growth of these companies. The companies which have undergone Digital Transformation have seen a significant increase in revenue and market share, while the companies which have not undergone Digital Transformation have seen a decline in revenue and market share [REF].

The success of Digital Transformation can be observed in the performance of companies that have succesfully embraced it compared to those that have not. Firms that have implemented Digital Transformation strategies report significantly stronger revenue growth and improved market share. Companies that are more digitally mature are up to 2.5 times more likely to see double-digit revenue growth than their less mature peers [REF]. Deloitte also says that digitally mature companies see an average revenue growth of about 45%, while less mature companies only see about 15% growth [REF]. BCG further highlights that successful transformations yield 15–25% increases in revenue and substantial efficiency gains [REF].

These results show that Digital Transformation is not just a theory; it is a real way to gain a competitive edge. As AI technologies become more and more a part of Digital Transformation, they are expected to help businesses make more money, run more smoothly, and stay strong over time.

Proof of Digital Transformation success:

- McKinsey (2021, 2023 updates): Companies that successfully undergo digital transformation are 2.5x more likely to report double-digit revenue growth compared to peers that lag behind in digital adoption【source: McKinsey Digital】.
- Deloitte (2023): Digitally mature companies achieve ~45% revenue growth on average , compared to ~15% growth for less mature companies【source: Deloitte Insights】.
- BCG (2020–2023 studies): Only about 30% of digital transformations succeed, but those that do deliver 15–25% increases in revenue and 30%+ improvement in operational efficiency【source: BCG Digital Acceleration Index】.
- Harvard Business Review (2022): Companies that invested heavily in AI and digital transformation were 5x more likely to gain market share than laggards【source: HBR – "Driving Digital Transformation with AI"】.

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Regarding AI adoption, Digital Transformation provides several lessons:

- Organizational readiness is crucial. Successful Digital Transformation requires not just technology but also changes in culture, skills, and processes. Similarly, AI adoption needs organizational readiness to manage change effectively.
- Maturity models can guide progression. Digital Transformation maturity models outline stages from initial experimentation to full integration. AI adoption can benefit from similar staged approaches to manage complexity and scale effectively.

The implementation of AI in organizations very much depends on the readiness of the organization to embrace change. This change comes in different forms, such as changes in culture, skills, and processes but also in the current technological infrastructure of the company and its ability to integrate new technologies. Challanges such as lack of permissions, lack of skills, lack of understanding of the technology and its potential, lack of resources and budget are all common barriers to the adoption of AI in organizations. These barriers can be overcome by following a structured approach to AI adoption, which is the main purpose of the SAIL framework. This would allow companies to overcome the barriers and successfully implement AI in their organizations and show them the standardized way of doing so and thus increase the chances of success while outlining which fields of the organization need to be changed in order to successfully implement AI.

The broad term of organizational readiness can be measured through different maturity models. The most well known and widely used maturity model is the Digital Maturity Model (DMM) developed by Deloitte. The DMM outlines five stages of digital maturity:

1. Initial: Ad hoc and uncoordinated digital initiatives.
2. Developing: Some digital initiatives, but still siloed and uncoordinated.
3. Defined: Digital initiatives are defined and coordinated across the organization.
4. Managed: Digital initiatives are managed and measured for impact.
5. Optimized: Digital is fully integrated into business strategy and operations.

In order to successfully implement AI in organizations, the assumption of high level of digital maturity is crucial. The higher the level of digital maturity, the higher the chances of success in implementing AI in organizations. The SAIL framework will therefore build upon the principles of Digital Transformation and adapt them to the specific context of AI adoption in software organizations.

2.3 Innovation Diffusion Theory [REF]

- Rogers' model: innovators, early adopters, majority, laggards.
- Adoption curve dynamics.
- Relevance to AI technologies in software organizations.
- How diffusion insights guide scaling strategies.

Innovation Diffusion Theory (IDT), developed by Everett Rogers, provides a valuable lens for understanding how new technologies, such as AI, are adopted within organizations. This theory is particularly relevant in the context of AI adoption in software organizations, where the pace of rapid industry change and technological advancement creates both opportunities and challenges for adoption.

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IDT become relevant in the context of technology adoption in organizations. The theory outlines how innovations are communicated over time among the members of a social system. The key elements of IDT include the innovation itself, communication channels, time, and the social system. The rise of usage of IDT is closely related to the rise of technology adoption in organizations and the recognition that successful adoption of new technologies requires more than just the technology itself; it also requires effective communication and social dynamics within the organization.

Perfect example where IDT was successfully applied is in the Israeli tech sector, where early adopters in startups and tech companies drove the initial adoption of AI technologies, leading to broader acceptance across the industry. This diffusion was facilitated by strong networks and knowledge sharing among innovators and early adopters, which helped to build trust and demonstrate the value of AI. Thus creating a country which swiftly became the "Startup Nation" and a global leader in AI innovation while having an insignificant population of only 9 million people and the amount of AI startups per capita being the country with the highest number worldwide【source: Startup Genome Report 2023】.

The key components of IDT include:

- Innovation: The acceptance of AI technologies as a new innovation within the organization.
- Communication Channels: The methods through which information about AI is shared within the organization (e.g., meetings, workshops, internal communications).
- Time: The duration over which AI adoption occurs, including the stages of adoption.
- Social System: The organizational culture and structure that influence how AI is perceived and adopted.

These key components were laid out in Rogers' seminal work "Diffusion of Innovations" (2003) more than two decades ago, but they remain highly relevant in today's context of rapid technological change and AI adoption. The ability to understand and leverage these components is crucial for successful AI adoption in software organizations. Each of these components plays a critical role in shaping the adoption process and determining the success of AI initiatives.
By following the principles of IDT, organizations are able to effectively manage the adoption process, address resistance, and build momentum for AI initiatives, while still being aware of the risks and challenges associated with AI adoption. The SAIL framework will therefore incorporate insights from IDT to guide the scaling strategies for AI adoption in software organizations.
The effective usage of IDT in organisations can be implemented through the following steps:

1. Start with innovators and early adopters: Identify and engage individuals or teams within the organization who show a strong interest in AI and are willing to experiment with new technologies. This will naturally create champions for AI adoption. The most important aspect is to identify the right people who are willing to experiment and take risks and give the people the freedom to do so. This will create a culture of innovation and experimentation within the organization.

2. Leverage communication channels: The usage of effective communication channels is crucial for spreading awareness. The spark that was created by the innovators and early adopters needs to be spread across the organization and let the fire of innovation spread. The most effective ways to do so are through company wide presentantions, demos, workshops and upper management support. The communication needs to be clear and concise and the benefits of AI adoption need to be highlighted.

3. Address concerns and resistance: It is natural for people to be resistant to change, the natural human behavior is to resist change and stick to the status quo. Therefore the emphasize on addressing concerns and resistance is crucial. This is done by creating a level of trust and transparency. The concerns of employees need to be addressed and the benefits of AI adoption need to be highlighted. For the successful adoption of AI the value proposition needs to be clear and the benefits need to outweigh the risks.

4. Build a supportive social system: Organizational culture and structure play a crucial role in shaping how AI is perceived and adopted. This means that the culture of the organization needs to be supportive of innovation and experimentation. By fostering a culture that is exploratory

and innovation driven we can create an environment where AI adoption can thrive. The kernel of the culture needs to allign with the long term mission and vision of the organization which at the end needs to be AI-Native.

By following the principles of IDT, organizations have a clear way to manage the adoption process, address resistance, and create a momentum where AI is embraced and incorporated into the culture which the SAIL framework will build upon.

2.4 Dynamic Capabilities Theory [REF]

- Sensing opportunities (AI trends, competitor actions).
- Seizing opportunities (investment, pilot design).
- Transforming organizations (structures, processes).
- Application to fast-moving AI landscape.

Dynamic Capabilities Theory (DCT), introduced by David Teece, provides a valuable framework for understanding how organizations can adapt and thrive in rapidly changing environments such as the current AI landscape which is mostly characterized by extremely fast technological advancements and changes. DCT as a theory is particularly emphasizing the importance of an organization's ability to sense, seize, and transform in order to maintain a competitive advantage. The winner is not the strongest or the most intelligent, but the one who is most adaptable to change while still achieving a sustained competitive advantage. DCT was origanlly developed in the context of strategic management and organizational theory, but its wide adoption in the tech and software industry is closely related to the rapid pace of technological change and the need for organizations to become more agile, adaptive and innovative in order to stay competitive.

DCT consists of three main components:

1. Sensing: The ability to identify and assess opportunities and threats in the external environment.
2. Seizing: The ability to mobilize disposable resources to capture value from opportunities.
3. Transforming: The ability to continuously renew and realign organizational processes and structures to adapt to changing environments while still maintaining operational efficiency.

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The winners in the modern digital economy are those who can quickly sense new opportunities, seize them effectively, and transform their organizations to stay ahead of the competition. These 3 simple steps might seem trivial, but they are the key to success. This type of mental allignment will be extremely relevant for the successful adoption of AI in organizations. By not following these principles, organizations risks moving and operating outside of their core competencies and thus deviating from their core mission and vision. Having a clear 3 step approach helps the organization to stay focused and aligned while still being able to reflect and adapt to the changing environment.

DCT can be used in both small and large organizations, but the implementation might differ. In small organizations, the decision-making process is typically more centralized, allowing for quicker sensing and seizing of opportunities. On the other hand the lack of available and disposable resources might hinder the ability to seize opportunities effectively and thus leading to a more visionary mindset instead of an operational one. In large organizations, the decision-making process is typically more decentralized and complex, which in most cases leads to slower sensing and seizing of opportunities. The advantage of large organizations is the availability of resources which allows them to seize opportunities more effectively and while not being as visionary as small organizations, they are more operationally efficient and the ability to transform and capitalize on opportunities is higher.

The usage of DCT can be perfectly showcased on an rather succesful startup from the heart of Tel Aviv called "Waze". Waze was founded in 2006 and was acquired by Google in 2013 for $1.1 billion. The success of 3 Jewish founders Ehud Shabtai, Amir Shinar, and Uri Levine can be attributed to their ability to sense the opportunity of real-time traffic information, seize the opportunity by developing a mobile app that leveraged user-generated data, and transform the organization by continuously updating and improving the app based on very crucial user feedback【source: Waze History】[REF].

2.5 Resource-Based View (RBV) and AI Assets [REF]

- VRIN framework: data, algorithms, expertise as resources.
- Building sustained competitive advantage through AI.
- Risks of resource imitation or commoditization.

2.6 Related AI Adoption Models [REF]

- Overview of AI maturity models.
- Digital Transformation frameworks.
- Strengths and weaknesses.
- Missing elements (coordination, reuse, lifecycle orientation).

The AI adoption models that are currently existing in literature and practice are mostly focused on the maturity of AI adoption in organizations. These models are typically structured around different levels of maturity and their intended use is to help organizations assess their current state of AI adoption and identify areas for improvement. This is a very useful approach, which can help organizations where to start and what are the prerequisites for successful AI adoption. However, these models are mostly focused on the maturity of AI adoption and do not provide a structured approach to the actual adoption process itself. This is the research and market gap where the SAIL framework is trying to fill in. The most well known and widely used AI maturity models are the following:

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1. AI Maturity Model by Deloitte: This model outlines five levels of AI maturity, from "Ad Hoc" to "Optimized". It focuses on areas such as strategy, governance, data management, and talent. The model is useful for assessing the current state of AI adoption but does not provide a structured approach to the adoption process itself【source: Deloitte AI Maturity Model】.
2. AI Maturity Model by PwC: This model also outlines five levels of AI maturity , from "Initial" to "Transformational". It emphasizes the importance of culture, leadership, and change management in addition to technical capabilities. Similar to the Deloitte model, it is useful for assessment but lacks a structured adoption process【source: PwC AI Maturity Model】.
3. AI Maturity Model by Gartner: This model outlines four levels of AI maturity, from "Experimentation" to "Transformation". It focuses on areas such as strategy, governance, data management, and talent. The model is useful for assessing the current state of AI adoption but does not provide a structured approach to the adoption process itself【source: Gartner AI Maturity Model】.

4. AI Maturity Model by Forrester: This model outlines five levels of AI maturity, from "Ad Hoc" to "Optimized". It emphasizes the importance of culture, leadership, and change management in addition to technical capabilities. Similar to the Deloitte model, it is useful for assessment but lacks a structured adoption process【source: Forrester AI Maturity Model】.
   These models are certainly useful for organizations in order to approach the topic of AI adoption and understand where they currently stand. Every company and business operating in the market needs to start somewhere and these models provide a good starting point. However, the main question is still opened and that is "What next?" and "How to actually implement AI in a structured way?". This question is still not answered by the existing models and is the most crucial one as the actual conversion of the theoretical knowledge into practical implementation is the most challenging part, but is the only part which actually creates value. Staying too long undercover with reasearch gets you only as far as the size of the company's budget allows you to go. The actual implementation and value creation is the only thing which will make the company successful in the long run. The purpose of the SAIL framework is to convert the theoretical knowledge into practical implementation and provide a structured approach to the adoption process itself. While focusing on mostly internal aspects of the organization and efficiency, resulting in reduction of overhead costs and increase of productivity.

2.7 Synthesis and Identified Gaps

- Comparative analysis across theories and models.
- Explicit statement of gaps.
- Justification for creating SAIL.

In order to properly justify the creation of the SAIL framework it is crucial to identify the gaps in the current approaches and frameworks outline in the previous chapters.

The identified gaps include:

- Lack of lifecycle orientation: The current models which are existing are not providing an approach which is covering the entire lifecycle of AI adoption, from the early initial awareness until the late stages of full integration and being AI-Native.
- Insufficient focus on coordination: Models which are currently out in the market are not giving a proper emphasis on the coordination of AI initiatives across different teams and the knowledge transfer between them. This is leading to fragmented and siloed efforts which are not creating the desired value.
- Neglection of "Reuse Mechanisms": Reuse of AI assets (models, data, knowledge) is not being properly addressed in the existing frameworks. The ability to reuse AI assets across various teams and projects is crucial for efficiency and scalability which often leads to effort duplication and inefficiency
- Holistic integration of theoretical lenses: While certain individual theories are providing valuable insights, the holistic approach of integrating these insights into a cohesive framework is missing.
- Practical applicability: Many of the existing models are theoretical and are only observant in nature and lack practical guidelines for implementation in real-world organizational contexts. The "call to action" is missing.
- Scalability challenges: Scalability is a crucial aspect of AI adoption, especially in large organizations with multiple teams and departments. It often serves as the hindrance for

successful AI adoption as local usage in a team is not being scaled across the organization.

The identified gaps are the building blocks for the development of an approach which is addressing lifecycle orientation, coordination, reuse, holistic integration of theoretical lenses, practical applicability and scalability challenges. Framework which is able to encompass all of these aspects will be the first of its kind and will provide a significant contribution to both theory and practice. Such a framework does not only fills the existing gaps but also provides a structured approach to AI adoption that is both theoretically informed and practically applicable. The outcome of this synthesis is the justification for creating the SAIL framework, which aims to address these gaps and provide a comprehensive solution for AI adoption in software organizations.

In order to properly visualize the synthesis of the different theoretical lenses and existing models, a comparative table is created. This table outlines the key components of each theory and model, highlighting areas of overlap and divergence. The table also identifies the specific gaps that SAIL aims to address, providing a clear rationale for its development.

Theoretical Lens / Model	Key Components	Overlaps with SAIL	Divergences from SAIL	Identified Gaps Addressed by SAIL
Enterprise Architecture (EA)	Alignment of IT with business strategy; systemic integration; governance; TOGAF & Zachman frameworks.	Provides structure for aligning AI with strategy; governance mechanisms support coordination.	EA developed in pre-AI era; lacks explicit lifecycle focus and reuse mechanisms.	Adds lifecycle orientation, AI-specific governance, and reuse of assets across projects.
Digital Transformation (DT)	Integration of digital technologies; cultural and organizational readiness; maturity models (Deloitte DMM).	Provides staged adoption maturity models; highlights readiness as key success factor.	Focuses broadly on digital change, not AI-specific challenges.	Tailors maturity concepts to AI lifecycle; adds detailed adoption steps beyond general digital readiness.
Innovation Diffusion Theory (IDT)	Adoption curve (innovators → laggards); communication channels; social systems.	Provides lens for understanding AI adoption dynamics; role of innovators/early adopters.	Focused on diffusion, not organizational coordination or reuse.	Adds mechanisms for organizational scaling, coordination, and cross-team knowledge reuse.

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Theoretical Lens / Model	Key Components	Overlaps with SAIL	Divergences from SAIL	Identified Gaps Addressed by SAIL
Dynamic Capabilities Theory (DCT)	Sensing, seizing, transforming; adaptability in dynamic environments.	Provides agility lens for AI adoption and scaling; emphasizes transformation.	Does not provide structured process for AI lifecycle adoption.	Embeds sensing–seizing–transforming into AI lifecycle stages with concrete governance and processes.
Resource-Based View (RBV)	VRIN resources (valuable, rare, inimitable, non-substitutable); focus on data, algorithms, expertise.	Highlights data and AI models as strategic resources; underpins value creation logic.	Lacks process orientation; focuses on resources rather than adoption mechanisms.	Adds structured lifecycle for capturing, reusing, and leveraging AI resources across the organization.
AI Maturity Models (Deloitte, PwC, Gartner, Forrester)	Staged assessment of AI readiness and maturity across dimensions (strategy, governance, data, talent).	Useful diagnostic tools; provide starting point for adoption journey.	Static assessment focus; no step-by-step lifecycle or reuse strategies.	Adds structured lifecycle roadmap; ensures adoption beyond maturity assessment into implementation.

This comparative analysis clearly demonstrates the unique value proposition of the SAIL framework. By integrating insights from multiple theoretical lenses and addressing the specific gaps identified in existing models, which SAIL aims to fill.

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The gap of not having the structured approach to the entire AI adoption lifecycle, from initial awareness to full integration is addressed by SAIL through its clearly defined stages of adoption (Awareness → Pilot → Scale → AI-Native).

3. Theoretical Framework

3.1 Conceptual Foundations of SAIL

- Purpose of a lifecycle adoption framework.
- Positioning relative to Digital Transformation and EA.
- Addressing fragmentation through coordination and reuse.

3.2 Integration of Theoretical Lenses

- EA → systemic integration.

- Digital Transformation → readiness and strategic alignment.
- Innovation Diffusion → adoption dynamics across teams.
- Dynamic Capabilities → agility in scaling and transformation.
- RBV → AI as strategic assets.

3.3 Principles Derived for Framework Design

- Scalability as a design principle.
- Coordination across organizational units.
- Knowledge reuse and cross-team learning.
- Governance and accountability.

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4. Research Methodology

4.1 Research Design – Design Science Research

- Why conceptual framework development fits this research.
- Link to design science cycles (relevance, rigor, design).

4.2 Literature Review Approach

- Search strategy, databases, keywords.
- Inclusion/exclusion criteria.
- Process of synthesizing theory.

4.3 Framework Development Process

- Iterative design and refinement.
- Mapping theories to practical framework elements.

4.4 Conceptual Evaluation via Use Cases

- Rationale for conceptual evaluation (vs. empirical).
- Selection of realistic use cases (code gen, documentation, planning).
- Evaluation criteria: coherence, scalability, reusability.

4.5 Limitations

- Absence of empirical validation.
- Risk of context-specific assumptions.
- Boundaries of applicability.

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5. Framework Development (SAIL)

5.1 Overview of SAIL Framework

- Core design logic.
- Lifecycle perspective.
- Visual diagram.

5.2 Adoption Stages (Awareness → Pilot → Scale → AI-Native)

- Awareness: building knowledge, initial exploration.
- Pilot: testing in limited scope, measuring outcomes.
- Scale: expanding across units, refining governance.
- AI-Native: embedding AI into strategy, culture, and processes.
- Success factors and risks for each stage.

5.3 Governance and Roles

- Role of CTOs, innovation managers, engineering leads.
- Governance mechanisms: policies, ethics, compliance.
- Decision-making structures.
- Risk and accountability management.

5.4 Use Case Mapping & Prioritization

- Criteria: feasibility, impact, alignment with strategy.
- Prioritization frameworks (e.g., impact-effort matrices).
- Portfolio approach to managing multiple use cases.

5.5 Evaluation and Reuse Mechanisms

- Capturing lessons learned.
- Creating knowledge repositories.
- Facilitating cross-team reuse.
- Feedback loops for continuous improvement.

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6. Use Case Walkthroughs

6.1 Use Case 1

6.2 Use Case 2

6.3 Use Case 3

- Description of each use case scenario.
- Application of SAIL stages and principles.
- Evaluation against criteria: coherence, scalability, reusability.

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7. Discussion

7.1 Theoretical Contributions

- How SAIL extends existing frameworks.
- Integration of multiple theoretical lenses into one model.

7.2 Practical Implications for Software Organizations

- Playbook for CTOs and managers.
- Guidelines for avoiding fragmented AI adoption.

7.3 Comparison with Existing Models

- Side-by-side strengths and weaknesses.
- Unique value of SAIL (lifecycle + coordination + reuse).

7.4 Challenges and Limitations

- Conceptual boundaries.
- Risks of overgeneralization.
- Directions for empirical follow-up.

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8. Conclusion & Future Work

8.1 Summary of Findings

- Restate research question and main outcomes.

8.2 Contributions to Theory and Practice

- Academic relevance.
- Practical usability for organizations.

8.3 Future Research Directions

- Empirical testing of SAIL.
- Expansion to other industries beyond software.

8.4 Final Reflection

- Broader perspective on AI adoption journey.
- Closing thought on the role of frameworks in Digital Transformation.

References

[Use [REF] placeholders during drafting; insert proper citations later.]

Appendices

- Extended diagrams of SAIL.
- Comparison tables of frameworks.
- Additional case walkthrough details.