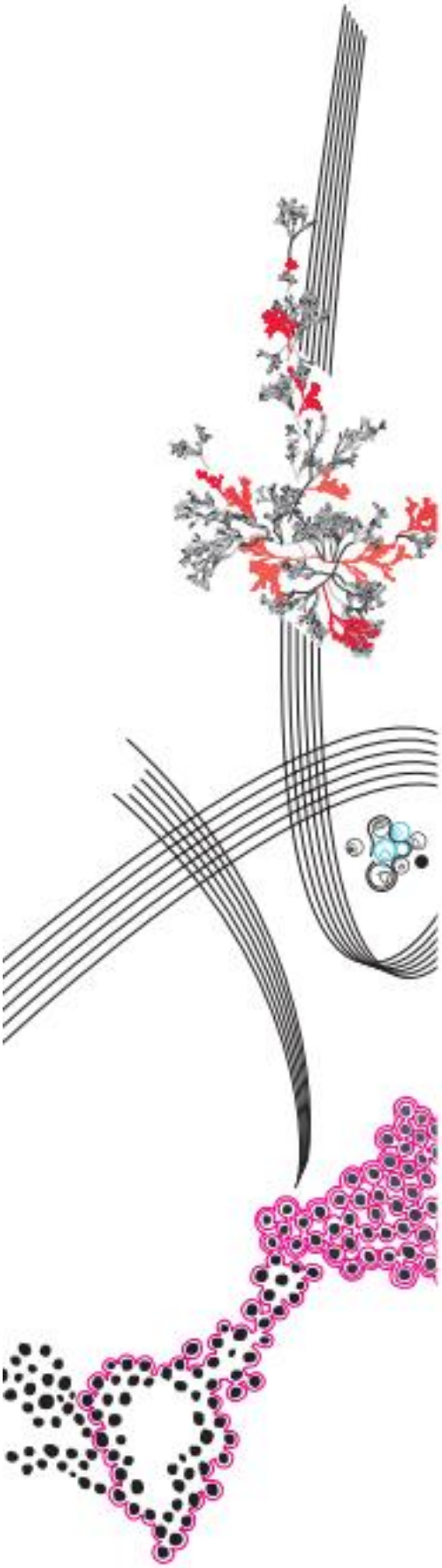

Master Thesis

IT Staff Sourcing in Financial Institutions: A Decision Support Approach for Cost-Efficient Hiring

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This thesis marks the final stage of my Master's program in Industrial Engineering and Management (IEM), with a specialization in Financial Engineering and Management. It is a significant milestone in my academic journey. I have engaged in a wide range of courses throughout my studies that have deepened my understanding of financial systems, risk management, and quantitative models. This academic experience not only enhanced my technical expertise but also strengthened my ability to approach problems with a structured and analytical mindset.

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Lastly, I would like to thank my family, friends, and everyone who supported me throughout this journey. I am excited to take the next step in my career, applying the skills and knowledge I have gained during my studies.

Sieta Bon
Enschede, July, 2025

Management Summary

This research examines a decision support approach aimed at improving staff sourcing[1] within the Chief Innovation and Technology Officer (CITO) department of Rabobank. The absence of a standardized framework for selecting staff work locations (internal, onsite, offsite) and contract types (staff augmentation, teaming, Statement of Work (SOW)) has led to inefficient and inconsistent sourcing decisions, elevated costs, and a lack of transparency and accountability. This research proposes a structured framework in the form of a decision tree to address these challenges and guide the selection of appropriate work locations and contract types during staff sourcing decisions. The main research question this study addresses is:

"How can a decision tree be developed to support sourcing decisions for staff in the CITO department, to reduce sourcing costs while maintaining quality?"

This research develops a decision tree using a hybrid methodology that combines literature review, expert interviews, and data analysis. These methods identify key sourcing factors and criteria, including cost, strategy, risk, technology, and vendor[2]-related considerations, which inform the development of the decision tree. Additionally, these research methods provide insights into the sourcing process and highlight opportunities for potential cost reductions.

The final decision tree integrates key decision factors into questions related to application classification (innovation, differentiation, record, platform), skill availability, compliance requirements, operational constraints, and application-specific considerations. Hiring managers can identify cost-effective hiring options that align with business objectives by answering structured questions in the decision tree. The final recommendation nodes of the decision tree include internal staff, onsite/nearshore staff augmentation, offsite teaming contracts, offshore SOW, and offshore teaming contracts.

An implementation plan supports the practical adoption of the decision tree, focusing on role definitions, mindset transformation, KPI tracking, and vendor governance. The cost analysis, based on the underlying assumptions in this research, suggests that adopting the suggested target sourcing mix could lead to potential cost savings. Gradual alignment with the decision tree could potentially lead to a target sourcing mix that reflects a 13% decrease in internal staff, an 8% decrease in onsite staff, and a 21% increase in offsite staff, relative to the current sourcing mix. A cost analysis indicates that these changes could result in a 10% reduction in overall IT staff sourcing costs.

In conclusion, this research presents a structured decision tree designed to enhance cost-efficiency, transparency, and strategic alignment in sourcing decisions. This research recommends Rabobank to move toward this target sourcing mix, which according to this analysis would lead to improved cost management, greater operational effectiveness, and sustained sourcing quality.

Keywords: *IT staff sourcing, sourcing strategy, hiring decisions, financial institutions, decision tree, cost management, sourcing governance*

[1] *Sourcing* refers specifically to the process of staff hiring in the context of this research.
[2] Vendors are defined as suppliers of external employees in the context of this research.

Abbreviations

- BPMN = Business Process Model Notation
- CITO = Chief Innovation and Technology Officer
- DBA Act = "*Deregulering Beoordeling Arbeidsrelaties Wet"*
- E&E Tech = Engineering and Enterprise Tech
- EBA = European Banking Authority
- EU = European Union
- FTE = Full-Time Equivalent
- GDPR = General Data Protection Regulation
- HCI = Human Computer Interaction
- IS = Information Systems
- IT = Information Technology
- ITO = Information Technology Outsourcing
- KPI = Key Performance Indicator
- MDAC = Multicriteria Decision Aid Constructivist
- MTPD = Maximal Tolerable Period of Disruption
- NPS survey = Net Promoting Score survey
- PRISMA = Rabobank's Partner Risk and Management Application
- R&F Tech = Risk and Finance Tech
- R&R = Resolution and Recovery
- RAISE = Rabobank It Sourcing Engagement
- RGO = Rabobank Group Organisation
- RNL Tech = Retail NL Tech
- SLR = Systematic Literature Review
- SMART = Simple Multi Attribute Rating Technique
- SOW = Statement of Work
- TCE = Transaction Cost Economics
- VAT = Value Added Tax
- VFT = Value Focused Thinking
- W&R Tech = Wholesale and Rural Tech

Contents

Chapter 1: Introduction

Cost management is important for organizations across all industries, and this is equally applicable to financial institutions such as Rabobank. A bank must manage its financial resources effectively to ensure profitability. This requires allocation of resources that align with the bank's broader strategic goals. The cost management department plays a role within this context. This department is responsible for continuously improving efficiency and providing transparency regarding costs. By working together with management teams, control departments, and other key stakeholders, the cost management department enables the bank to influence and manage costs effectively (Internal Rabobank SharePoint, 2025).

One of the developments impacting cost structures in the banking sector is the growing dependence on information technology (IT). Banks increasingly start to become large IT organizations as a result of digitalization over the past decade. More operational activities and customer interactions happen to take place online. This shift has increased the need for digital infrastructure, improved security protocols and compliance measures to protect sensitive financial data and maintain the integrity of financial systems (Wang et al., 2024).

The digital transformation increases the importance and influence of the Chief Innovation and Technology Officer (CITO) department at Rabobank. This department is responsible for ensuring the availability, performance and security of all IT systems and applications of the bank. The importance of CITO is reflected in the operational cost. The Rabobank Group Organization (RGO) has a total operating expenses of approximately €3.6 billion (Rabobank Annual Report, 2023), around €2.1 billion, which equals nearly 60%, of which were related to IT cost. Approximately 60% of those IT costs is allocated to IT staff expenses. Managing IT hiring costs is of importance for ensuring that applications remain operational and that investments can be made.

This research focuses specifically on the sourcing of staff within the CITO department. Rabobank must find the a sourcing mix to avoid going over budget while ensuring IT systems remain operational and perform up to standard with also considering several risks, such as geopolitical risks and loss of strategic control. This research identifies opportunities to improve staff sourcing decisions by exploring the current situation, analysing the staff sourcing ratios and developing a decision-making framework to support future IT staff sourcing choices.

1.1 Problem Context

Rabobank's CITO department employs the skills of roughly 10,000 people to keep the IT operations of the bank running smoothly and securely. The staff is spread across the world, including the Netherlands, European Union (EU), India, and other locations. Approximately 5,400 of this staff are internal employees, 3,000 are external employees and a further 1,500 are employed under team sourcing[3] or Statement of Work[4] (SOW) contracts (Internal Rabobank Sourcing Dashboard, 2025). This research focuses on the tech divisions within the CITO department. There are four main tech divisions, Wholesale & Rural Tech (W&R Tech), Engineering & Enterprise Tech (E&E Tech), Risk & Finance Tech (R&F Tech) and Retail NL Tech (RNL Tech). The ratio of internal, external, and SOW staff, as well as the ratio of onsite, offshore and nearshore staff, varies within the tech divisions of CITO. Onsite

[3] *Team sourcing contracts* are agreements between Rabobank and a vendor in which the vendor supplies a complete team of externals. Rabobank defines the required skill sets, and the vendor assembles a team that meets those specifications. Rabobank retains full responsibility for managing the individual team members, while the vendor provides the team.

[4] Statement of Work (SOW) contracts are agreements in which Rabobank commits to paying a fixed price for the delivery of a specific outcome or deliverable. The vendor is fully responsible for selecting and managing the team that will complete the work. Rabobank does not have responsibility over the composition or management of the vendor's team.

employees are based in the Netherlands, nearshore refers to staff in Europe, and offshore means staff from the rest of the world, which will be primarily India in this research. An overview of CITO's staff distribution is given in Figure 1.1.

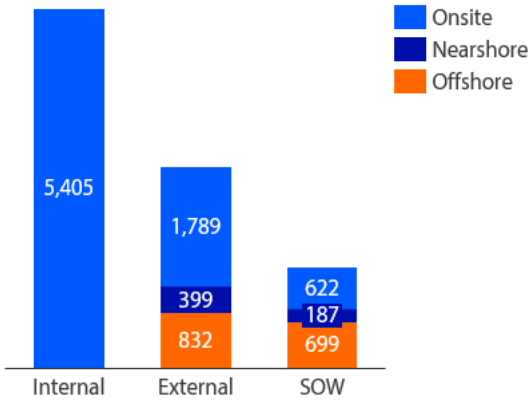

***Figure 1.1**: Staff distribution in Full-Time Equivalent (FTE): Contract type and work location (Internal Rabobank Sourcing Dashboard, May 2025).*

Recently geopolitical tensions have increasingly affected business operations, including banking. This is important to consider within the sourcing strategy especially since Rabobank is relying significantly on external IT staff. Offshoring to other regions across the world offers cost advantages and more access to specialized skills, however it also introduces a new layer of risk. These risks must be mitigated, and in addition to cost, risk should also be taken into account (Leibholz, 2024).

In the CITO department, determining the contract type and location for staff is a complex challenge. Each contract type and location has its own advantages and disadvantages. For example:

- *Contract type:* Internal staff tend to be more cost-effective compared to onsite external staff, but internal employees are less flexible when it comes to reducing capacity. This makes internal staff less suitable for short-term or fluctuating demands. Onsite external staff offer greater flexibility and are easier to scale up quickly, but they tend to be more expensive. While onsite external staff are ideal for rapid growth or specialized skills, their higher costs may not be sustainable for slower and more controlled growth scenarios (Berndt et al., 2023). In that case internal staff could be more beneficial.
- *Location:* Location also plays a role in these decisions. Offshore locations such as India offer significantly cheaper options for hiring staff, but managing staff in different parts of the world can be challenging and entails additional risks. The complexity of coordinating with teams across multiple time zones, along with potential differences in productivity and competency levels, can lead to difficulties. Onsite or nearshore options might mitigate these challenges, but they come with higher costs compared to offshore (Berndt et al., 2023).

Rabobank employs four different contract types: internal staff, staff augmentation, team sourcing contracts, and SOW contracts. These contract types constitute the scope of this research. The bank designates the location as onsite, nearshore, or offshore, except for internal staff, who are always onsite Currently, there is no standardized framework or approach within the CITO department to assist hiring managers in selecting the contract type and work location for specific sourcing projects. This absence of guidance in the sourcing process leads to inefficient and inconsistent sourcing decisions, high expenses and a lack of transparency and accountability.

Inefficient sourcing decisions: Sourcing decisions are complex and require careful consideration of different aspects. Currently, there are no clear guidelines to assist managers in making these decisions. Sourcing decisions are made by various hiring managers within the different CITO divisions, resulting in a lack of alignment regarding quality and cost. Managers may have differing views on what

constitutes as a suitable sourcing mix. It can lead to a mismatch of job requirements and not having the best fit for the role when decisions are based on incomplete or inconsistent information.

Inconsistent decisions: Each hiring manager prioritizes different aspects of the sourcing decision. Some managers might prioritize quality over costs, while others might focus too much on cost without considering quality. These inconsistent quality standards can impact the performance of the CITO department and the delivery of IT services.

Unnecessary high expenses: The costs of internal and external staff, along with onsite, offshore, and nearshore options, vary significantly. At Rabobank onsite external staff are the most costly option, while offshore externals are the cheapest. The absence of structure in the hiring approach can lead to inefficient sourcing and unnecessarily high expenses.

Lack of transparency and accountability: Tracking outcomes and performance becomes more challenging when decisions are not based on a clear strategy. The lack of structure to guide sourcing decisions makes it is difficult to assess the effectiveness of the hiring choices. This makes it hard to determine if decisions were right or wrong and makes it challenging to replicate successful decisions in the future.

1.2 Core Problem

The core problem is that there is currently no generally accepted approach or clear guidelines within the divisions of CITO on how to determine the contract type (internal/ external/ teaming/ SOW) and work location (onsite/ nearshore/ offshore) for sourcing decisions. This problem is the main cause of negative consequences such as inefficient sourcing decisions, high expenses, inconsistent decisions and a lack of transparency and accountability. By addressing this root issue, Rabobank improves performance and enables a more cost-efficient decision-making process, adding value to its overall strategy.

1.3 Research Objective

Optimizing the sourcing mix of the CITO department at Rabobank is a priority on their cost management agenda for 2025. The bank has set several sourcing targets for 2025, including (Internal Rabobank SharePoint, 2025):

- A minimum of 80% of staff hired internally or through Rabobank It Sourcing Engagement[5] (RAISE) vendors.
- A maximum limit on onsite external staff per CITO department.
- A shift towards more teaming and SOW contracts.
- Quarterly performance survey sent to hiring managers.
- Quarterly assessment of the strategic sourcing vendor list based on performance.

Rabobank aims to reduce the staff sourcing costs of the CITO department through these sourcing targets while maintaining the required performance standards. This research provides insights into the costs and decision-making process to further reduce IT staff sourcing costs where possible without compromising quality. A structured hiring approach in the CITO department enables more coherent decision-making and achieve the sourcing targets and cost reductions. Decision criteria are identified and a decision tree to guide hiring managers is developed. The decision support tree adds value by guiding managers in making decisions that align with the sourcing strategy to meet these targets and cost reductions.

[5] Rabobank It Sourcing Engagement (RAISE) vendors comprises the eight vendors Rabobank aims to source the majority of its external staff from. Risk assessments and performance management are conducted and continuously monitored.

1.4 Research Design

The objective of this research is to develop a decision tree that supports managers in making more consistent and cost-effective sourcing decisions across the CITO department, while maintaining high standards of staff performance and quality. This research addresses the following main question to achieve this goal:

> *"How can a decision tree be developed to support sourcing decisions for staff in the CITO department, to reduce sourcing cost while maintaining quality?"*

To address the main research question. This thesis explores several sub research questions that focus on the development and implementation of the decision tree:

> **1)** What decision factors and criteria are emphasized in the literature for making IT staff sourcing decisions within the context of financial institutions?
>
> **2)** What are the current processes for making sourcing decisions in CITO department, and what challenges and inefficiencies emerge?
>
> **3a)** What are the key decision factors and criteria for sourcing decisions within the CITO department at Rabobank?
>
> **3b)** How can data analysis be utilized to enhance the development of the decision tree?
>
> **4)** How can the impact of different sourcing decisions on IT costs be assessed, while ensuring staff quality?
>
> **5)** What are the recommendations for hiring managers to implement the decision tree effectively and make more cost-efficient IT sourcing decisions?

This study employs data gathering methods such as a literature review, expert interviews, and data analysis to address the research questions. This hybrid approach integrates both qualitative and quantitative techniques to achieve a comprehensive outcome. The decision tree is formulated using expert knowledge gathered through interviews, existing sourcing strategies, and patterns and trends identified via data analysis. This methodology combines subjective insights with objective decision-making processes to ensure a complete and practical framework.

- *Literature review:* A literature search is conducted to gain insights into sourcing strategies and detailed information regarding the rationale of past sourcing decisions. This literature review focuses on sourcing within the context of financial institutions, with particular attention to security and compliance requirements, as well as the need for a diverse range of skills.
- *Semi-structured interviews:* Interviews are conducted to analyse the decision-making factors and criteria and current processes involved in sourcing. Initially, business controllers[6] from the CITO divisions are interviewed to provide an overview of the general sourcing strategies and processes, along with insights into the budget and FTE targets they establish. Subsequently, interviews with domain managers[7] and (senior) tech leads[8] from the CITO divisions are held to understand the practical implementations. Other stakeholders, such as vendor management[9], are also interviewed to ensure a comprehensive understanding of the sourcing context.

[6] *Business controllers* play a role in looking for opportunities to improve performance with the goal to deliver transparency on the costs to increase the influenceability.
[7] *Domain managers* play a role in the control of the financial planning and the long term strategic decisions of the tech divisions.
[8] *(Senior) tech leads* play a role in delivering IT capabilities within tech divisions. They establish and support teams that drive continuous improvement while ensuring the quality and reliability of IT applications.
[9] *Vendor management* plays a role in guiding internal stakeholders to optimize contract oversight while serving as the main point of contact for relationships with vendors.

- *Data analysis:* Data is utilized to gain insights into previous hiring decisions. Available data includes information on contract types, vendors, costs and the number of FTE per division within CITO. The dataset that is analysed consist of 153,096 records and is analysed to identify trends, relationships and patterns in contract type choices together with the costs. The findings from this analysis served as the foundation for developing targeted interview questions.

The required data is gathered by combining these three approaches. The results provide practical recommendations for standardizing and enhancing the sourcing process, thereby improving cost-efficiency while ensuring the quality. An overview of the research framework is given in Table 1.1.

Sub-Question	Method	Deliverable
1) What decision factors and criteria are emphasized in the literature for making IT staff sourcing decisions within the context of financial institutions?	Literature review	Chapter 2
2) What are the current processes for making sourcing decisions in CITO department, and what challenges and inefficiencies emerge?	Literature review and interviews	Chapter 3
3a) What are the key decision factors and criteria for sourcing decisions within the CITO department at Rabobank?	Interviews	Chapter 4
3b) How can data analysis be utilized to enhance the development of the decision tree?	Data analysis	Chapter 4
4) How can the impact of different sourcing decisions on IT costs be assessed, while ensuring staff quality?	Data analysis	Chapter 5
5) What are the recommendations for hiring managers to implement the decision tree effectively and make more cost-efficient IT sourcing decisions?	Literature review and interviews	Chapter 6

Table 1.1*: Research framework: Questions and methodology.*

1.5 Limitations

A limitation of this research is that historical data reflects past decisions, which are difficult to assess in terms of their effectiveness. As a result, during the data analysis the focus should be on identifying relationships, inconsistencies and possible improvements rather than simply replicating past decisions. This dataset serves as the basis for conducting a descriptive statistical analysis of current sourcing practices. The records contains employee-specific information, such as work location and contract type represented by categorical variables. This data provides insight into the current sourcing mix and its associated costs. Since it is not correlated with specific projects, assessing the quality of prior sourcing choices is complex. The absence of data related to project outcomes limits the ability to evaluate the effectiveness of past sourcing decisions.

Another limitation of this research is the assumption that sourcing decisions follow a logical and structured process. The decisions are influenced by numerous additional considerations such as personal preferences, time constraints and external events. These elements are challenging to account for in the development of the decision tree. Therefore, the decision tree serves as guiding tool for hiring managers and does not determine binding sourcing decisions.

1.6 Scope

The scope of this research is to examine the hiring decisions within the CITO department. Emphasis is placed on the four main tech divisions within CITO, Wholesale & Rural Tech, Engineering & Enterprise Tech, Risk & Finance Tech and Retail NL Tech, as these divisions comprise 93% of the total number of FTEs (Internal Rabobank Sourcing dashboard, 2025). Figure 1.2 illustrates the FTE distribution.

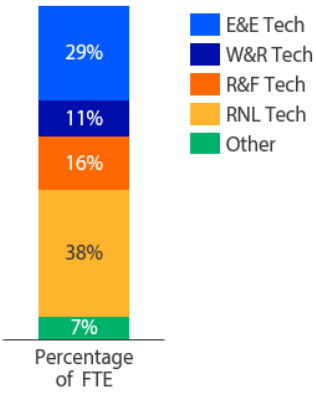

***Figure 1.2**: FTE distribution across CITO department (Internal Rabobank Sourcing dashboard, May 2025).*

While this research is conducted within the specific context of Rabobank, its findings and methodological approach offer broader applicability to organizations across the financial sector. The insights, along with the framework, inform IT-related sourcing decisions in other comparable organizational settings. The decision tree is designed to support sourcing decisions by providing guidance for large organizations especially where cross-departmental coordination is desired. The findings are particularly relevant to institutions that operate under compliance requirements and adopt a risk-averse approach to decision-making.

1.7 Conclusion

This chapter outlines the key challenges in IT sourcing within the CITO department, emphasizing the absence of a standardized framework for selecting contract types and work locations. This lack of structure results in inefficient and inconsistent sourcing decisions, high expenses and lack of transparency. The main objective of this research is to develop a decision tree that provides structured guidance for hiring managers, ensuring cost-efficiency while assuring staff performance quality. The decision tree addresses the core issues that potentially could help to reduce costs, enhance operational effectiveness, and improve strategic alignment. The research employs a hybrid methodology combining literature review, interviews and data analysis, leveraging both expertise insights and analytical findings.

Chapter 2: Systematic Literature Review

The theoretical framework of this research is based on a systematic literature review (SLR) that includes academic sources, along with grey literature such as non-peer-reviewed publications and articles. A comprehensive overview of the current body of knowledge on IT staff sourcing decision-making factors, criteria and frameworks is summarized in the relevant findings section of this research. The databases used for this literature search are Scopus and Google Scholar. They are chosen for their complementary strengths in academic sources and grey literature. This chapter provides an overview of the search strategy, including the search terms, the inclusion and exclusion criteria, and the screening and selection process. Finally, the relevant key findings from the literature search are outlined.

2.1 Research Scope and Objective

This SLR answers the following research question: *"What decision factors are emphasized in the literature for making IT staff sourcing decisions within the context of financial institutions?"* This information serves as a framework for connecting insights obtained through interviews with the existing body of knowledge. This serves as the theoretical foundation for the development of the decision support tree. Targeted literature searches provide specific insights into IT staff sourcing decision-making within financial institutions. An additional search is performed without restricting the scope to the financial sector to develop a comprehensive understanding of IT staff sourcing practices more broadly. Figure 2.1 illustrates the primary focus areas and corresponding search terms used in the literature review. The key focus areas of this search lies at the intersection of three core concepts: sourcing, technology and decision-making. Each area includes related terms to capture a broad range of relevant literature:

- *Sourcing-related terms:* outsourcing, sourcing, hiring, recruitment, staffing, information technology outsourcing (ITO).
- *Technology-related terms:* information technology (IT), CITO, tech, information systems (IS), technology.
- *Decision-making-related terms*: decision framework, decision-making, decision factor, decision criteria, decision model.

To obtain more specific knowledge related to financial institutions, additional search terms are applied. However, narrowing the scope to financial institutions significantly reduces the number of relevant papers. As a result, an additional search query is introduced to include literature from a broader, more general context. More in-depth research is conducted by incorporating keywords related to offshoring and nearshoring to explore the location aspect of IT staff sourcing decisions.

- *Financial sector terms:* financial institutions, financial services, banking.
- *Location terms:* offshore, nearshore, onshore, onsite, offsite.

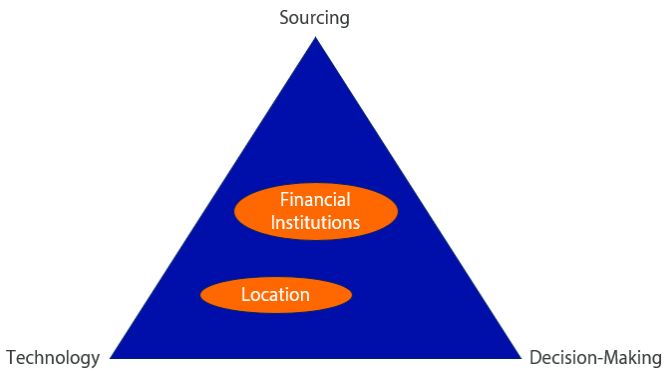

Figure 2.1: *Scope of literature research: Key focus areas.*

2.2 Search Strategy

This search strategy examines IT staff sourcing in the financial sector using a systematic approach, by combining different databases. A structured search and screening process refined the selection, ensuring relevant sources form the theoretical foundation of this research.

2.2.1 Databases

This literature review selects Scopus and Google Scholar as the primary databases due to their complementary strengths. Scopus offers an extensive collection of high-quality, peer-reviewed literature, including scientific journals and conference papers, along with advanced search and citation tracking features (Elsevier, 2024). In contrast, Google Scholar provides broader coverage by including grey literature such as reports and articles not typically found in traditional academic databases (Falagas et al., 2008). The review ensures a comprehensive and relevant set of sources, minimizing the risk of missing key insights and supporting a deeper understanding of the research topic by combining both databases.

2.2.2 Inclusion and Exclusion Criteria

An academic search is conducted using Scopus, guided by clearly defined inclusion and exclusion criteria established in advance to ensure a systematic and transparent selection of high-quality, relevant sources (Page et al., 2021). The inclusion criteria include: publications written in English, peer-reviewed articles, works published between 2010 and 2025 to ensure recency, and relevance to the research topic based on the article's title, abstract, and keywords. The exclusion criteria rule out preliminary versions of published articles, non-scientific publications such as news articles and opinion pieces, and articles without citations. These criteria are consistently applied throughout the search process. As a result, a clear and focused selection of relevant sources is compiled, forming the foundation for further analysis.

2.2.3 Search Queries

Three final search queries are used in Scopus to gather relevant literature. These queries are constructed using a combination of carefully selected keywords, synonyms, and Boolean operators, based on the study's scope and the research question. Inclusion and exclusion filters are applied to narrow the results to high-quality, relevant sources. As shown in Table 2.1, the search queries are iteratively refined to achieve the most complete and accurate overview of the relevant literature.

Search Queries	**Sources**
((outsourcing OR sourcing OR hiring OR staffing OR ITO) AND (banking OR "financial institution" OR "financial services") AND ("information technology" OR IT OR "information system" OR IS OR tech) AND (decision AND (making OR factor OR framework OR criteria))	8
(("IT outsourcing" OR "IT sourcing") AND (decision AND (making OR factor OR framework OR criteria)))	55
(((offshore AND outsourcing) OR (nearshore AND outsourcing)) AND (decision AND (making OR factor OR framework OR criteria)) AND ("information technology" OR IT OR tech OR "information systems" OR IS)	9

Table 2.1: *Overview of search queries.*

The first search query targets literature on IT staff sourcing within the financial sector. Given that financial institutions operate under strict regulations and compliance requirements, it is essential to consider these factors in sourcing decisions. This query focuses on decision-making and returns studies discussing criteria and factors influencing the sourcing process. The second search query broadens the scope to IT staff sourcing in general, intentionally excluding the financial sector to gain a wider perspective on sourcing practices across industries. The focus remains on technological aspects despite the broader scope, which are central to identifying relevant decision criteria. The third search query concentrates on the location dimension of sourcing. It includes studies on offshore and nearshore sourcing to provide insights into decision-making related to location choices.

In addition to these systematic queries, a semi-structured search on Google Scholar is conducted, yielding eleven additional sources relevant to IT staff sourcing in the banking sector. Altogether, the three search queries and the supplementary search result in a total of 83 relevant papers.

2.2.4 Screening and Quality Assessment

The gathered literature is subsequently screened to assess quality. Out of the initial 83 sources, seven duplicates are removed. The screening process is supported by ASReview, a tool that uses active learning and machine learning techniques based on researcher feedback (ASReview, 2025). After reviewing all abstracts and providing input, the tool prioritizes the most relevant papers. As a result, 38 papers are identified as not valuable and excluded from the study. The remaining articles undergo detailed examination, leading to a final selection of 23 relevant papers, which form the theoretical foundation of this research. Figure 2.2 shows this selection and screening process of the SLR.

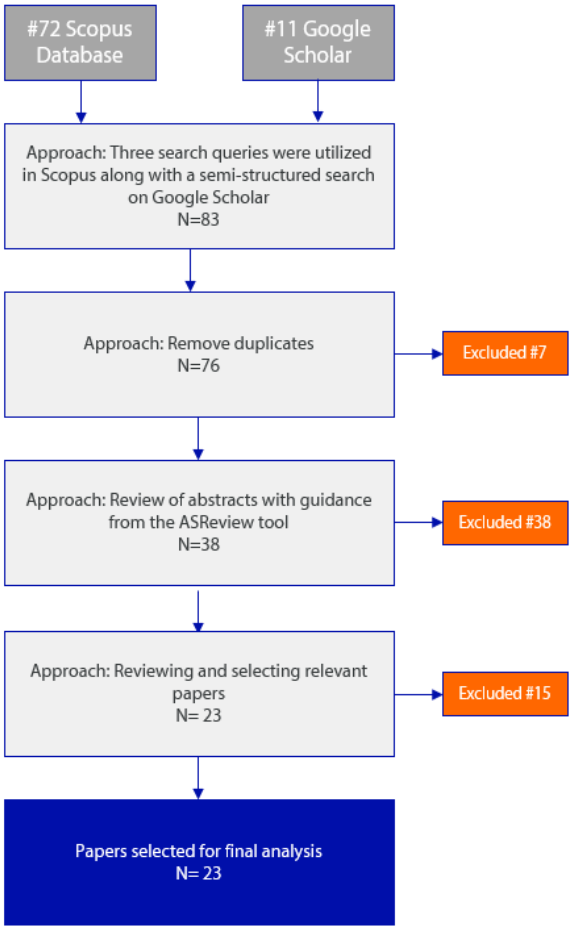

***Figure 2.2**: Selection and screening process of SLR (Methodology: (Denyer & Tranfield, 2009)).*

2.3 Relevant Findings

In the previous years, research has been conducted on how financial institutions make IT sourcing decisions. The decision involves whether to develop and manage IT applications with internal or external staff. The systematic literature review outlines several categories as the foundation of IT sourcing decisions factors. This research identifies five main categories. These are cost, strategy, risk, technology and staffing vendor related. Each category is associated with several key decision factors, along with corresponding advantages and disadvantages that should be considered when evaluating sourcing options. This constitutes an integrated framework for making structured IT sourcing decisions within financial institutions. Appendix A presents a summary of the relevant findings.

2.3.1 Cost

According to the existing literature, cost savings represent one of the primary drivers for IT outsourcing. Two main categories of costs can be reduced through outsourcing: capital expenditures and operational expenses (Mohapatra et al., 2015; Rahman et al., 2021). In addition, outsourcing enables organizations to convert fixed costs, such as staff salaries, into more predictable and variable expenses. These become more manageable when pricing agreements are established in advance with vendors, for instance, regarding staff rates or deliverable-based pricing. However, such agreements must be carefully structured with clearly defined quality standards, to ensure successful outcomes (Rautela et al., 2021; Tooranloo et al., 2018). Another frequently cited advantage is the ability to leverage the economies of scale offered by external vendors. These vendors often possess experience with similar IT functions, which enhances efficiency and reduces costs through specialization (Poleto et al., 2020; Rautela et al., 2021; Keshavarznia & Wallace, 2023). Furthermore, outsourcing can reduce the managerial effort by minimizing the time spent overseeing IT staff and operations, thereby allowing managers to focus on core responsibilities (Jain & Natarajan, 2011). Despite these potential benefits, cost savings are not guaranteed. González et al. (2013) emphasize the risk of unforeseen expenses arising from poorly performing vendors or inadequately defined contracts. Such issues can diminish anticipated savings and complicate cost-benefit analyses. In line with the Transaction Cost Economics (TCE) framework, organizations are advised to consider not only direct costs but also transaction-related expenses, including those associated with contracting and coordination (Tooranloo et al., 2018).

2.3.2 Strategy

In addition to cost savings, strategic considerations play a significant role in IT outsourcing decisions. Outsourcing is increasingly employed to support long-term organizational objectives by enabling them to concentrate more on their core competencies while delegating non-core IT functions to external vendors (Daryaei et al., 2018; Rautela et al., 2021). For banks, this strategic approach facilitates a focus on innovation within core operations, while routine tasks are managed by vendors. However, several studies highlight the risk of excessive reliance on external vendors. Over-outsourcing may result in the reduction of internal expertise and a loss of strategic control (Sobinska & Willcocks, 2016; Wallace et al., 2021). Daryaei et al. (2018) similarly highlight vendor dependence as a critical challenge in the sourcing strategies of financial institutions. Sourcing decisions should aim to strike a balance between leveraging external capabilities and preserving sufficient internal knowledge and oversight to mitigate the risks (Anderson-Princen, 2022). Outsourcing also offers access to specialized expertise that may not be available internal, thereby enhancing a bank's competitive position. Competitive pressure itself is a motivating factor, as organizations often adopt outsourcing strategies in response to industry trends to avoid lagging behind in innovation (Wing Ying Mo, 2024; Mukherjee & Mukherjee, 2015). Flexibility and scalability represent additional strategic drivers. Outsourcing allows organizations to adapt more quickly to market developments and technological advancements given the fast pace of technological change. Firms can reduce the time and resources required for internal development and implementation by utilizing external expertise (Amiri et al., 2021; Hanafizadeh & Zareravasan, 2020).

2.3.3 Risk

Risk is a consideration in IT outsourcing decisions, particularly for banks operating under strict regulatory frameworks. A frequently cited concern in the literature is the risk to data confidentiality, given the sensitivity financial information from clients. Literature highlights that concerns over data security and loss of control may lead banks to avoid outsourcing core functions or to restrict outsourcing to non-critical services (Mo & Chang, 2024; Hanafizadeh & Zareravasan, 2020). Regulatory compliance is another factor influencing sourcing decisions. Outsourcing must align with sector-specific regulations, including data protection laws such as the General Data Protection Regulation (GDPR), the European Banking Authority (EBA) guidelines on outsourcing, and third-party risk management requirements (Baldwin et al., 2017; Wallace et al., 2021). These regulations need enhanced oversight, due diligence and contractual safeguards when engaging with external vendors

(Keshavarznia & Wallace, 2023). Vendor-related risks also play a role. Over-reliance on a single provider can increase vulnerability, particularly related to vendor failure or service disruption. Banks often adopt hybrid sourcing models to mitigate this risks, such as multi-sourcing or co-sourcing, which distribute risk across multiple vendors and enhance operational resilience (Anderson-Princen, 2022; Handley et al., 2022). In addition to technical and regulatory risks, human factors must also be considered. Outsourcing initiatives can encounter internal resistance, especially when employees perceive threats to job security or a loss of control over critical IT functions. Such resistance can affect implementation and reduce the effectiveness of outsourcing strategies. Therefore, managing organizational change and addressing employee concerns are essential for successful execution (Mukherjee & Mukherjee, 2015; Ensslin et al., 2020; Ishizaka et al., 2019).

2.3.4 Technology

Technology is a factor in IT sourcing decisions, particularly for banks seeking to remain competitive in rapidly evolving digital environments. Outsourcing enables financial institutions to adopt emerging technologies more quickly and mitigate the risk of technological obsolescence, especially in areas such as cloud computing and cybersecurity (González et al., 2013; Lu et al., 2024). As noted by Rahman et al. (2023) and Sobinska & Willcocks (2016), sourcing allows organizations to stay up-to-date of innovation without the need to internally develop every technological advancement. Vendor capability is central to this process. Vendors must demonstrate their ability to deliver high-quality technological solutions (Mo & Chang, 2024; Mohapatra et al., 2015). Consequently, service quality emerges as another determinant in outsourcing decisions. Financial institutions increasingly prioritize reliability, speed of delivery and enhanced user experiences (Assaf et al., 2011; Hanafizadeh & Zareravasan, 2020). For instance, improvements in online banking platforms or faster issue resolution can influence customer satisfaction. Moreover, outsourcing is often leveraged to enhance customer service, which is viewed as a strategic asset for gaining competitive advantage (Rautela et al., 2021; Baldwin et al., 2017). Banks can offer more responsive and user-centric services by partnering with specialized vendors, reinforcing their market position in a technology landscape.

2.3.5 Vendors

Selecting the appropriate vendor is a component of a successful IT sourcing strategy. Financial institutions evaluate vendors based on a range of criteria, including technical expertise, reliability, financial stability and reputation (Mukherjee & Mukherjee, 2015; Wing Ying Mo, 2024). Research indicates that vendors with strong reputations and a proven track record are more likely to deliver high-quality IT services (Rahman et al., 2021; Keshavarznia & Wallace, 2023). Strategic and cultural alignment between the organization and the vendor is essential for long-term collaboration. Shared values and compatible goals facilitate smoother cooperation and enhance mutual understanding (Poleto et al., 2020; González et al., 2013). Trust and prior positive experiences also play a role in vendor selection, as organizations tend to favour partners they have successfully worked with in the past (Westphal & Sohal, 2016). Effective vendor governance is another key factor in ensuring successful outsourcing relationships. This includes the establishment of clear contractual agreements, monitoring and regular communication to prevent misunderstandings and maintain alignment (Ensslin et al., 2020; Handley et al., 2022). Wallace et al. (2021) and Sobinska & Willcocks (2016) emphasize that ongoing coordination and transparency are essential for sustaining productive outsourcing partnerships. Finally, the geographical location of the vendor can influence risks, quality and cost-effectiveness. Financial institutions consider factors such as the geopolitical stability and location-specific risks when selecting vendors (Ishizaka et al., 2019; Hansen et al., 2019).

2.3.6 Decision-Making Frameworks and Models

Recent studies on IT staff sourcing in the financial sector utilize different decision-making frameworks and models:

- Ensslin et al. (2020) integrates Multicriteria Decision Aid Constructivist (MDAC) methods, combining qualitative and quantitative analysis to assess sourcing decisions based on organizational goals and strategic alignment. This approach focusses on aligning outsourcing decisions with core values to make sure they support long-term strategic goals.
- Poleto et al. (2020) combines Value Focused Thinking (VFT) with FITradeoff to evaluate trade-offs in vendor selection. This framework prioritizes factors and ensures decisions are made with understanding of the core values.
- Rahman et al. (2023) applied a hybrid Human Computer Interaction (HCI) model and the Simple Multi Attribute Rating Technique (SMART) to assess outsourcing decisions. This research focusses on offshoring of maintenance applications. This approach enhances decision-making by adding ratings based on specific attributes in order to help organizations make more informed outsourcing decisions.
- Mo & Chang (2024) uses a qualitative and quantitative method. This method combines focus groups and surveys to prioritize factors influencing IT outsourcing satisfaction. This method provides a clear understanding of beneficial outsourcing drivers that can help improve outsourcing strategies.
- Daryaei et al. (2018) uses a survey method with expert interviews to develop a decision-making framework for outsourcing in financial institutions. This method offers insights from experts and helps organizations make more informed and practical outsourcing decisions.
- Hanafizadeh & Zareravasan (2020) conducted a systematic literature review to categorize factors influencing IT outsourcing decisions. The study offers a in dept and clear overview of the factors that organizations must consider when making outsourcing decisions.

Frameworks and models from previous studies form the foundation for identifying key factors and criteria that influence IT sourcing decisions in the financial sector. A list of relevant factors is developed by analysing and integrating insights from these decision-making approaches. This research applies the methodologies proposed by Daryaei et al. (2018) and Hanafizadeh & Zareravasan (2020) to support the development of this list. Daryaei's framework, based on expert interviews, contributes practical and experience-based insights, while the systematic literature review by Hanafizadeh provides a structured and in-depth categorization. Applying both approaches enables the research to incorporate theoretical and practical perspectives in identifying key decision-making criteria.

2.4 Conclusion

This chapter presents the structured literature review strategy used to establish a theoretical framework for IT staff sourcing decisions in financial institutions. The objective of this framework provides a foundation for the development of the decision tree. This literature review identifies key factors and criteria and divides them into five main categories: cost, strategy, risk, technology, and vendor related factors. Appendix A included a summary of these findings. In addition, this chapter highlights decision-making frameworks found in the literature, which support structured and informed IT sourcing decisions.

Chapter 3: Context Description

This chapter provides an overview the current staff sourcing process context that forms the foundation for the development of the decision tree. It discusses the current sourcing strategy and elaborates on the various contract forms, which will serve as the final nodes of the decision tree. In addition, it outlines the IT staff sourcing process and the stakeholders involved, highlighting the current challenges and inefficiencies.

3.1 Sourcing Strategy

Effective cost management within the CITO department is essential for optimizing IT budget allocation. Particular focus must be given to hiring decisions, as staff sourcing costs account for approximately 70% of the total CITO budget. Balancing the need for high-performance staff within budget constraints can be challenging. The bank has established a sourcing strategy comprising of two main strategies. First, collaborating primarily with a select group of vendors, the eight RAISE vendors and second, measuring several key performance indicators (KPIs) related to sourcing targets.

RAISE vendors hold strategic importance for the bank. A substantial portion of the external staff is sourced through these vendors. Each tribe within CITO has chosen two or three preferred vendors from the RAISE vendors to meet the majority of their sourcing requirements. This strategy aims to enhance the bank's buying power and improve collaboration with the RAISE vendors. The quality of these vendors is maintained through quarterly performance evaluations, ensuring they consistently meet the bank’s predefined standards.

In addition to collaborating with RAISE vendors, several KPIs are tracked to provide insights into the sourcing mix. Each division within the CITO department measures and reports on these KPIs, which include the ratio of internal staff to RAISE partners, the onsite and offsite external staffing ratios, the internal staffing ratio and total FTE. Targets are set for each KPI, guiding divisions in making sourcing decisions that align with budget constraints and operational effectiveness. These KPIs, together with the eight RAISE vendors, form the foundation of the current IT sourcing strategy. Other influencing factors and decisions are determined by the individual tech divisions within CITO and can vary significantly. This research aims to explore the reasons behind these variations and identify ways to minimize them, promoting more aligned and consistent decision-making across the bank.

The IT sourcing strategy is guided by a set of defined targets to be achieved by the end of 2025. The bank has outlined the following key targets:

- *Each division within CITO needs to have 80% of the staff sourced through either internals or externals through RAISE vendors:* Increasing internal staff helps protect intellectual property and reduces dependence on many separate external vendors. Using eight RAISE vendors strengthens the bargaining position of the bank and improves control over external staff performance. Consolidation of vendors means less time spent on negotiations and risk assessments.
- *Each division within CITO has reached the maximum target for onsite externals*: The goal is to reduce the number of onsite externals and prioritize offshore and nearshore options to lower costs. Onsite externals are relatively expensive, when work can be done offsite[10] it should be preferred.
- *Work more with teaming contracts and SOW contracts:* Using fewer staff augmentation contracts and more teaming and SOW contracts will provide cost predictability and reduce management effort since the staff in working more output based. The vendor is responsible for the final result with output based contracts and handles the HR responsibilities.

[10] *Offsite* means nearshore or offshore.

- *Quarterly performance surveys:* they are sent to managers about the preferred vendors, aiming for a minimum 70% response rate. This target helps to consolidate vendors by addressing underperformance and potentially discussing solutions. Strengthening relationships and collaboration with RAISE vendors will enhance transparency and ensure they continue delivering high-quality performance.
- *Quarterly reassessment of the strategic vendor list based on performance:* Continuous performance measurement allows for regular reassessment of the strategic vendor list, ensuring the bank always works with high performance vendors.

These target findings are currently outlined in the bank's general IT sourcing strategy and assessed through KPIs.

3.2 Contracts

The bank utilizes four contract types: internal staff, staff augmentation, teaming contracts and SOW contracts. These contract forms are fixed. The location can be decided as onsite, nearshore, or offshore for each contract form. Internal staff, however, are always onsite. These contract form will be the final nodes of the decision tree.

3.2.1 Contract Types

Internal staff contract: The work is performed by employees on the bank's payroll. These contracts are established with individual staff members and paid based on time and material. All activities are managed within the organization, including the selection and steering the staff, along with results and deliverables. The bank has significant influence on performance. Effective management is important to achieve valuable outcomes. Internal staff contracts involve additional onboarding and HR tasks and the bank must provide various benefits such as laptops, training budgets and annual performance reviews.

External staff augmentation: The bank pays the vendor based on the time worked by the staff of the vendor or a fixed amount for a predefined period. This type of contract does not include KPIs to assess performance. Staff hired through a staff augmentation contract must complete the bank's e-learnings, café, bankers oath and engagement scan as part of the onboarding process managed by the bank. The bank is responsible for selecting and steering the staff, along with monitoring the results and deliverables. This contract is similar to an internal staff contract, except the staff are not on the bank's payroll but paid via vendors and the work under temporarily contracts, allowing the contract to end when they are no longer needed. The staff can work onsite, offshore, or nearshore.

External teaming contract: The bank pays the vendor based on the time worked by the staff of the vendor or through a fixed pricing agreement. This contract is contingent upon meeting certain pre-determined KPIs for success. KPIs related to delivery, quality, team maturity and knowledge management are used to evaluate team performance. The vendor selects the team, but the bank is responsible for steering and overseeing the results and deliverables. Since the team is already used to working together, management tends to be easier. These teams must complete the bank's e-learnings, café, bankers oath and engagement scan as part of the onboarding process, as the bank manages the staff and is responsible for the deliverables.

External SOW contract: A SOW contract is an agreement between the bank and a vendor for the delivery of services or products. The project scope must be clearly defined and agreements are established regarding the completion. This contract focuses on the deliverables rather than the methods of delivery. The vendor is responsible for selecting and managing resources, along with delivering the results and outputs. Managing staff requires less effort and still yields valuable deliverables, even when the bank exercises limited control over performance. The invoicing method is fixed price, which means that the bank pays for the project upon completion. The project's performance is measured using KPIs.

3.2.2 Contract Costs

The aim of this research is to reduce IT staff sourcing costs while maintaining performance quality. External staffing costs vary by location with onsite being the most expensive, followed by nearshore and offshore typically being the least costly. Location is the primary determinant of sourcing costs. Although internal employees are based onsite, they are generally less expensive than onsite externals. While location is the main cost factor, other elements such as the type of work, seniority level and scarcity of specific technologies also influence pricing. Additionally, contract type impacts overall costs. SOW contracts tend to be slightly more expensive due to their delivery-based model. The vendor assumes responsibility for the outcome, including contingencies and risks, which adds to the cost. A cost breakdown is provided to illustrate how expenses are structured under an SOW agreement. SOW staff may be located onsite, offsite or in a hybrid arrangement. Table 3.1 presents a comparison of sourcing costs by work location.

Work Location	**Cost in Percentage**
Internal	60%
External onsite	100%
External nearshore	50%
External offshore	33%

***Table 3.1**: Cost distribution by work location (Internal Sourcing Dashboard Rabobank,2025).*

3.3 Organizational Structure

Rabobank adopted a scaled agile way of working, which is reflected in its organizational structure. The agile way of working is an iterative approach which helps teams deliver value faster (Institute., 2017). This research focuses on the tech divisions within the CITO department, which include tribes and squads. The main goal of the tech divisions is to handle the technical aspects of product delivery and ensure the efficiency and management of IT activities related to the availability, security and continuity (Internal Rabobank SharePoint, 2025). The tribes within these divisions are composed of squads, each responsible for managing several IT applications. Figure 3.2 presents a visual representation of this organizational structure. There are four main tech divisions: Wholesale & Rural Tech, Engineering & Enterprise Tech, Risk & Finance Tech and Retail NL Tech.

- *Wholesale & Rural Tech (W&R Tech):* The teams within the W&R Tech department support the development of a future proof technology platform, maintain applications for financing products and enable a seamless digital experience for global W&R clients and bankers.
- *Engineering & Enterprise Tech (E&E Tech):* The goal of the E&E Tech department is to provide IT services and innovate for customers, employees and engineers, enabling easy banking, smooth customer service and rapid new product development.
- *Risk & Finance Tech (R&F Tech):* The R&F Tech department develops and maintains all central risk management and finance systems and contributes significantly to the realization of the bank's IT strategy.
- *Retail NL Tech (RNL Tech):* The teams within the RNL Tech department develop and maintain applications that support the retail propositions aimed at financial healthy living for customers and helping entrepreneurs grow their businesses sustainably.

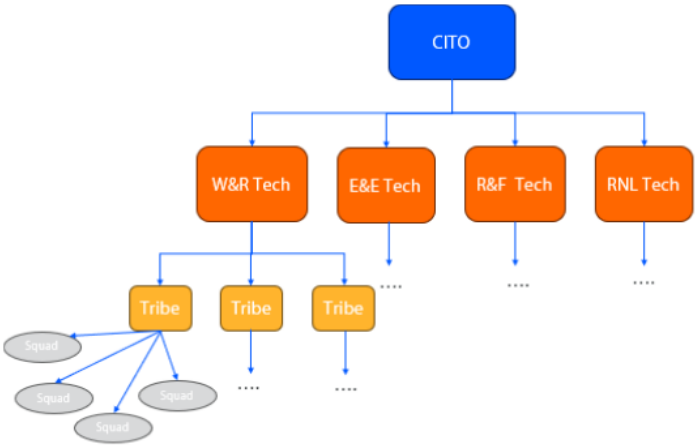

***Figure 3.2**: Overview organisational structure CITO department.*

3.4 Stakeholders

The IT staff sourcing process is a collaborative effort involving multiple key stakeholders, each contributing to ensure cost-efficiency and the successful achievement of sourcing objectives. These stakeholders include business controllers, domain managers, senior tech leads, tech leads and vendor managers. This research includes interviews with various stakeholders from the four tech divisions. This section explains how stakeholders participate within the sourcing process.

Business controller: The business controller is responsible for overseeing the budget and FTE allocations within the tech domains, ensuring alignment with forecasts. They measure various KPIs to monitor the performance of sourcing and provide insights into cost developments and FTE trends. The business controller acts as an advisor and prepares and analyses financial reports. These reports offer insights into costs and help balance the financial and IT aspects.

Domain manager: The domain manager has a more strategic role in the sourcing process by providing context for the sourcing strategy and selecting the preferred vendors. Each tribe can choose two or three preferred vendors from the eight RAISE vendors available. These vendors will be the primary suppliers for hiring the majority of external staff. The number of staff sourced from these vendors is monitored with a KPI. Domain managers also track other KPIs to ensure alignment with the sourcing strategy and challenge senior tech leads on their performance. They play a role in vendor selection and ensuring that sourcing decisions align with overall business objectives while their direct involvement in hiring is limited.

Senior tech lead: The senior tech lead is responsible for supporting hiring decisions and prioritizing projects within the constraints of the top-down budget. A predetermined budget is allocated to the specific divisions. The senior tech lead can decide on allocation. They must prioritize between maintaining business-as-usual operations and delivering on innovative projects. The senior tech lead oversees the hiring processes, ensuring that the right staff is selected to meet the deliverables and KPIs. Providing regular feedback to vendors to ensure performance standards are met is also the responsibility of the senior tech lead.

Tech lead: Tech leads are responsible for setting out vacancies and managing the staff. They collaborate with the senior tech lead to decide on the contract type and work location for hiring staff for specific projects. Tech leads visit offsite staff as needed to ensure everything is running smoothly. The decision tree is designed to assist and guide tech leads in making hiring decisions.

Vendor management: Vendor management has a facilitative role in the IT sourcing process. They manage vendor relationships, ensure compliance with contracts and policies, and perform Rabobank's

Partner Risk and Management Application[11] (PRISMA) reporting. They also negotiate prices and support tech leads in sourcing. The tech lead outlines the skill requirements, level and contract type when new staff is needed. Vendor management sends these proposals to the vendors. They ensure that the work performed meets agreed-upon terms and standards. Vendor management primarily handles relationships with RAISE vendors, along with several additional vendors.

In addition to these main stakeholders, the resource office supports the hiring process by managing the onboarding processes, including screening, laptop setup, confidentiality agreements and diploma checks.

3.5 IT Staff Sourcing Process

The staff sourcing process varies depending on the contract type and can be categorized into internal staff contracts, staff augmentation contracts, teaming contracts and SOW contracts. The location decision has minimal impact on the process itself, but it affects the way the tech lead manages the external staff.

Internal staff: Internal staff is sourced without involvement of external vendors. The HR department of the bank creates job vacancies and oversees the selection and onboarding processes. Internal staff is paid through the payroll and have different privileges than external staff, for instance they have a training budget and annually performance meetings with their manager. In practice, many internals initially start as externals and are later brought on as internal staff.

Staff augmentation: The sourcing process starts with the tech lead approaching vendor management with a sourcing request. In the request the tech lead specifies the required skills, job level and preferred vendors. Vendor management distributes the vacancy to the selected vendors, who then respond with CVs of potential candidates. The tech lead reviews the CVs, conducts interviews and eventually selects the most suitable candidate. The resource office manages the onboarding process, which includes screening, setting up laptops, handling confidentiality agreements and verifying diplomas. The selected candidate starts on the agreed date and joins one of the tech lead's teams. The candidate may work onsite or offsite depending on the work location. The tech lead visit the candidate's country to monitor progress when necessary.

Teaming contracts: In this case, the tech lead collaborates with vendor management to define the requirements for the sourcing request for a whole team. The vendor handles the screening process, assembles the team and provides a list of candidate names. The resource office is responsible only for onboarding, and not screening. This approach significantly reduces the HR workload for the bank, as the vendor forms the team and ensures they can work together effectively. However, the bank retains responsibility for managing the team. This arrangement gives the bank greater influence over the final deliverables while mitigating the risk of low-performing teams. The vendor is accountable for resolving any team issues. These teams can work onsite or offsite, depending on chosen location. The tech lead may visit the teams abroad as needed or if problems arise.

SOW contracts: The bank enters into an output-based contract with the vendor, making the vendor responsible for delivering a service. The vendor determines how and with which staff the service is provided. Initially, vendor management assists the tech lead in drafting the SOW, setting the scope and defining the requirements for the desired output. Once the SOW is reviewed and approved by both the vendor and the bank, the list of staff is sent to the resource office, which handles the onboarding. The vendor is accountable for the deliverables in this contract type. The contract may include requirements for meeting several KPIs or other additional agreements. This approach ensures that the vendor is

[11] Rabobank Partner Risk and Management Application (PRISMA)is an application in which a contract with a vendor is recorded whenever a product or service is planned for purchase. All vendor contracts are centrally managed within PRISMA.

responsible for delivering the agreed outcomes and overseeing part of the managerial responsibilities and risks of the project. This contract type can involve onsite, offsite or a mix of both work location. It is common for this contract choice to include a small number of onsite staff and a majority of offsite staff to facilitate collaboration and management between the bank and vendor.

3.5.1 BPMN Model

Figure 3.3 illustrates a Business Process Model Notation (BPMN) diagram representing the IT sourcing process. This model is based on interview insights and depicts the various processes associated with different contract types and show the scope of this research. The orange activity within this diagram signifies the point where the decision tree will be implemented.

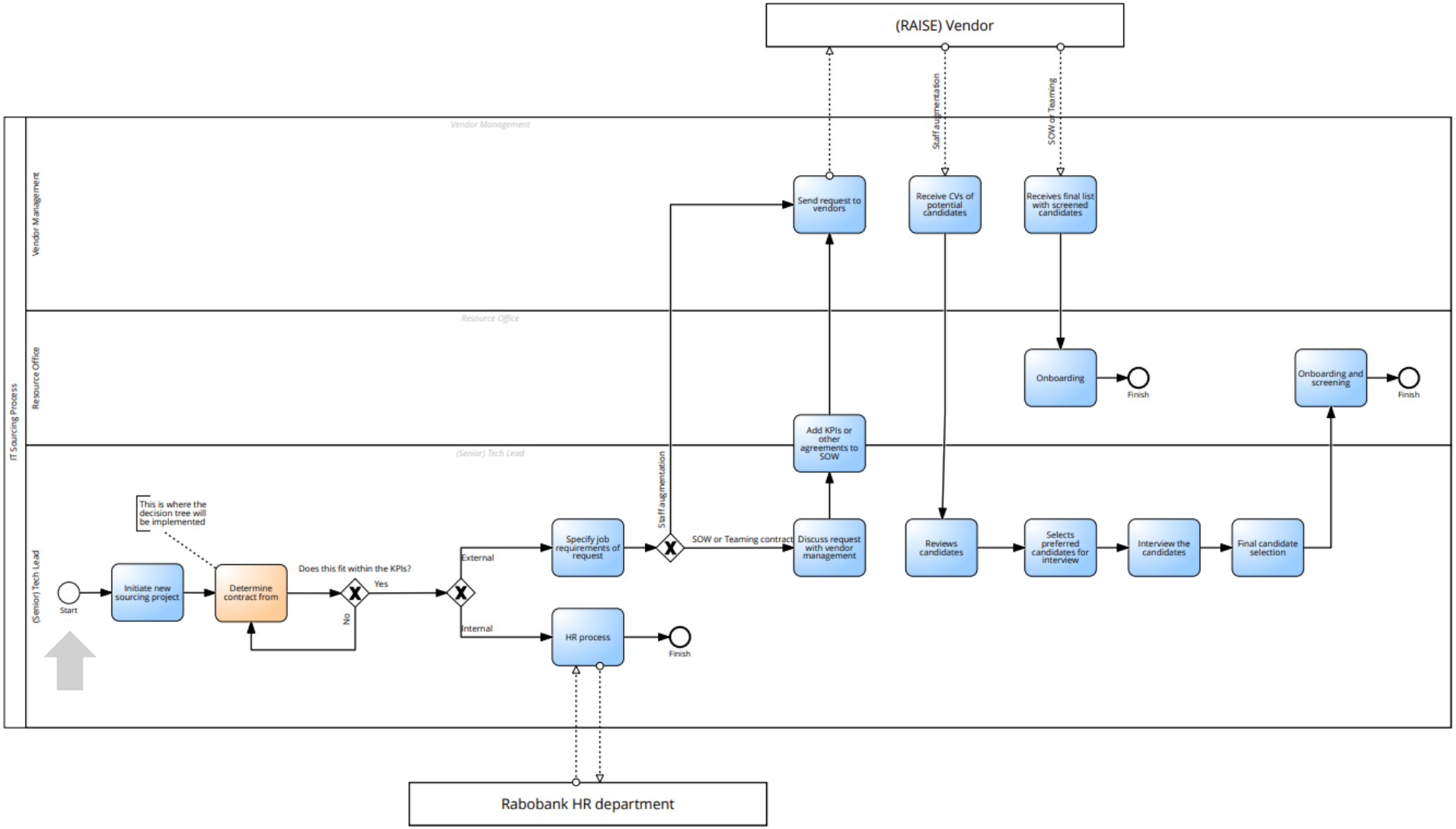

***Figure 3.3**: BPMN model: IT sourcing process workflow.*

3.6 Challenges and Inefficiencies

Interviews and the analysis of the sourcing process have uncovered challenges and inefficiencies that contribute to increased sourcing costs. This section elaborates on several identified problems, including high wages, bill rate breaches, lack of transparency, compliance issues, role of preferences and issues related to an unclear scope and requirements.

High wages: A challenge in the sourcing process is the percentage of expensive employees. This is assessed by examining the hourly wage of external staff. If an employee costs more than €135 per hour, they are classified as "expensive" (Rabobank Internal Document, 2025). An assessment of the employees identifies a substantial presence of expensive externals within the tech divisions, with the majority working onsite. Research determines whether these expensive employees are sourced for valid strategic reasons. If this is not the case, alternative options should be considered to make resource allocation more cost-efficient.

Bill rate breaches: The KPI for bill rate breaches measures instances where an employee is paid more than 10% above the predetermined agreed upon hourly wage stated in the contract between the vendor and the bank. Currently, this applies for approximately 10% of the staff sourced through vendors (Internal Rabobank Sourcing Dashboard, 2025). This is not preferable and should be avoided since it undermines financial control and contractual integrity.

Lack of transparency: An inefficiency associated with external staff hired under SOW contracts is the lack of transparency. These contracts can sometimes act as a "black box", limiting visibility into the specific work being performed, as the vendor is responsible for overseeing the details and providing the deliverables. SOW contracts can be used for multiple purposes. They can facilitate the management of offshore staff by establishing clear agreements and deliverables, which is particularly beneficial when dealing with staff that works in different time zones. SOW contracts can be also applied to onsite staff but this practice can reduce transparency. For instance, the number of hours each staff member works in relation to the cost charged may not be clearly disclosed, potentially obscuring high hourly wages. A contract covering a small number of individuals might seem cost-effective at first, yet it could actually incorporate elevated hourly rates for onsite staff. The use of SOW agreements for onsite employees is generally less desirable, as it leads to reduced visibility into expenses and workforce composition.

Compliance issues: A risk associated with hiring freelancers is the potential for compliance violations. The bank enforces a rule that freelancers can only work a maximum of two years at the bank to prevent pseudo self-employment. The DBA Act ("*Deregulering Beoordeling Arbeidsrelaties Wet")* was introduced to address pseudo self-employment and clarify the employment relationship between the bank and freelancers. Freelancers could function as employees in practice but lack the associated rights and obligations. This is something the government aims to prevent, by ensuring that social premiums and taxes are correctly (Financien, 2025). If a freelancer performs well and the bank wants to retain them beyond this two-year period, the bank must make the person an internal employee. These regulations can be avoided by transferring the freelancer into a SOW contract, which due to the lack of transparency conceals their previous work history. The duration of service of freelancers is measured and reported through a KPI to prevent this and to ensure there is no breach of the maximum contract duration.

Role of preferences: The preferences of a tech lead can influence sourcing decisions. Onsite staffing facilitates easy communication and collaboration but is often more costly. When working with offsite staff is feasible, it is generally preferred due to its cost-efficiency, although it may require additional coordination. Preference also plays a role when tech leads directly request a vendor to provide specific individuals they have previously worked with. This overrides standard sourcing procedures and limits

the role of vendor management in negotiating favourable terms. The bank may incur higher costs, as personal preferences can lead to less cost-effective choices, even when more affordable candidates are equally qualified.

Unclear scope and requirements: Sourcing without a clearly defined objective or deliverable often results in inefficiencies and elevated costs. While an unclear scope may be acceptable for innovative projects, due to the unpredictability of the work, it poses challenges for other projects. Insufficient research and unspecified requirements can complicate decisions around work location and contract type, potentially leading to more expensive sourcing choices. This is particularly relevant for SOW contracts, where the vendor is responsible for delivering a defined outcome. Given the limited control over the execution process in SOW contracts, having a well-defined scope and clear requirements enhances the likelihood of successful delivery.

3.7 Conclusion

This chapter provides an overview of the current IT sourcing process within the CITO department. It explains the bank's general sourcing strategy, which focuses on collaboration with RAISE vendors and tracking KPIs of the sourcing mix. Sourcing targets including reducing onsite staff, increasing the use of output-based contracts, and enhancing vendor consolidation and performance monitoring. The contract types and work locations are explained, forming the final nodes of the decision tree. Contract types are divided into internal staff and external staff, with external staff employed under staff augmentation, teaming or SOW contracts. The work location is a key cost determinant, with onsite staff being the most expensive, followed by nearshore, while offshore offers the most cost-effective option. The chapter also outlines the CITO department's organizational structure and identifies the key stakeholders involved in the IT sourcing process. Interviews are conducted with business controllers, domain managers, senior tech leads, tech leads, and vendor management to gather insights. In addition, the sourcing process for each contract type is modelled and explained, highlighting the roles and responsibilities of stakeholders. Several challenges and inefficiencies in this process are addressed, including high salaries, lack of transparency, and compliance issues. Collectively, this information provides the context for developing the decision tree.

Chapter 4: Analysis

This chapter provides insights into the analysis of the interviews and historical data. The goal is to identify key factors, patterns and relationships that influence sourcing decisions. These insights are used to develop the decision tree. The analysis is based on two approaches, semi-structured expert interviews and historical data analysis of IT sourcing decisions. Each approach provides a different perspective. The interviews offer a qualitative perspective of the reasoning and priorities behind the decisions, while the data analysis provides a quantitative perspective. The data provides insights into the current contract types, job families, work locations and vendors. In addition, the literature review adds a theoretical dimension, providing frameworks and decision-making criteria that connect the practical research to existing theories.

4.1 Analysis of Interviews

Several stakeholders are interviewed to gain insights into the current hiring process and the key decision factors and criteria that determine the outsourcing strategy. The stakeholders included business controllers, domain managers, senior tech leads, tech leads and vendor managers. For the development of the decision tree the primary focus is on the senior tech leads, as they are responsible for the final sourcing strategy within the tribes. The focus was more on the tech leads during the implementation phase of the decision tree, since the tech leads make the final sourcing decisions and has to work directly with the hired staff. An understanding of the differences between the tech divisions is received by interviewing and comparing the stakeholders from the four tech divisions.

The interviews are conducted using a semi-structured approach. In appendix B1, a set of open questions can be found based on the main research themes. The main research themes include: the role in the sourcing process, contract types, location types, vendors and decision-making. This approach ensures that all relevant topics are discussed during the interviews and allows for comparability between the different respondents. The semi-structured interview approach allows room for follow up questions on topics mentioned by the respondents. This flexibility enables an understanding of the insights, issues and decision factors. The interviews last between 30 and 45 minutes. This interview approach is chosen to provide an overview of common practices of the IT sourcing decision and tech division specific approaches.

4.2 Key Findings from Interviews

The following section outlines the key decision factors and criteria emerged from the interview analysis. These findings identify the main factors to consider when developing the decision tree. This research categorizes the factors into three main groups to enhance clarity, namely strategic and organizational factors, vendor and market dynamics, and practical and operational constraints.

4.2.1 Strategic and Organizational Factors

This category includes factors related to internal strategies, organizational capabilities and the long-term objectives of the bank. These elements play a role in shaping sourcing decisions and determining the overall approach to management of the workforce. These factors are the most influential category and are essential to consider in the decision tree development.

A factor that influences sourcing decisions is the ***application type.*** Applications vary across tribes due to differences in the origin of the work. E&E Tech focuses for instance more on data and strategy-related applications, while RNL Tech focuses on software solutions for business operations. According to interviews, applications can be classified into categories namely, core competence applications, run the bank applications, change the bank applications and compliance-related applications. An application can be classified into one or more of these categories depending on its characteristics and role within the bank. These are the four main categories and their purpose:

- *Core competence applications* are of strategic importance to the bank. They play a role in the success and competitiveness of the bank and are often complex, dynamic and involve extensive stakeholder interactions. For instance, they could be related to client data or risk management. These applications are typically managed internally or onsite to maintain oversight and ensure ownership. Outsourcing such applications to offsite locations is generally avoided. This is done to mitigate the risk of losing control over these strategically important applications.
- *Run the bank type of applications* support the daily operations of the bank. Their primary function is to maintain banking processes and ensure system functionality. For instance, core banking systems that manage customer accounts and transactions. These applications are suited for offsite or nearshore solutions due to their standardized nature and clearly defined scope of work, along with the minimal degree of direct required oversight. They are often suited for SOW contracts, given the ability to define clear deliverables.
- *Change the bank type of applications* focus on transforming and improving the services and capabilities of the bank. These applications often involve evolving and complex requirements, making it difficult to define work in clear deliverables. For instance, digital transformation related to AI. The applications require high levels of collaboration and adaptability throughout the process, making them less suitable for SOW contracts. Internal staff, staff augmentation or teaming contracts are preferred due to the broader span of control. These applications benefit from flexible sourcing models such as onsite or nearshore.
- *Compliance-related applications* deal with sensitive data, such as client-related information, and could comply to regulations like General Data Protection Regulation (GDPR). These applications are typically kept internal, onsite or nearshore to meet regulatory requirements and minimize security risks. Nearshoring may be considered if compliance and security measures are in place, but offshoring is generally avoided. Staff augmentation and teaming contract are preferred over SOW contracts to ensure compliance and maintain control over these critical applications.

The ***application maturity*** is another factor that is considered. Applications can be new, regularly renewed or focused on maintenance. Maintenance and regularly renewed applications involve ongoing upkeep and periodic updates to ensure systems remain functional and reliable. These applications fall under “run the bank”, as they are operational with defined scopes. New applications focus on developing and implementing innovative systems that drive transformation and improvement. These projects are strategic in nature, often featuring dynamic and evolving requirements, making them more suited for “change the bank”.

Another strategic consideration is related to ***budget***. The allocated budget varies across tribes within the bank. In some cases, tribes may receive reduced budgets compared to previous years, requiring them to identify cost-saving measures while still maintaining their applications. This involve reevaluating their current sourcing mix to select more economical options. If cost-saving efforts do not fully meet operational needs, tribes must prioritize tasks. This means ensuring essential banking functions remain intact and less critical projects are postponed or reassessed. Budget availability also affects location-based sourcing decisions. Tribes with proportionally larger budgets may prefer onsite sourcing, as in person collaboration is often more convenient and easier to manage compared to offsite. Tribes may prioritize convenience over cost-efficiency by opting for onsite staffing in cases where they have sufficient budgets. Tribes with smaller budgets may explore nearshore or offshore options more frequently, balancing cost-effectiveness with workload demands.

In addition to budget considerations ***workforce scalability*** is reflected on in sourcing choices. Striking the right balance between internal and external staff is essential for effective sourcing. An imbalance in this ratio can lead to excess costs and over-reliance on external staff. This could introduces the risk of vendor dependency. An internal base is combined with a flexible external workforce that allows banks to adapt to changing demands while maintaining control over systems. This flexibility enables the bank

to adjust workforce levels according to the demand without long-term contract commitments. Internals play a role in preserving long-term knowledge of the bank's applications and processes. They ensure continuity and ownership of applications. Maintaining sufficient internal staff helps reduce dependence on external vendors. An internal foundation ensures stability and minimizes risk, while external staff supports flexibility, enabling scaling up or down as needed.

Moreover, the potential benefit of specific ***external expertise*** can be a motivation for outsourcing. External professionals often bring specialized knowledge and skills which could enhance project outcomes. Their experience with similar projects allows them to apply best practices and proven solutions, reducing risks and increasing efficiency. Implementing a new application can be complex and time consuming. External staff who have previously worked with similar applications can be more helpful. Leveraging the prior knowledge of external staff accelerates workflows, reduces the likelihood of errors and facilitates a smoother transition. Their specialized expertise enables tasks to be completed more efficiently. In addition, their exposure to diverse projects allows them to introduce innovative ideas and strategies that internal teams may overlook.

4.2.2 Vendor and Market Dynamics

Sourcing decisions are influenced by vendor characteristics and external market dynamics. These factors determine the quality of potential sourcing partnerships and strategies required for effective management.

The choice of work location and contract type is closely tied to ***vendor selection.*** Each tribe within the bank has selected two to three vendors from the eight RAISE partners and primarily collaborates with these preferred vendors. These selections influence both the available sourcing locations and the appropriate contract types. Vendor work locations shape sourcing strategies. For instance, tribes that partner with RAISE vendors offering only nearshore staff typically opt for nearshore sourcing. In contrast, tribes working with vendors that provide both nearshore and offshore options are more inclined to consider offshore sourcing. Vendors offering a combination of both nearshore and offshore staffing are often preferred, as they provide greater flexibility and allowing work to start nearshore and later transition offshore once projects become more stable and clearly defined. SOW contracts are used with trusted vendors, since these contracts place control and responsibility of deliverables at the vendor. Working with vendors outside of the RAISE partners is possible but not preferred, as it introduces additional challenges such as increased managerial oversight and the need for extra risk assessments.

Vendor maturity is a key selection criterion that helps identify the most suitable vendor and significantly influences the success of the collaboration. The bank fosters a foundation of trust by building long-term relationships with vendors. Through these relationships, the bank gains a deeper understanding of the vendor’s capabilities, which strengthens collaboration and leads to improved outcomes. Trust becomes especially critical in the context of SOW contracts, where a degree of control over deliverables is delegated to the vendor. Such contracts are only implemented when the vendor has demonstrated reliability and maturity. A mature vendor is one that delivers on expectations. When maturity is established, offshore sourcing can be scaled more confidently, as hiring managers are more willing to delegate responsibilities. This trust is often supported by measurable performance indicators, such as the Net Promoting Score (NPS) survey, a quarterly evaluation completed by hiring managers. Vendors who score highly in these assessments tend to deliver better quality and are therefore more likely to be selected for future projects.

Skill scarcity is a market dynamic to consider in sourcing decisions. When specific skills are scarce, it limits the available options for work location and contract type, and often leads to higher prices for staff with this expertise. Tribes managing applications that require rare or specialized skills tend to use onsite staffing, as finding the right fit is challenging and such expertise is more likely to be available onsite. In these cases, internal or offshore sourcing may not be viable due to the difficulty in identifying and securing the required skills. On the other hand, tribes seeking staff with more commonly available skills,

such as Python development, face fewer constraints. These roles can be more easily filled through offshore or nearshore solutions, where cost-effective and scalable options are widely accessible.

4.2.3 Practical and Operational Constraints

Practical and operational constraints define the context within which sourcing decisions are made. These constraints influence both the feasibility and the smooth execution of outsourcing arrangements.

First, the ***contract length*** plays a role in sourcing decisions, particularly in determining the appropriate contract type. The contracts durations are divided into three categories, short-term, mid-term and long-term:

- *Short-term contracts (up to 3 months):* These are best suited for onsite staff augmentation, as the time required to search and onboard candidates is minimal. In contrast, onboarding offsite or internal staff typically takes longer, making them less practical for short-term needs. SOW contracts are generally not ideal for short-term projects due to their short duration. Instead, staff augmentation or teaming models are preferred.
- *Mid-term contracts (3 to 12 months):* These are commonly associated with "change the bank" projects. Teaming contracts are suited for mid-term projects, although they require more initial managerial effort to establish a functional team. SOW contracts are less convenient in this context, as they take time to set up and may not align well with the timeline of the project.
- *Long-term contracts (over 12 months):* Suited for "run the bank" activities where continuity and stability are essential. In these cases, SOW agreements are appropriate, as the extended duration allows teams to establish efficient workflows and focus on output-based objectives.

Secondly, ***high-risk*** projects require careful management to ensure successful outcomes. These projects often involve tasks where errors could have serious consequences for the bank. In such cases, internal or onsite staff are typically preferred, as they offer greater control, closer oversight and more seamless collaboration. When vendors are involved in high-risk projects, the performance and reliability of their staff become essential. Vendors must have shown a strong track record of providing quality and dependable staff, which is assessed through vendor performance metrics and insights from previous collaborations. The vendor has to assure that the staff is both competent and trustworthy to mitigate risk and safeguarding the integrity of the project.

Another consideration is related to projects with ***strict deadlines***. They require efficient sourcing strategies to ensure timely completion. In such situations, there may not be enough time to search for an offsite team or conduct the screening and onboarding process for internal staff. The time needed to set up an offsite team can delay the project start, increasing the risk of missing deadlines. Onsite sourcing is preferred for this type of projects, despite being more costly. Onsite teams can begin work immediately, offering an important advantage that outweighs the higher expense. Their efficiency and ability to meet deadlines make onsite sourcing the most appropriate choice for projects with strict time constraints.

Stakeholder preferences also impact sourcing decisions. Some stakeholders prefer onsite staff, as they find in person collaboration more effective and convenient compared to remote communication. This preference can lead to higher onsite ratios, despite being less cost-effective. The same applies to vendors who are favoured due to positive past experiences. For instance, a vendor that primarily operates onsite or nearshore may be preferred. This reduces the likelihood of offshore and SOW contracts. Some stakeholders may find it difficult to hand over oversight to vendors, opting instead for staff augmentation instead of SOW contracts. This approach can limit the benefits of SOW contracts, which are designed to focus on deliverables rather than direct supervision. The sourcing strategies across tribes also play a role. Some tribes prioritize cost-efficiency and favour offshore solutions, while others value control and collaboration, leading to higher onsite or nearshore ratios. This results in variations in sourcing decisions, emphasizing the need to align preferences with broader strategic goals.

Cultural fit is another consideration in sourcing. While it could be influencing the sourcing decision, it remains challenging to quantify due to its subjective nature. One of the factors influencing cultural fit is location, which affects how teams interact and collaborate. Cultural differences emerge in areas such as communication styles and levels of independence. Cultural alignment also influences the choice of contract type. Projects that are clearly defined and require minimal interaction are generally suited for offshore execution. Roles that demand frequent collaboration and interpersonal engagement are often handled nearshore or onsite, where cultural alignment supports teamwork.

Time zone differences pose challenges in teamwork and collaboration. Non-overlapping work hours can result in delayed communication and decision-making. This increases inefficiencies and waiting times, especially in projects requiring frequent stakeholder interaction. Similar working hours reduce these inefficiencies, leading to faster and more effective communication. Offshore sourcing is preferred for project with minimal communication needs, whereas nearshore sourcing works well for roles requiring closer stakeholder collaboration. SOW contracts help overcome time zone barriers, as they focus on deliverables rather than constant interaction. Staff augmentation and teaming contracts are more impacted by time zone differences, as they rely more on collaboration.

Geographical distribution of offsite teams presents challenges for effective management. When teams are spread across multiple countries or even across various locations within a single country ensuring smooth communication and coordination becomes complex. These challenges have direct implications for sourcing strategies and operational decisions. Tech leads could be required to travel to offsite locations to maintain oversight, either annually or as needed. Managing these visits can be logistically demanding. Therefore, vendor locations should be a consideration in sourcing decisions. This facilitates easier travel and reduces complexity. The bank should prioritize limiting the number of distinct offsite locations, optimize resource allocation and improve project oversight. Consolidating locations not only streamlines travel planning but also contributes to more effective team management and collaboration across distributed teams.

Lastly, the ***workforce structure*** plays a role. Staff can be divided into three experience levels, namely seniors, mediors and juniors. Maintaining a balanced diamond-shaped[12] staff composition is important in sourcing decisions.

- *Juniors* are less experienced but bring fresh perspectives. They provide an opportunity for growth, as they can be trained and guided to progress into medior roles.
- *Mediors* form the core of the team, possessing most knowledge and experience, making them the primary drivers of project execution and continuity.
- *Seniors* provide leadership and specialized expertise, ensuring strategic direction for the team.

The bank can optimize cost and capabilities by focusing on a balanced distribution. Limiting the number of seniors helps manage expenses, while investing in junior staff development ensures workforce continuity and long-term success.

4.2.4 Risk Factors

The bank encounters four primary risks that require careful attention when outsourcing, as identified through interviews. These risks are as followed:

- *Compliance risk:* Regulatory requirements such as GDPR, internal risk assessments and other compliance obligations must be observed. The bank avoids outsourcing critical applications to protect sensitive data and especially client-related information. Location plays a role in outsourcing decisions, as offshore handling of sensitive data is generally avoided, while nearshore solutions may be considered depending on the data type. However, internal or onsite

[12] *Diamond-shaped workforce* structure means having fewer juniors and seniors but a larger proportion of mediors, resulting in effective team dynamics and project success.

sourcing remains the preferred approach. SOW contracts are typically avoided in these cases to maintain direct control over project execution.

- *Vendor dependency:* Relying on a single vendor introduces risk of over-reliance. The bank tries to avoid this by ensuring no single vendor dominates a specific technology domain, application or area of expertise. Vendor diversification is a strategy to mitigate this risk, promoting competition and encouraging vendors to maintain service quality and competitive pricing.
- *Geopolitical risk:* Recent global events have underscored the vulnerabilities of depending on a country for services. Political instability, regulatory changes or other disruptions can impact operations and make continued collaboration unfeasible. For instance, such risks have affected relationships with teams in countries like India. The bank diversifies across multiple countries and implements measures to manage geopolitical uncertainty.
- *Risk of losing control:* Outsourcing through SOW contracts can reduce the bank's influence over project execution, as deliverables are predefined and output-focused. This creates a risk of losing control over quality and direction. The bank ensures that KPIs and deliverables in SOW contracts are clearly defined and measurable to address this. Additionally, strategic competencies are retained internally to preserve oversight and maintain control over these projects.

4.2.5 Differences between Tech Divisions

Tribes are expected to align sourcing practices with the overarching IT sourcing strategy of the bank. This strategy provides a consistent foundation across the tribes of the bank. The final sourcing mix varies between the tech divisions and tribes. Apart from the inconsistencies in decision-making factors. These variations reflect the unique characteristics of each division, such as the nature of their applications, the required expertise and operational needs. Sourcing decisions are tailored to fit the specific context of each tribe while remaining aligned with the broader strategic objectives.

- *Application type:* Each tech division manages projects with distinct applications and expertise requirements, which shape the sourcing mix. These differences are mainly driven by the origin of the tribe and the nature of its work.
- *Vendor selection:* Tribes have different preferred vendors, typically two or three RAISE vendors, influencing contract types and sourcing locations. High-performing offshore vendors are essential to ensure successful offshoring while mitigating associated risks. Vendor selection plays a role in shaping the sourcing mix and requires careful evaluation.
- *Budget:* Budget allocations vary across tribes, directly impacting sourcing decisions. Tribes with proportionally larger budgets often favour more expensive onsite options. A decision tree can help optimize this process by encouraging cost-effective choices tailored to each role.
- *Stakeholder preferences:* The preferences of tech leads influence sourcing decisions. The decision tree can ensure consistent sourcing choices across divisions, guiding teams toward aligned sourcing strategies in comparable situations.

The interview findings reveal no significant differences in decision-making factors or criteria across divisions. Sourcing mix variations arise primary from differences in application type and expertise required, which is related to the origins of each tech division. Vendor selection impacts the sourcing mix as well. Other differences result from variations in stakeholder preferences and budget allocations. These factors will be addressed with the implementation of a decision tree. Since most decision-making factors and criteria remain consistent across divisions, a generalizable decision tree can standardize and optimize sourcing decisions, ensuring alignment across all tech divisions. A summary of the interview findings across the divisions can be find in Appendix B2.

4.2.6 Comparison of Interview and Literature Insights

The comparison between insights from interviews and literature reviews reveals both common themes and distinctions. Both research methods support factors and criteria related to costs, strategic alignment,

risk considerations, technology and vendor capabilities but they differ in scope and level of abstraction. Interviews place greater emphasis on context specific and operational factors, focusing on practical considerations. These insights are more experience-based, highlighting factors that are more difficult to identify in literature. The literature provides a broader and more theoretical perspective on the other hand. Emphasizing more on strategic and long-term considerations and generalizability across organizations. This approach offers a macro level understanding of sourcing decisions, while it may lack the specificity required for individual organizational contexts. These differences are depicted in Table 4.1 and 4.2 and stem from the distinct nature of the two research methods. It becomes possible to develop a comprehensive and balanced decision tree by integrating both approaches. This combination ensures a strong foundation for informed decision-making.

Unique Factors in Literature Findings
Improve quality of service, Enhance customer support
Take competitive advantage, Respond to competitive pressure
Staff resistance
Minimizing obsolescence risk

***Table 4.1**: Key findings identified exclusively in literature.*

Unique Factors in Interview Findings
Application maturity
Stakeholder preferences
Contract duration
Time constraints
Geographical distribution
Workforce structure

***Table 4.2**: Key findings identified exclusively in interviews.*

Table 4.2 presents findings from the interviews that are not explicitly mentioned in the literature. One factor is application maturity, which plays a role in hiring decisions within the bank's specific context. Some staff members are hired to support mature and more operational applications, while others are recruited for applications still in the innovation phase. This distinction is important to consider when making hiring decisions, though it is not prominently addressed in existing literature. Another factor identified in the interviews is stakeholder preference. Hiring managers may make sourcing decisions based on personal preferences, such as choosing onsite staff for easier collaboration and communication, rather than offsite employees who face challenges like time zone differences. Contract duration also influences sourcing decisions. Short-term contracts are often impractical for offsite outsourcing due to the time-intensive process of recruitment and onboarding. This factor is not widely discussed in literature, likely because it is specific to the bank's internal processes and the time required to fulfil various roles. Similarly, time constraints are highly context-dependent. For projects with strict deadlines, sourcing strategies differ compared to those for more flexible projects. Geographical distribution has become an increasingly significant factor in recent years, especially due to the rising global instability driven by political tensions and ongoing conflicts. The workforce structure is another consideration for the bank, ensuring a steady flow of staff. This is not directly linked to sourcing performance, but it remains a factor for the bank to take into account when sourcing. Overall, these factors are though not explicitly covered in literature but are vital in the development of the decision tree mainly due to their context-specific and experience-driven nature.

4.3 Data Analysis

This research analyses historical data to support and enhance decision-making in the IT sourcing process. The analysis will be performed on a sample dataset covering the period from January 2024 to February 2025 (14 months). Each month presents data that shows the current sourcing mix. A broader trend can be observed by analysing multiple months. The average number of FTEs is used to show the sourcing mix. The objective of this analysis is to identify patterns, trends and relationships between

variables, which could help reduce sourcing expenses and optimize sourcing decisions. This quantitative analysis complements insights obtained from the interviews and literature and contributes to the development of a practical decision tree.

The dataset consists of 153,096 rows and captures sourcing decisions across the CITO department. The dataset is fully anonymized prior to analysis to comply with privacy and internal data policies. All personal identifiable information, including names and work identification numbers, are excluded. The dataset includes the following variables:

- *Date:* The reporting month and year of each sourcing record.
- *Office level:* The data is organized according to various divisions within CITO and for this analysis filtered across the four primary tech divisions. Additional categorization and filtering can be applied at the tribe level to allow for more detailed analysis.
- *Worker type:* This specifies whether the person is an employee (internal staff), contingent worker (external staff), or someone engaged under a SOW contract.
- *Job family:* A high level grouping of job functions, such as architects or business analysts.
- *Work location:* This indicates where the work is performed either onsite, offsite, "*detavast*"[13] or unspecified external locations.
- *Supplier:* The vendor responsible for supplying external staff.
- *Strategic partner*: A binary variable identifying whether the supplier is a RAISE vendor or not.
- *Job:* The specific job title of the worker.
- *Job level:* This indicates the worker seniority, categorized from A (low salary scale) to F (high salary scale).
- *FTE:* The number of full-time equivalents represents the staffing levels and illustrates demand over time. One FTE corresponds to a contract of 36 hours.

The process filters and cleans the data before analysis to ensure consistency and remove irrelevant entries. This refined dataset forms the basis for structured historical data analysis. The following steps take place:

- *Filtering:* The data is filtered to align with the scope of this research, including only records from the four main tech divisions (9,428 records excluded). Work location data is further refined to include only relevant locations within the scope of the research. Irrelevant records, including "detavast" and unspecified external entries, are excluded (1,174 records excluded).
- *Missing values:* Records with missing information are removed (1,751 records excluded).
- *Standardize formats:* The date field is standardized to allow chronological filtering. Categorical variables are adjusted to group similar entries under unified labels, focussing on eliminating spelling variations and format inconsistencies.
- *Remove duplicates:* Duplicates within the same month are removed to maintain consistency in the dataset (0 duplicates identified).

4.4 Key Findings of Data Analysis

The analysis provides an examination of the sourcing mix by contract type and work location, offering insights into sourcing mix across the different tech divisions. The focus is placed on comparing the utilization of RAISE vendors versus other vendors, emphasizing their role in outsourcing and cost-efficiency. Appendix D presents a detailed visual representation of the findings through various graphs, illustrating trends in vendor usage, job family distribution, and workforce structures.

[13] "*Detavast"* refers to a temporary onsite contract with the possibility of transitioning into a permanent internal contract.

The current sourcing mix illustrated in Figure 4.1. The analysis highlights the ratios of internal and external employees and identifies deviations. Comparing tech divisions based on contract type and work location provides insights into current trends and variations. Most divisions maintain a relatively even ratio between internal and external employees, except for W&R Tech. This division has only half as many external staff compared to internal employees. This variance may be attributed to the substantial share of SOW contracts within W&R Tech. The preference for SOW contracts potentially results from stakeholder preferences and established relationships with reliable vendors. This approach is cost-efficient, as a substantial percentage of SOW contracts are offsite, reducing dependence on onsite staff.

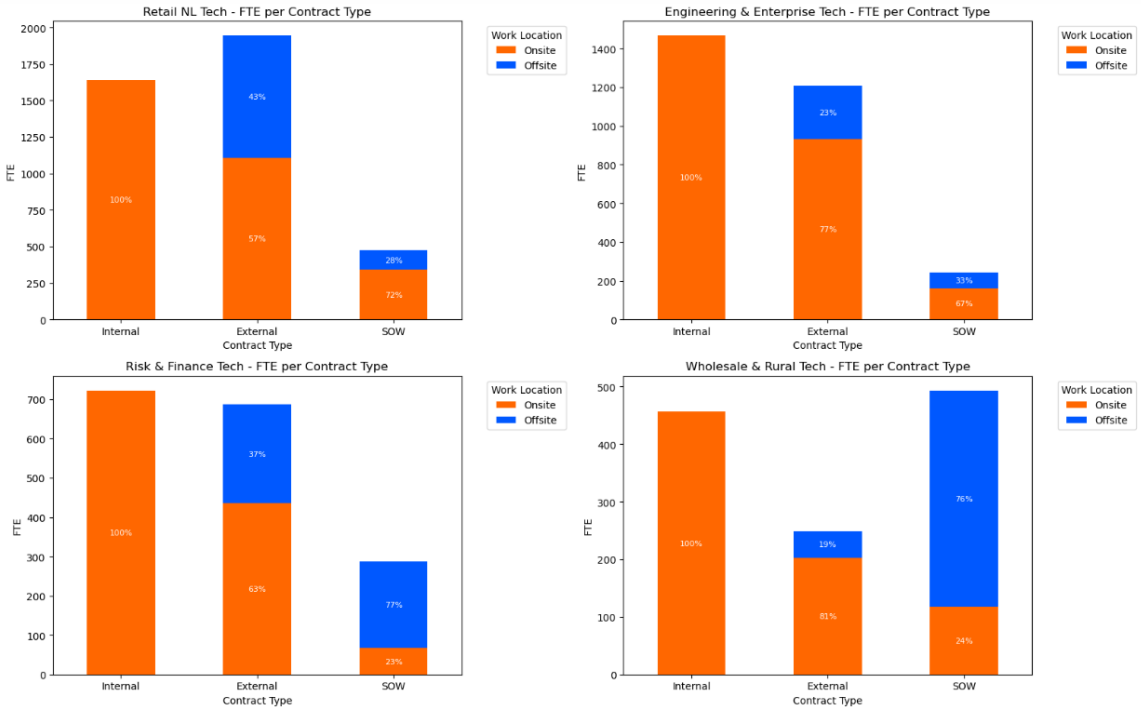

***Figure 4.1**: Average sourcing mix across tech divisions (January 2024 – February 2025, n=140,743)*

Another observation of Figure 4.1 is that within RNL Tech 43% of external employees operates offsite, which is more than other divisions. This sourcing mix aligns with the banks objectives and potentially suggests a shift toward cost-efficient sourcing. Increasing the number of offsite employees, especially under SOW contracts, and reduce the number of expensive onsite externals. Some divisions are progressing further in this direction than others.

In addition to analysing the sourcing mix, an examination of vendor utilization has been conducted. The data reveals a distinction between vendor usage at onsite and offsite locations. The analysis demonstrates that RAISE partners are more frequently utilized for offsite work locations. These partners should potentially be prioritized over other vendors according to the general IT sourcing strategy. At onsite locations, 44% of outsourcing is handled by RAISE vendors. This is lower than the rate observed for the offsite locations, where on average 82% of outsourcing is done through RAISE vendors. External staff at offsite locations is outsourced through RAISE vendors at an even higher rate of 92%. Offsite outsourcing is associated with risk and is well-managed by RAISE vendors due to closely monitored performance and adherence to contractual agreements.

Further analysis of vendor utilization provides insights into the distribution of FTEs sourced from each vendor. The specific vendor names have been left out due to confidentiality. Two non-RAISE vendors account for a substantial amount of FTEs. The reliance on these non-RAISE vendors contradicts with

the general IT sourcing strategy of the bank. This requires attention in the development of a decision tree to ensure alignment with the overall IT sourcing objectives and cost minimization.

The FTE distribution across job families provides insights into the sourcing strategies. The six largest job families account for 78% of the total FTE distribution. In total, there are twenty-nine different job families. An analysis of the division between external and internal staff as well as onsite and offsite work by job family offers further insights. The Dev Ops Engineer is the most common job family, accounting for 46% of the total FTE. Data analysis indicates that niche job families are typically staffed internally, while larger and more widespread job families are increasingly outsourced. Key observations include:

- Dev Ops Engineers have a high percentage of external staff, namely 62%. Dev Ops Engineers focus on the development of IT operations, automation of tasks and ensuring faster, more reliable software deployment. The percentage of external staff aligns with interview findings, which indicate that these roles are often classified under "run the bank" functions and are more easily outsourced.
- Scrum Masters show a substantial percentage of external staff. A Scrum Master facilitates agile processes, removes obstacles and ensures effective collaboration. Interviews suggest that having an external Scrum Master provides an outside perspective on team dynamics and processes, which aligns with the observed outcomes.
- Architects are responsible for designing system structures and making high level decisions about software architectures. They are typically retained internal due to their role in shaping long term strategy of the bank. A shortage of architects has led to the inclusion of some external Architects, as reflected in the 24% external staff.

An analysis of work location supports these findings. Most job families primary work onsite, but DevOps Engineers stand out, with 27% of their tasks performed offsite. This aligns with the operational nature of the role, making it suited for outsourcing. In contrast, architects largely work onsite, reflecting a strategic choice to keep these roles internal. External architects hired due to shortages remain onsite to ensure oversight and maintain quality output.

The analysis of job levels across tech divisions provides additional insights into the workforce structure. SOW job levels are excluded from the analysis, as SOW contracts do not contain information on specific job levels. The data reveals that E&E Tech, RNL Tech, and R&F Tech exhibit a diamond-shaped workforce structure, reflecting a balanced mix of junior, medior, and senior roles. W&R Tech deviates from this structure, as it has a substantial share of both A-level and D-level roles. Interview data suggests that the high number of D-level roles is due to the use of niche application, where specific technical expertise is rare and expensive. The higher proportion of A-level roles lacks a clear explanation but does not indicate an issue, as lower job levels may contribute to greater cost-efficiency.

4.5 Conclusion

This chapter integrates both qualitative and quantitative insights. The interviews identify key factors and criteria influencing the sourcing decision, along with associated risks. This forms a set of practical and theoretical knowledge that is considered in the development of the decision tree. The data analysis further enriches this understanding by focusing on the current sourcing mix and the vendors. The examination of job families and job levels provide background knowledge for the tree its development. The data analysis is used mainly for assessing the current sourcing mix and its associated costs, enriching the potential for a cost analysis. The decision tree serves as a tool for hiring managers, guiding them toward a more cost-efficient sourcing mix. The data analysis identifies the current sourcing mix, enhancing the potential for benchmarking and refinement to improve cost-effectiveness. Chapter six provides a more detailed explanation of this process. Implementing the decision tree supports this transition, fostering a structured and more cost-efficient sourcing strategy.

Chapter 5: Results

This chapter elaborates on the decision support approach in the form of a decision tree. The identified and structured nodes follow a logical order based on the information from literature, interviews and data analysis. The objective of the decision tree is to ensure that sourcing decisions should prioritize cost-efficiency whenever they align with the scope of the work. This principle guides the design of the decision tree, ensuring that financial prudence remains a key consideration throughout its development. This chapter explains the decision tree along with the assumptions and simplifications made.

5.1 Decision Logic and Key Nodes

This research identifies several recurring decision factors and criteria through interviews and literature, which are considered in sourcing decisions. These are converted into nodes within a decision tree with the aim to including the decision logic of the hiring managers. Multiple versions of the decision tree have been developed and tested with hiring managers to gather feedback. This process helped refine the decision tree, ensuring the effectiveness and usability. The development of the tree focuses on which decisions have to be made in order to reduce costs. The decision tree steers the hiring manager toward the most cost-efficient option that remains aligned with strategy and regulations, while ensuring core competencies are preserved and high staff quality is maintained

The initial node of the decision tree distinguishes between application categories using the Gartner Pace-Layered Application strategy. This approach helps the bank structure application classification based on the rate of change and business impact across different system types (Gartner, 2017). The categories include system of innovation, system of differentiation, system of records and platform systems. This framework provides support for understanding applications and determining the most suitable work location and contract type. An additional sheet provides clear definitions and key characteristics to support the selection of the appropriate Gartner type. The hiring manager can retrieve this extra sheet by clicking on the node.

Other nodes in the decision tree highlight restrictions that shape sourcing decisions. One factor is skill availability. If a certain expertise is scarce and only accessible at a single viable work location, that location becomes the restricted choice. This is often the case with highly specialized skills. Time constraints also play a decisive role. If there is a strict deadline, offshore collaboration is time-consuming, making onsite options the preferred choice for securing timely completion. These fundamental constraints define practical limitations and available alternatives. An extra sheet in the decision tree to provide additional support, includes job families related to business intimacy and skill scarcity. The hiring manager can retrieve this sheet by clicking on the node. These additional information is based on interviews and data analysis. Job families with a high potential for business intimacy tend to have a significantly high percentage of internal staff, supported by interview comments indicating they are kept in-house. The same applies to scarcity of skills. These job families have a notably low proportion of offsite staff, reinforced by interview insights on the limited availability of such expertise.

Another set of nodes in the decision tree emphasizes the type of application. Risk, compliance and complexity must be considered to determine the most suitable and cost-effective contract type and work location. These factors further ensure a higher likelihood of maintaining quality and allow for greater influence when required. An extra sheet in the decision tree provides guidance for the hiring manager with additional questions to assess whether an application is linked to risk, compliance or complexity. This sheet can be accessed when extra guidance is needed to answer the node.

5.2 Structure and Final Recommendations

The decision tree consists of a series of structured decision points. These points emphasize the process of finding a suitable candidate to fill a specific vacancy and guide the hiring manager toward the

recommended contract type and work location. The job type and application type are known before using the decision tree providing the context. The questions in the decision tree nodes are based on this context and following the framework will lead to a final recommendation. The flow of the decision-making process is structured using binary and categorical variables. Figure 5.1 provides a visual representation of the decision tree. Further details on the decision tree are provided in Appendix E. The final recommendation nodes are internal staff, onsite/nearshore staff augmentation, offsite teaming, offshore SOW and offshore teaming:

- Internal staff is prioritized for projects where, according to the banks strategy, intellectual property must be retained. While the bank aims for internal employees, it also recognizes the value of flexibility and specialized skills, striving to balance internal expertise with adaptability.
- Onsite or nearshore staff augmentation is chosen when direct control over a project is necessary. This is the highest-cost option and is recommended for projects with strict time constraints, high risks, compliance requirements or significant complexity. The hiring manager must determine whether onsite or nearshore staff is required. Nearshore staff is preferred, with onsite staff engaged as needed.
- Offsite teaming contracts are used for projects that do not meet the criteria for staff augmentation, implying the work is less critical and can be managed offsite. The bank still prefers to maintain a degree of oversight, leading to the selection of a teaming contract.
- Offshore SOWs are designated for projects where direct control is unnecessary. These typically involve operational tasks related to running the bank. Control is not required for such projects as they are not considered critical, and do not involve strict deadlines, high risks or compliance requirements.

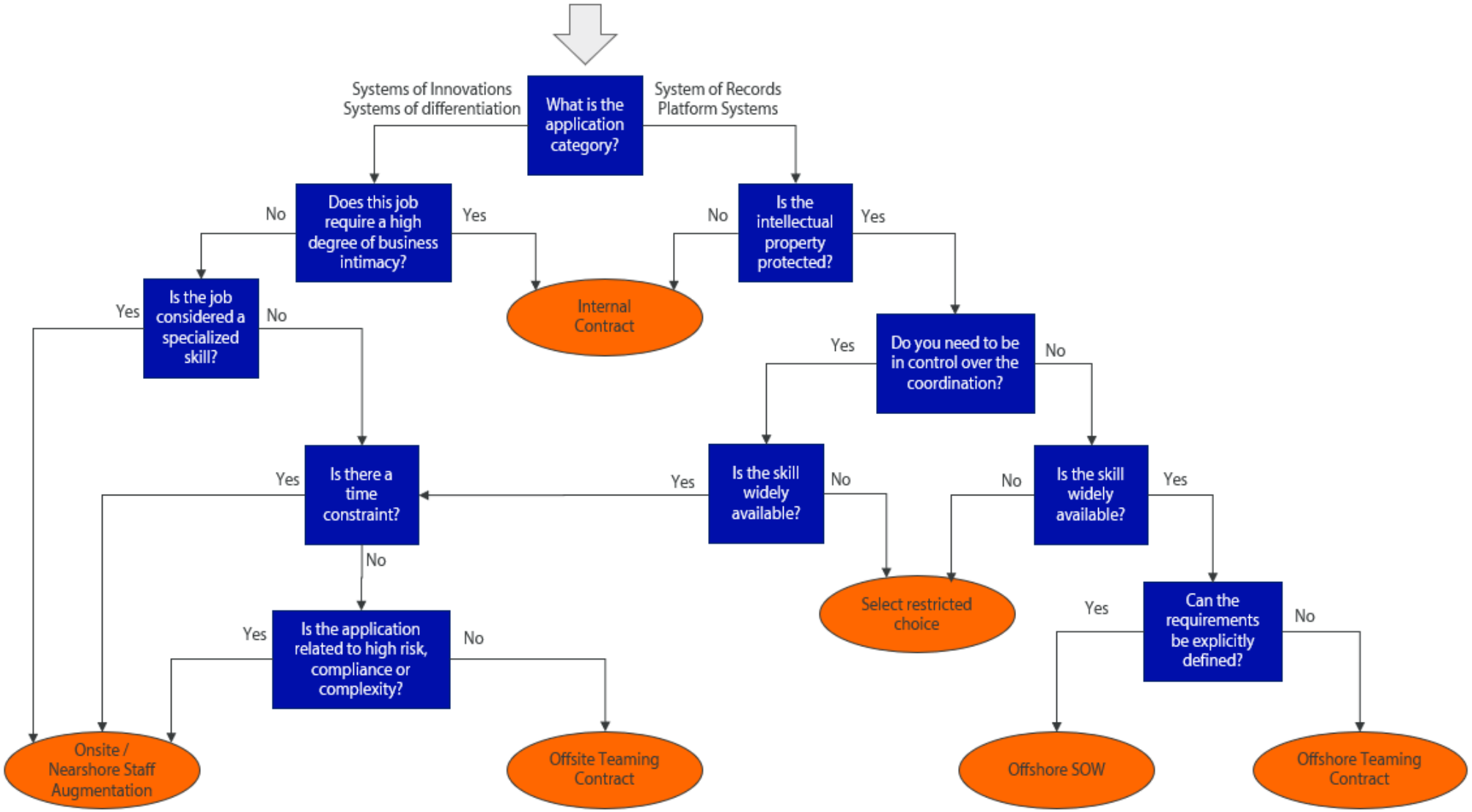

Figure 5.1: *IT staff sourcing decision tree*

5.3 Assumptions

Various assumptions maintain the clarity and usability of the decision tree. These assumptions define the boundary conditions and influence the following aspects:

- Quality assurance is assumed in all sourcing decisions. If staff fail to meet performance standards, inefficiencies, delays, and increased overhead costs may occur. Incorporating quality into the decision-making framework ensures cost-efficiency and supports long-term performance and operational effectiveness.
- Cost-efficiency is prioritized, regardless of budget availability. Hiring managers are expected to choose the most economical option in line with the decision tree's recommendations. More convenient but costly alternatives should not be selected, even when budgets allow. Personal preferences in work arrangements are excluded from the decision-making process.
- Compliance with regulations is assumed. This includes limiting freelancer contracts to a maximum of two years and ensuring bill rates do not exceed the predetermined salary tariff by more than 10%. Rate card tariffs agreed with RAISE vendors must be applied, with no exceptions.
- Scope and requirements are clearly defined before making sourcing decisions. A well-defined sourcing need supports the selection of the most appropriate option using the decision tree. An unclear scope may lead to decisions that misalign with project deliverables, causing inefficiencies in cost and resource allocation.
- The sourcing context is dynamic and evolving. Additional relevant factors—beyond those explicitly included in the model, may influence decisions and should be considered. As applications mature, sourcing mixes require reassessment.
- The decision tree serves as a flexible guide, not a rigid framework. Users should apply it with discretion, recognizing that it may not capture every nuance of real-world decision-making.

These assumptions create the conditions under which the decision tree can be used as guidance and provides practical value. These conditions have to be taken into account to ensure the reliability of the outcome of the recommendation.

5.4 Simplifications

The decision tree incorporates several simplifications to ensure practicality and interpretability. These adjustments enhance usability for hiring managers by removing unnecessary complexity, while maintaining broad applicability across various tech divisions. The key simplifications include:

- To maintain general applicability, the decision tree omits certain risks and factors that may be relevant in specific cases. The factors are excluded to preserve the decision tree's practicality and clarity while these elements can be important.
- This research examines three location types and four contract types. The decision tree consolidates these into four final combinations for simplicity. Similar options influenced by comparable conditions are grouped together, while rarely used combinations, such as offsite staff augmentation are excluded. Recommendations may include multiple options, for example, offsite encompasses both nearshore and offshore. The most cost-effective location is considered first, with alternatives evaluated if the preferred option is not feasible. Similarly, onsite and nearshore staff augmentation are grouped, with nearshore preferred for strategic and cost-efficiency reasons unless impractical, in which case onsite is selected.
- Simplification of SOW contract dynamics. Offsite SOW contracts focus on outcome-based delivery and often follow a hybrid model that includes onsite or internal staff for oversight. This setup improves communication and bridges gaps between vendors and the bank. The effectiveness of SOW contracts increases when supported by strong vendor governance

frameworks, which aid in issue resolution and quality control. These dynamics are simplified and not explicitly represented in the decision tree.

5.5 Generalizability

The core structure of the decision tree is standardized, making it applicable across various tech divisions. It captures general decision-making patterns related to contract types and work locations, while incorporating cost considerations. The model is flexible enough to be implemented in broader contexts, effectively guiding sourcing decisions across different divisions and promoting alignment among teams. Its adaptability also makes it relevant for other organizations operating in similar financial environments. This flexibility and generalizability extend its usefulness beyond the tech divisions of the bank. However, certain nuances must be taken into account, which are further discussed in the limitations section of this research..

5.6 Conclusion

This chapter presents the final decision tree, developed based on insights from interviews, literature, and data analysis. An optimized version of the tree was established after gathering feedback. The key nodes within the decision tree focus on Gartner's application classification, various restrictions and application-specific considerations. Answering the questions leads to final recommendations, including internal staff, onsite/nearshore staff augmentation, offsite teaming, offshore SOW, and offshore teaming. Clarity and usability is assured by certain assumptions and simplifications. The decision tree operates under the assumptions related to prioritizing cost-efficiency, maintaining high-quality sourcing, adhering to compliance regulations, ensuring a well-defined scope and adapting to an evolving context. The decision tree incorporates several simplifications, including the generalization of SOW contracts, the consolidation of the most impactful variables, and the exclusion of uncommon or impractical options to improve usability. Finally, the generalizability of the decision tree could extends beyond the bank’s tech divisions and can be applied to other financial organizations with similar IT operations.

Chapter 6: Cost Analysis

Tech divisions work each with different applications that require a tailored sourcing strategy. A target sourcing mix is determined by analysing the type of applications. This research categorizes the applications into four groups based on Gartner's Pace-Layered Application Strategy (Gartner, 2017). The classification is based on an analysis of available application data. According to the Gartner model, each category can be defined by specific characteristics, allowing for an estimation of the distribution of FTEs related to the bank's applications across these categories. In this chapter the classification of the bank's applications is estimated and connected to staff ratios. This provides insights into a sourcing mix distributions per application category based on their accompanying characteristics. The estimation of the sourcing mix for each category enables a calculation of potential cost savings.

6.1 Gartner Model

The Gartner Pace-Layered Application Strategy divides the applications into four categories, namely system of innovation, system of differentiation, system of records and platforms systems. This serves as a framework for categorizing applications and offers a structured approach to understanding the types of applications used. This model establishes a distinction, enabling to propose an allocation of staff to each category of applications. Benefits from this classification are that cost considerations will align more effectively with business objectives. Table 6.1 provides several characteristics per Gartner application category. The Gartner definitions of the four categories are:

- *Systems of innovation:* New systems built on an ad hoc basis to address emerging requirements or opportunities. These are typically short life cycle projects (0 to 12 months). If successful, they evolve into systems of differentiation.
- *Systems of differentiation*: Systems designed for unique business processes or industry-specific operations. They have a medium life cycle (1 to 3 years) and must be regularly reconfigured to accommodate changing business practices or customer requirements. Over time, they may become systems of record.
- *Systems of record*: Existing systems (either purchased or internal-developed) that support core transaction processing and manage the bank's critical data. The rate of change is slow, as these processes are well established and common across organizations, often subject to regulatory requirements.
- *Platform systems:* Components that enable or host the innovation, differentiation and record systems. These are the technical building blocks.

Characteristics	**System of Innovation**	**System of Differentiation**	**System of Record**
Rate of change	Rapid	Steady	Slow
Architecture	Alternate platforms	Alternate platforms	Traditional
Funding	Investment	Departmental	Capital process
Development	Agile	Incremental and Iterative	Waterfall
Collaboration	Doing the work	Part of the team	Formal process
Time horizon	0 – 12 months	1 – 3 years	7+ years

***Table 6.1**: Key characteristics of Gartner Pace-Layered Application Strategy (Gartner, 2017)*

6.1.1 Application Classification through Data Analysis

The available data on applications provides an overview of all the applications utilized by the bank. These applications can be linked to tech divisions and analysed in relation to the number of employees working within each division. The dataset includes details on application status, deployment model, year of creation, and priority level. The figures in Appendix F support the conclusions drawn in this section. An estimation based on these insights is made regarding the distribution of applications across the categories defined in the Gartner model.

The analysis provides insights into the status of the applications, which can be categorized as phasing out, pilot, production, test, or in the planned/on-order phase. A proportion of applications fall into the planned, test, and pilot phases, collectively suggesting to represent the systems of innovation category. This accounts for 13% of the total applications. The majority of applications, 84%, are in the production phase, suggesting that these are distributed across the other categories within the Gartner model.

Another insight highlights the relationship between applications and the deployment model. Infrastructure services and cloud infrastructure services account for 12% of the total applications, suggesting the classification within the platform systems category. Applications with as deployment model, client based applications, prioritize customer requirements and suggest to align more closely with the systems of differentiation category.

The classification of an application is closely linked to the maturity level. Systems of innovation are defined as the applications with the shortest maturity, typically less than one year. They represent 12% of the applications in the dataset. Systems of differentiation are generally characterized by a maturity range of one to three years, accounting for approximately 26% of the applications. Systems exceeding a maturity of three years falls under either the systems of differentiation or the platform systems category.

Another factor considered in the analysis is the priority level of an application. The priority is determined based on the maximal tolerable period of disruption (MTPD), the degree of resolution and recovery (R&R) criticality, and whether the process it supporting or non-supporting. The bank uses this to estimate application priority, assigning lower priority to applications that can tolerate extended downtime while assigning higher priority for those that require minimal disruption. Table 6.2 provides an overview of the priority levels with the corresponding characteristics. Applications classified as systems of record are typically essential for core business functions and require often minimal disruption. These applications are more likely to fall within priority level one, although some less critical systems exhibit greater flexibility in downtime tolerance and are categorized under priority level three. The system of differentiation category provides applications with competitive advantages, placing them within priority level two. Other applications in this category are strategically important but can tolerate longer recovery times, aligning them with priority level five. Applications within the systems of innovation category generally have lower priority, as they are still in the development phase. These experimental applications are assigned lower priority levels due to their greater flexibility in downtime. The non-supporting functions are primarily associated with platform systems, which include priority level four applications. These infrastructure-related applications contribute to broader IT operations but are not directly critical to business processes. The significant number of applications falling into the rest category. This has to be considered carefully when interpreting the data.

Priority Level	Characteristics
1	Supporting R&R critical process, MTPD ≤ 8 hours
2	Supporting R&R essential process, MTPD ≤ 8 hours
3	Supporting R&R critical process, MTPD > 8 hours
4	Not supporting R&R critical or essential process, MTPD ≤ 8 hours
5	Supporting R&R essential process, MTPD > 8 hours
6	Rest (low priority applications)

Table 6.2: *Application priority levels and their defining characteristics (Internal Rabobank SharePoint, 2025).*

The analysis of various application characteristics including status, deployment models, maturity levels and priority distribution provide findings to understanding how applications align with systems of innovation, systems of differentiation, systems of record, or platform systems. The percentages of FTEs that work related to each category can be estimated based on this analysis together with insights from the interviews and literature.

- *Systems of innovation (10%):* This small percentage corresponds to the experimental applications, which are typically in the early development phase and have not generated significant business value yet. These applications explore emerging technologies without taking excessive risk.
- *Systems of differentiation (25%):* The percentage of applications that fall into this category are designed to enhance competitive advantages. Differentiation systems primarily focus on improving business processes and customer engagement, contributing to their strategic importance within the bank.
- *Systems of record (45%):* This category represents the largest share, as these applications are fundamental to core business functions. They could be tied to data management or compliance regulations, ensuring that essential banking operations run smoothly and efficiently.
- *Platform systems (20%):* These applications form the technological building blocks that enables other systems to function. The percentage is based on the infrastructure of the bank and need for robust support services.

The distribution of applications across these categories could help to identify cost reduction opportunities. Further improvements of the application classification could enhance accuracy. This will be explained more in dept in the further research section of this research.

6.2 Staff Distribution

The application classification supports cost analysis and offers insights into the sourcing mixes for each category. The sourcing ratios of internal, onsite, and offsite staff are estimated and determine a potential distribution of FTEs across the application categories. These ratios are based on interview insights and benchmarks in literature. This allocation could establishes sourcing ratios that potentially could improve cost-efficiency, while ensuring that the necessary staff quality is sourced for effective application management.

System of innovation: Staff working on innovation systems must collaborate closely with the business since these applications are still in the early development phase. The rapid pace of change in this category requires more specialized skills (Gartner, 2017). Banks generally have a small number of innovation applications, so the overall staff assigned to this category remains limited. A higher proportion of internal and onsite staff is necessary since innovation plays a role in long-term success and sustainability of the bank.

- 50% of the staff is estimated as internal. Innovation systems require a large proportion of internal employees to develop expertise in new technologies and safeguard internal knowledge (Deloitte, 2024).
- 40% of the staff is estimated as onsite. The high onsite ratio is necessary due to the niche expertise required for development and implementation. This allocation supports technological relevance in an evolving environment (Deloitte, 2024).
- 10% of the staff is estimated as offsite. A small portion of offsite staff is engaged primarily in handling basic support tasks, allowing intern and onsite staff to focus on business priorities (McKinsey, 2021).

System of differentiation: These applications strengthen the bank's competitive advantages and require a staff distribution to support flexibility while keeping business operations running. They are more mature than innovation systems, which reduces the need for internal expertise retention. The selected staff allocation keeps differentiation applications effective and responsive, while minimizing costs and maintaining competitive advantage.

- 40% of the staff is estimated as internal. This staff ensures that differentiation systems retain expertise and remain adaptable for ongoing development.

- 30% of the staff is estimated as onsite. Onsite staff contribute to specialized knowledge in niche areas, improving applications and strengthening functionalities (Gartner, 2017).
- 30% of the staff is estimated as offsite. Offsite staff manage standardized and maintenance tasks, improving efficiency. The well-defined requirements of this work makes them suitable for outsourcing (Deloitte, 2024).

System of record: These applications handle a large volume of core business functions that require stability (Gartner, 2017). The standardized structure makes offsite staffing a cost-effective choice for routine operations. Innovation in this category is minimal. Due to the essential role for the bank, these applications need a presence of internal and onsite staff to maintain reliability and operational continuity.

- 30% of the staff is estimated as internal. Internal employees provide oversight of core functions and ensure compliance with regulatory requirements (Gartner, 2017).
- 20% of the staff is estimated as onsite. A limited onsite presence is sufficient because system of record applications are standardized and require minimal direct intervention. Onsite staff is primarily needed for complex integrations and critical system updates that demand niche expertise.
- 50% of the staff is estimated as offsite. This share is allocated to this category because standardized tasks are typically outsourced to improve cost-efficiency, while routine maintenance and support can be effectively managed remotely (McKinsey, 2021).

Platform systems: These applications are highly standardized, making them suited for offshoring. They require a small proportion of internal and onsite staff to maintain system reliability. Offsite management, combined with these internal employees and onsite professionals, helps organizations reduce costs while ensuring continuous operation of foundational systems.

- 20% of the staff is estimated as internal. Internal employees focus on architecture planning and provide oversight where necessary to ensure operational efficiency (Gartner, 2017).
- 10% of the staff is estimated as onsite. Onsite staff offer niche expertise and facilitate smooth collaboration and support system integration.
- 70% of the staff is estimated as offsite. The largest share of offsite staff is assigned to platform systems, as outsourcing infrastructure and platform-related tasks to vendors improves cost-efficiency (Deloitte, 2024).

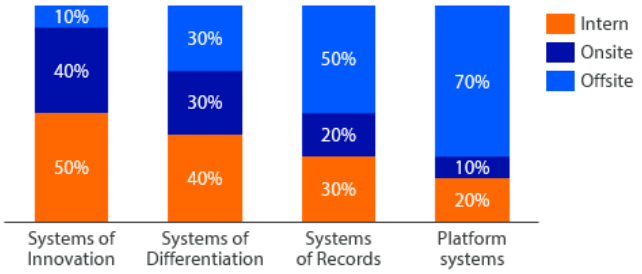

***Figure 6.1**:Suggested distribution across application categories and work locations*

Application Type (FTE %)	Internal	Onsite	Offsite
Systems of innovation (10%)	50%	40%	10%
Systems of differentiation (25%)	40%	30%	30%
Systems of records (45%)	30%	20%	50%
Systems of platform (20%)	20%	10%	70%
Weighted average	**33%**	**23%**	**45%**

***Table 1.3:** FTE distribution across application categories and work locations (Deloitte, 2025) (Gartner, 2017) (McKinsey, 2021).*

The weighted average of internal, onsite, and offsite percentages could function as a sourcing mix benchmark aimed at cost reduction. This estimation serves as an example, offering a potential framework to sourcing ratios that enhance cost-efficiency. These ratios are based on literature and interview findings. Figure 6.1 and Table 6.3 present an overview of the assumed distribution of FTE percentages across application categories for the bank as a whole. These percentages may vary across tech divisions depending on the nature of the work. However, for simplicity, this research assumes a uniform distribution. Further exploration of this application types per division is suggested in the future research section of this research.

6.3 Cost Estimation

The sourcing costs are mainly related to the work location of the staff. The contract type has little influence on sourcing costs and is therefore assumed to be excluded from this cost analysis. The current sourcing mix of the tech divisions can be connected with the average salary rate of staff and provides an overview of the average sourcing cost. Offshore and nearshore locations are merged into a single offsite category to simplify classification, resulting in more accurate and consistent staff distribution estimates. This approach aligns with existing data formats, as the majority of available data only distinguishes between onsite and offsite.

Work Location	Average Cost per Hour[14]	Cost in Percentage
Internal	€ 70,00	60%
Onsite	€ 120,00	100%
Offsite	€ 50,00	40%

***Table 6.4**: Cost distribution by work location inc. VAT (Internal Rabobank Sourcing Dashboard, 2025).*

Table 6.4 presents the average hourly cost including Value Added Tax (VAT) for different work locations. In the bank, one FTE represents an employee working 36 hours per month. A month is assumed to have four weeks, allowing the calculation of the monthly cost per employee based on work location. These costs combined with staff ratios across work locations determine the average staffing cost for the current sourcing mix of the tech divisions.

The suggested total sourcing cost are determined using the estimated staff distribution across Gartner application categories to evaluate potential cost-efficiencies. The total number of employees is allocated according to the proportions of applications within each category. The estimated internal, onsite, and offsite staffing ratios are then applied to develop a sourcing distribution. This enables cost calculations and comparisons with the current sourcing mix, highlighting potential savings. Figure 6.2 illustrates the distribution of staff across different work locations, comparing the current and the suggested sourcing mix. If the bank adjusts its sourcing mix to align with the application types and sourcing ratios, it would result in a 13% reduction in internal staff and an 8% decrease in onsite staff and offsite staffing would increase by 21%. This aligns with the implementation of the decision tree, which emphasizes reducing onsite presence while expanding offsite staffing. Figure 6.3 presents the potential cost reductions associated with these sourcing changes. Internal staff costs decrease by 29%, and onsite costs by 26%, reflecting a reduction in total cost. Offsite costs will rise, increasing by 90%.

[14] Inclusive Value Added Taxes

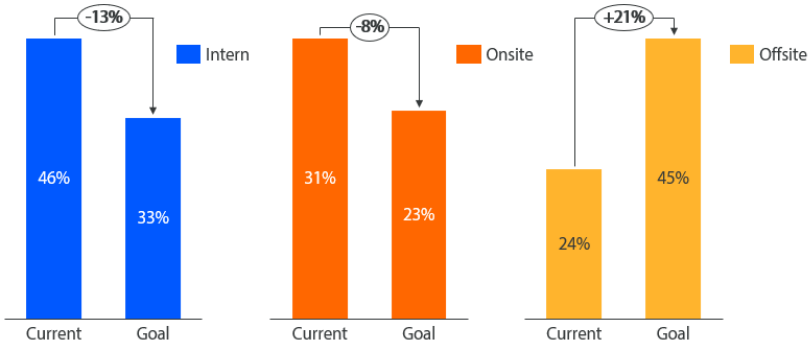

Figure 6.2: *FTE sourcing mix distribution by work location: Current vs. cost-efficient goal (based on Gartner application framework).*

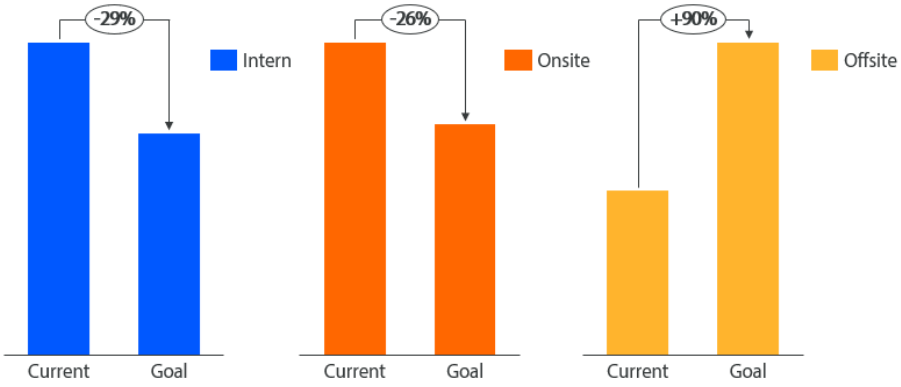

Figure 6.3: *Cost comparison of sourcing mix by work location: Current vs. cost-efficient goal (based on Gartner application framework).*

Implementing these changes requires a continuous approach. Tech leads must progressively integrate sourcing strategies that align with this sourcing mix to effectively reduce costs. The decision tree developed in this research can provide guidance, steering tech leads toward decisions that support this results. Figure 6.4 depicts the potential 10% reduction in total sourcing costs resulting from this shift. A significant increase in offshore staffing introduces risks, such as geopolitical uncertainties, that require careful management. Effective managerial practices and particularly vendor governance will become more essential for mitigating challenges and ensuring smooth operations. Similarly, a lower share of internal staff could increases risks such as reduced control and loss of internal knowledge. This should be mitigated by focusing on structured decision-making to determine whether retaining knowledge internally is strategically important.

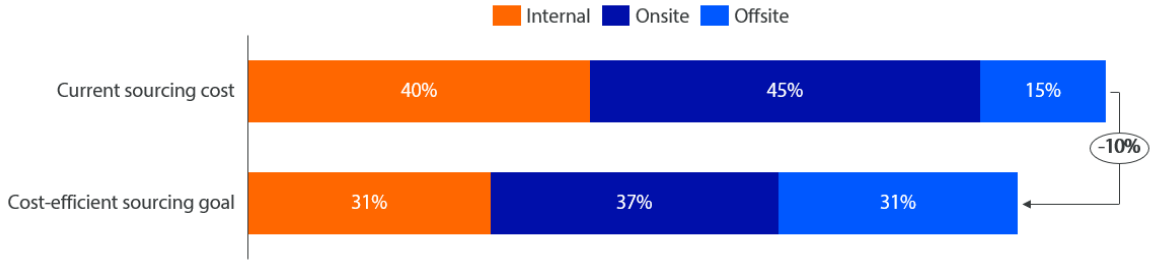

Figure 6.4: *Overall projected cost savings.*

6.4 Application Cost

The number of applications can be connected to the current sourcing mix. Only the number of applications does not provide meaningful insight into the relationship between applications and sourcing costs. By converting the number of applications into application costs, a comparison can be made alongside sourcing costs. This section focuses on the analysis of cost category data (XS, S, M, L, XL, XXL) , allowing for examination. The average application cost per tech division are calculated and linked to the average sourcing cost for each division. In Table 6.5, the average application costs are presented for each cost category, as assessed by the bank. The cost categories are structured as follows:

Size	Annual Cost
XS	< € 100k
S	< € 500k
M	< € 1m
L	< € 2.5m
XL	< € 5m
XXL	> € 5m

Table 6.5: *Annual cost by application size (Internal Rabobank, 2025).*

The cost category distribution across tech divisions has been analysed and is further depicted in Appendix F. The key findings include:

- W&R Tech has a high number of applications that fall within the XS cost category.
- E&E Tech has a substantial proportion of XXL category applications.
- Across all divisions, there are generally more smaller applications (lower cost categories) and fewer larger applications (higher cost categories).
- When considering the percentage contribution of each cost category to total application costs, the L category accounts for 83% of total application costs.
- In general, divisions allocate around 15% of the applications to the L category, except for W&R Tech, which only has 5% to this category.

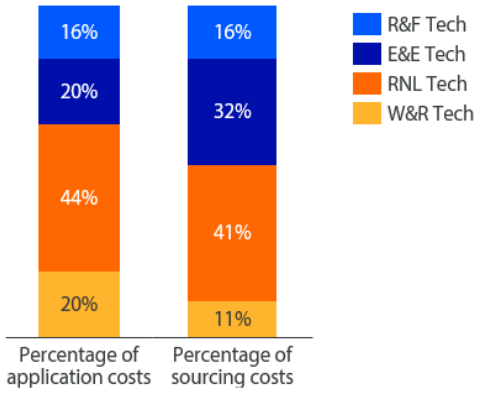

Figure 6.4*: Cost comparison across tech divisions: Application cost vs. sourcing cost (February 2025, n=2533).*

The application and sourcing cost comparison in Figure 6.4 shows that R&F Tech and RNL Tech have similar sourcing and application costs ratios, E&E Tech has lower application costs relative to the sourcing costs, and W&R Tech has lower sourcing costs compared to the application costs. These findings indicate that tech divisions show varying relationships between sourcing and application costs. Potential explanations for these variations could include differences in cost- efficiency and resource utilization. Multiple external factors may drive cost variations, impacting whether the sourcing mix is truly cost-efficient. These influences must be carefully analysed to determine overall cost-effectiveness. Further research is required to validate these findings and draw definitive conclusions regarding the cost effectiveness within each tech division.

6.5 Conclusion

This chapter analyses the classification of the bank's applications using the Gartner Pace-Layered Application Strategy, providing insights into staffing distribution, sourcing costs, and potential cost reductions. The findings suggest that the suggested sourcing mix could be gradually achieved by making sourcing decisions more in alignment with the tree over time and eventually could lead to a 13% reduction in internal staff, an 8% reduction in onsite staff, and a 21% increase in offsite staffing. The cost analysis quantifies these changes, indicating a potential 10% reduction in overall sourcing expenses, reinforcing to align sourcing strategies with application needs and business priorities. In addition, application costs were compared to staff sourcing costs, but definitive conclusions could not be drawn due to the influence of multiple additional factors lacking sufficient data.

Chapter 7: Implementation plan

This chapter outlines how the decision tree can be implemented within the CITO department. It provides recommendations for long-term adaptation, focusing on collaboration with stakeholders, the hiring manager's mindset, KPIs and vendor governance structure. The goal of the implementation is to ensure sourcing decisions are consistent, structured and transparent. Successful implementation helps drive cost reductions while maintaining quality standards.

7.1 Implementation Strategy

The success of the decision tree depends on an effective implementation strategy. Feedback from tech leads is collected during development of the decision tree and incorporated to enhance its usability and ensure relevance across the divisions. The feedback is a valuable step in the process of development, as tech leads will be the primary users of the decision tree. The initial phase of the implementation plan involves conducting structured training sessions to enhance the effectiveness of the decision tree. Hiring mangers receive trainings on the functionalities and purpose of the decision tree, including the understanding of how the tree facilitates informed decision-making while allowing users to make decisions without rigid constraints. The training also increases the awareness of the financial aspects of sourcing decisions by emphasizing cost reduction strategies. Following the initial implementation, continuous feedback loops and regular refinements are part to the strategy, assuring the decision tree adapts to evolving sourcing strategies and market dynamics. User insights could drive adjustments and maintain alignment with real-world challenges. These measures support ongoing improvement, while keeping the decision tree responsive and relevant in IT sourcing processes.

7.2 Recommendations

This section provides recommendations for implementing the decision tree. It highlights the need to define roles and responsibilities, consider mindset influences, KPIs and establish vendor governance to assure structured collaboration.

7.2.1 Roles and Responsibilities

The roles and responsibilities of the tech lead, vendor management and business controller in sourcing decisions is outlined, emphasizing how each could leverage the decision tree.

- *Tech leads* utilize the decision tree to define the sourcing approach, influencing work location and contract type decisions. They ensure sourcing choices align with cost-efficiency goals and strategic objectives and maintaining a sourcing mix that supports targets. The tech lead facilitates collaboration between internal and external teams while safeguarding knowledge retention. Implementing recommendations from the decision tree could enhance consistency and transparency in sourcing decisions.
- *Vendor management* ensures informed vendor selection with a focus on RAISE partners. They streamline the sourcing process through enabling cost control, risk mitigation and quality assurance of the vendors. Their role includes vendor performance monitoring to validate they meet contractual obligations and service expectations. Vendor management also identifies opportunities for economies of scale and supports strategic decision-making. Active engagement in evaluation, negotiation and coordination drives financial optimization while maintaining performance standards.
- *Business controllers* secure financial alignment in IT sourcing through KPI monitoring, assessing whether the decision tree effectively drives cost reduction while maintaining performance quality. Their role includes monitoring KPIs and reporting them to the group direction. These efforts validate the decision tree its effectiveness and contribute to evaluating sourcing strategies.

7.2.2 Mindset

A successful implementation of the decision tree depends on shifting stakeholders' mindsets. Sourcing decisions will become more structured and strategically aligned rather than based on intuition or personal preference. An understanding of the need for change potentially increases the likelihood of achieving successful outcomes. The transition to structured decision-making requires a fundamental shift in how sourcing choices are approached. Tech leads are encouraged to make explicit and thoughtful decisions, moving away from unstructured reasoning. This fosters alignment across the tech divisions, ensuring sourcing decisions remain consistent and aligned with the bank's strategy. The decision tree enhances consistency and transparency by requiring stakeholders to document and justify decisions in sourcing cases. This enables the bank to assess effectiveness and refine future strategies. Further research on decision effectiveness and the impact of structured sourcing models can help identify and replicate effective sourcing decisions.

7.2.3 KPIs

A dashboard with KPIs is currently used to monitor the sourcing mix. Additional KPIs are suggested to enhance reporting. The KPIs could focus on key metrics such as RAISE partner percentages and the distribution of internal, onsite and offsite staff. This will facilitate a comparison of pre- and post-implementation results, helping to evaluate the overall impact. Sharing this data with tech leads will support informed decision-making and focus on alignment with KPI objectives. The exact KPI ratios require further analysis, though insights from the Gartner model may offer additional guidance. The further research section of this report will provide a more detailed explanation.

7.2.4 Vendor Governance

Vendor governance structures support implementation of the decision tree within the IT sourcing process. It incorporates a meeting framework with defines collaboration roles, discussion topics and meeting frequency. This should prevent excessive ad-hoc meetings and switch to more structured communication. The meeting structure varies based on contract type and work location. Offsite communication tends to be more challenging, requiring additional coordination, while onsite collaboration has a easier way of interacting. These regular meetings helps assess whether vendors deliver the expected performance and execute tasks correctly. Meetings are structured at strategic, tactical and operational levels, fostering effective communication between the bank and vendors. Tracking operational effectiveness through these meetings ensures that deliverables are met and vendor quality is maintained. The proposed governance structure consists of three key types of meetings:

- *Strategic alignment (quarterly):* This helps to align sourcing decisions to support the bank’s overall goals and business needs. Key stakeholders and vendor representatives meet to plan and adjust the sourcing strategy.
- *Tactical alignment (every six weeks):* This provides a structured meeting for refining sourcing strategies and improving vendor collaboration. These meetings are led by the tech lead, vendor management and the vendor’s representatives.
- *Operational alignment* (every two weeks): This focuses on daily tasks, checking the progress of deliverables, reviewing performance and solving potential issues. The tech lead and the vendor’s representative handle these meetings.

A clear governance structure results in transparency and clarity in IT sourcing process. Expectations keep stakeholders aligned and consistent. Refining vendor governance could improve efficiency and ensures that sourcing decisions and workflows run smoothly.

7.3 Conclusion

This chapter outlines a structured implementation plan for the decision tree, focusing on clear role division, mindset transformation, KPI tracking and vendor governance. The initial step involves training hiring managers to understand the functionality and purpose of the decision tree while fostering cost

reduction awareness. Continuous feedback ensures ongoing refinements, keeping the decision tree aligned with evolving business needs. The recommendations are as follows:

- Clearly defined responsibilities enhance cost-efficiency awareness and ensure effective utilization.
- The shift in mindset moves decision-making away from intuition toward a structured, cost-conscious approach.
- KPI tracking provides insights into the impact, helping assess whether desired outcomes are achieved.
- Vendor governance could strengthen collaboration and performance monitoring, supporting long-term sourcing effectiveness.

Chapter 8: Conclusion

This research explores the development of a decision tree within the CITO department to provide structured guidance for hiring managers in IT sourcing decisions. The decision tree aims to enhance cost efficiency while ensuring staff quality is maintained. The central research question addressed is:

"How can a decision tree be developed to support sourcing decisions for staff in the CITO department, to reduce sourcing cost while maintaining quality?"

The research develops a decision tree based on interviews, a literature review and data analysis. It incorporates key decision factors and criteria such as Gartner's application classifications (innovation, differentiation, record, platform), skill availability, compliance requirements, operational constraints and application-related considerations. The final recommendation nodes focus on selecting the work location and contract type, resulting in the options internal staff, onsite/nearshore staff augmentation, offsite teaming, offshore SOW and offshore teaming. The decision tree follows a structured approach aiming to ensure cost efficiency while maintaining quality. The most cost-effective option is prioritized unless specific conditions justify a higher-cost alternative. The assumption is made that staff quality remains the fundamental factor in all sourcing decisions. The tool is predominantly based on interviews and literature, while the data analysis provided additional insight into cost perspectives within the IT sourcing mix. A key assumption in the cost analysis is that applications can be classified according to Gartner's model, allowing for the identification of a sourcing mix based on application characteristics. Further research into application categorization and sourcing mixes could refine and optimize these recommendations. The suggested sourcing adjustments based on estimated application categories, suggests reducing internal staff by 13%, reducing onsite staff by 8% and increasing offsite staff by 21%. The cost analysis indicates a potential 10% reduction in overall sourcing expenses, achieved through a 29% decrease in internal staff costs and a 26% decrease in onsite staff costs. Offsite costs would increase by 90%. Several risks, such as loss of control, reduced internal knowledge and geopolitical uncertainties, must still be carefully considered and managed as part of a balanced sourcing strategy. Beyond cost reductions, the decision tree is expected to support hiring managers by guiding them toward more efficient sourcing choices, reducing inconsistencies and improving transparency and accountability in the IT sourcing process. A structured implementation plan is recommended to maximize the decision tree effectiveness, focusing on the role divisions, mindset transformation, KPI tracking and vendor governance.

8.1 Limitations of Research

While this research provides decision-making support for enhancing the IT sourcing process, several limitations must be acknowledged. Understanding these limitations is necessary for interpreting the results and identifying opportunities for future research. The key limitations identified are as follows:

- *Limited ability to capture all influencing factors:* The IT sourcing process can be influenced by various additional factors that impact decision-making. The decision tree does not account for every factor that may impact individual cases. It focuses on integrating key decision factors and criteria while placing less emphasis on smaller more case-specific considerations.
- *Limited ability to measure implementation outcomes:* The results of the decision tree implementation will be difficult to assess. The KPIs track the current sourcing mix while also reflecting changes driven by other factors over time, making it difficult to determine the specific impact of the decision tree.
- *Limited contribution to theory:* The decision tree is designed for implementation across the bank's tech divisions and potentially broader IT sourcing in other financial organizations. However, since its development is mainly based on research within the specific Rabobank context, its applicability to broader theoretical frameworks may be limited.

- *Limited reflection between value and cost:* The decision tree does not fully capture the nuances of real-life hiring decisions, particularly the balance between value and cost. These complexities are challenging to incorporate into the decision tree, making it difficult to determine when selecting a more expensive option is justified.

8.2 Further Research Suggestions

Building on the findings and limitations outlines in the previous sections, several opportunities for future research have emerged to further enhance the IT sourcing decision-making process. Exploring these areas can contribute to the development of a more effective decision support approach. The key areas for future exploration include:

- *Further research on application categorization*: Research to refine the application classification based on Gartner's Model is suggested. Sourcing targets play a role in shaping sourcing strategies. They are currently broad and uniform across all tribes. A tailored approach could be adopted, establishing specific goals for each tribe and aligning them with application requirements to support sourcing needs.
- *Further research on offsite staff efficiency:* Research to evaluate the efficiency of offsite staff compared to onsite staff. Key considerations include whether one FTE offsite provides the same value and productivity as one FTE onsite, taking into account factors such as communication, collaboration and operational effectiveness.
- *Further research on sourcing ratios:* Research to determine an effective balance between internal and external staff, as well as onsite and offsite staffing distributions. Given the role KPIs play in sourcing decisions, they could offer additional guidance to hiring managers in enhancing the sourcing mix.
- *Further research on cost influencing factors:* Research to explore additional factors that impact sourcing costs. Key considerations include onboarding expenses, tax implications and additional pension costs.

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Appendix A: Systematic Literature Review

Category	Key Decision Factors and Criteria	Sources
Cost-related	• Maximizing cost-efficiency • Saving management time • Leveraging economies of scale • Enhancing cost predictability	Mohapatra et al. (2015); Rahman et al. (2021); Poleto et al. (2020); Keshavarznia & Wallace (2023); Jain & Natarajan (2011); González et al. (2013); Tooranloo et al. (2018); Rautela et al. (2021)
Strategy-related	• Prioritize core competencies • Keep flexible and scalable workforce • Take competitive advantage • Respond to competitive pressure • Overreliance on vendor	Daryaei et al. (2018); Hanafizadeh & Zareravasan (2020); Rautela et al. (2021); Wing Ying Mo (2024); Mukherjee & Mukherjee (2015); Amiri et al. (2021); Anderson-Princen (2022); Sobinska & Willcocks (2016); Wallace et al. (2021)
Risk-related	• Risk of confidentiality breach • Risk of regulatory compliance breach • Vendor dependency • Reduction operational control • Staff resistance	Anderson-Princen (2022); Mo & Chang (2024); Wallace et al. (2021); Hanafizadeh & Zareravasan (2020); Handley et al. (2022); Mukherjee & Mukherjee (2015); Baldwin et al. (2017); Ensslin et al. (2020); Ishizaka et al. (2019); Keshavarznia & Wallace (2023);
Technology-related	• Technological expertise • Minimizing obsolescence risk • Improve quality of service • Enhance customer support	Assaf et al. (2011); Mo & Chang (2024); González et al. (2013); Rahman et al. (2023); Lu et al. (2024); Rautela et al. (2021); Baldwin et al. (2017); Hanafizadeh & Zareravasan (2020); Sobinska & Willcocks (2016); (Mohapatra et al., 2015).
Vendor-related	• Vendor quality • Technical expertise • Cultural fit • Vendor governance structure • Geographical location • Geopolitical risk	Mukherjee & Mukherjee (2015); Ishizaka et al. (2019); Rahman et al. (2021); Keshavarznia & Wallace (2023); Hansen et al. (2019); Westphal & Sohal (2016); Ensslin et al. (2020); Wallace et al. (2021); Wing Ying Mo (2024); Handley et al. (2022); González et al. (2013); Sobinska & Willcocks (2016) Poleto et al. (2020)

Table A1*: Key decision factor and criteria identified in literature review.*

Appendix B: Interview Research

B1: Interview Questionnaire

Role in the IT Sourcing Process

- What is the role of your function in the IT sourcing process?
- How is a new sourcing project determined? Is the current sourcing mix reevaluated?
- To what extent do you influence decisions regarding contract type and location?
- How do you align hiring decisions with the overall sourcing strategy?
- How do you take into account the budget and FTE target?
- Are there specific guidelines or KPIs that support or guide these decisions?
- Are there any exceptions when the sourcing goes not following the general process?

Contract Types

- What factors determine whether a role is filled internally or externally?
- How do you decide between using staff augmentation, a teaming contract, or a SOW?
- How do the required application and skills impact the decision between contract types?
- What do you see as the biggest advantages and disadvantages of a SOW?
- What is the main difference between teaming contracts and SOW contracts?
- What are important considerations when using a SOW contract?

Location Types

- How is the decision made between onsite, nearshore, or offshore locations?
- What are the advantages and disadvantages of these location types?
- When making sourcing decisions, do you prioritize location first or contract type first?

Vendors

- What role do you play in the vendor selection process?
- How is vendor performance measured, and how does it influence hiring decisions?
- How do cost and quality differences between vendors impact decision-making?
- How does trust and previous experience with a vendor influence the decision-making?
- What is the vendor governance after the selection?

Decision-Making

- How much freedom does the decision maker have in choosing vendors, contract and location? Why is the cheapest option not always selected?
- To what extent do personal preferences play a role in decision-making?
- What improvements would you suggest to make hiring decisions more cost-effective?
- What types of risk do you consider?
- What key factors would you include in a decision tree for IT sourcing decisions?
- When making sourcing decisions, what is the sequence of criteria you prioritize?

Additional Questions

- Are there any other important factors or criteria influencing IT sourcing decisions that we have not yet discussed?
- Are there other people you recommend interviewing for further insights into the IT sourcing process?

B2: Interview Results

Key Factors and Criteria	W&R Tech	RNL Tech	R&F Tech	E&E Tech
Application type	✓	✓	✓	✓
Vendor selection criteria	✓	✓	✓	✓
Budget considerations	✓	✓	✓	✓
Application maturity	✓	✓	✓	✓
Skill scarcity	✓	✓	✓	✓
Stakeholder preferences	✓	x	x	✓
Vendor maturity	✓	✓	✓	x
Contract duration	✓	✓	✓	✓
Risk considerations	✓	✓	✓	✓
Time constraints	✓	✓	✓	✓
Cultural fit	✓	✓	✓	x
Time zone challenges	✓	✓	✓	✓
Workforce scalability	✓	✓	✓	✓
Value of external knowledge	✓	x	✓	✓
Geographical distribution	✓	✓	✓	✓
Workforce structure	✓	✓	x	✓

Table 2: *Key factors and criteria by tech division from interviews.*

Appendix C: Interview and Literature Comparison

Key Insights from Interviews	Key Insights from Literature
Application type	Prioritize core competencies, Saving management time
Vendor selection criteria	Leveraging economies of scale, Vendor governance structure
Budget considerations	Maximizing cost-efficiency, Enhancing cost predictability
Skill scarcity	Technological expertise
Vendor maturity	Vendor quality
Risk considerations	Prioritize core competencies
Cultural fit	Cultural fit
Time zone challenges	Cultural fit
Workforce scalability	Keep flexible and scalable workforce
Value of external knowledge	Technological expertise
Compliance risk	Risk of confidentiality breach, Risk of regulatory compliance breach
Vendor lock in risk	Overreliance on vendor, Vendor dependency, Vendor diversification
Geopolitical risk	Geopolitical risk, Geographical location
Risk of losing control	Reduction operational control
Application maturity	x
Stakeholder preferences	x
Contract duration	x
Time constraints	x
Geographical distribution	x
Workforce structure	x
x	Improve quality of service, Enhance customer support
x	Take competitive advantage, Respond to competitive pressure
x	Staff resistance
x	Minimizing obsolescence risk

***Table C1**: Comparison of key decision factors and criteria: Literature vs. interviews.*

Appendix D: Data Analysis

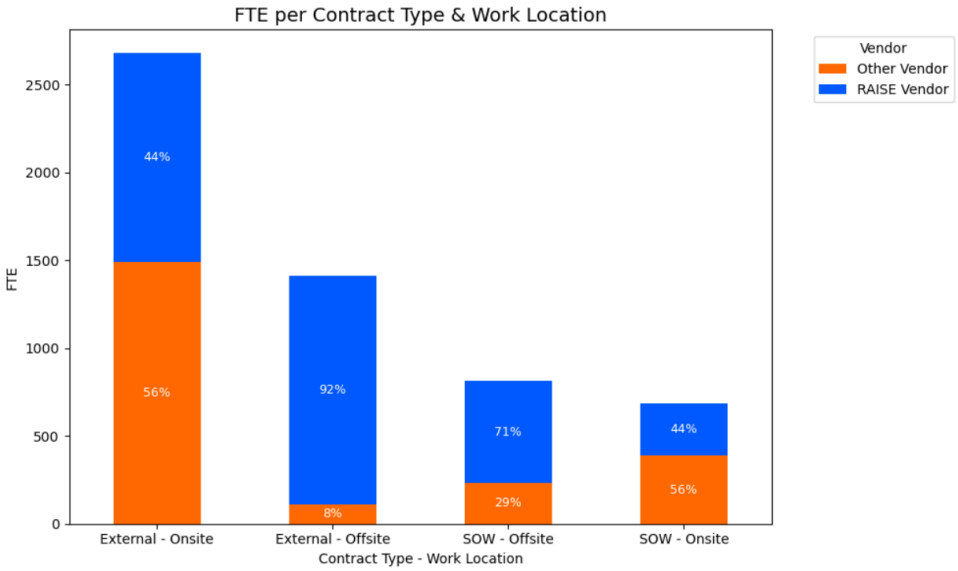

***Figure D1**: Monthly average FTE distribution by contract type and work location (January 2024 – February 2025, n=140,743)*

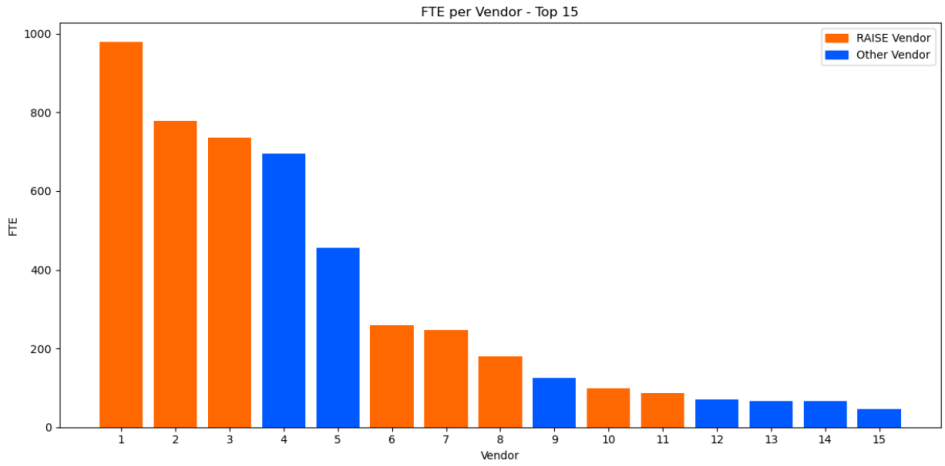

***Figure D2**: Monthly average FTE distribution by vendor (January 2024 – February 2025, n=140,743)*

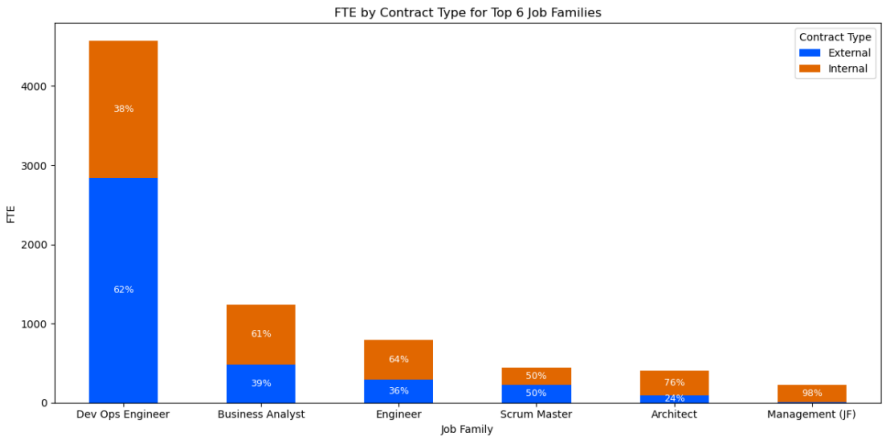

***Figure D3**: Monthly average job family distribution by contract type (January 2024 – February 2025, n=140,743)*

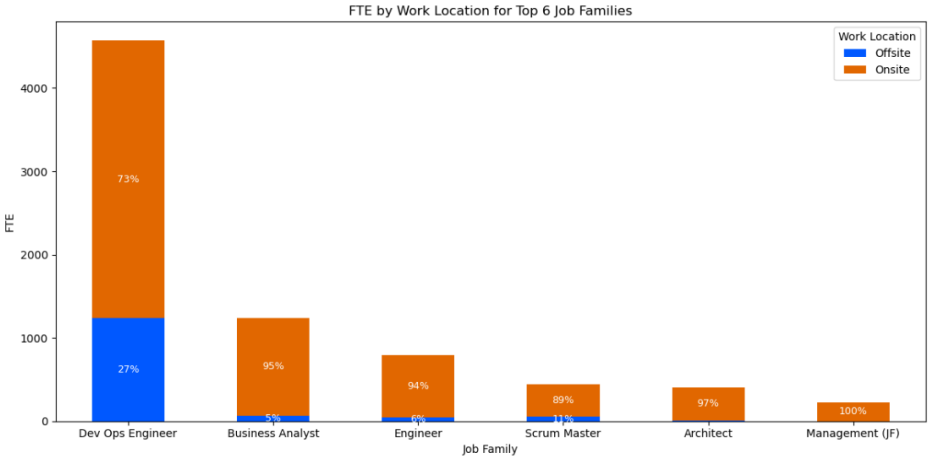

***Figure D4**: Monthly average job family distribution by work location (January 2024 – February 2025, n=140,743)*

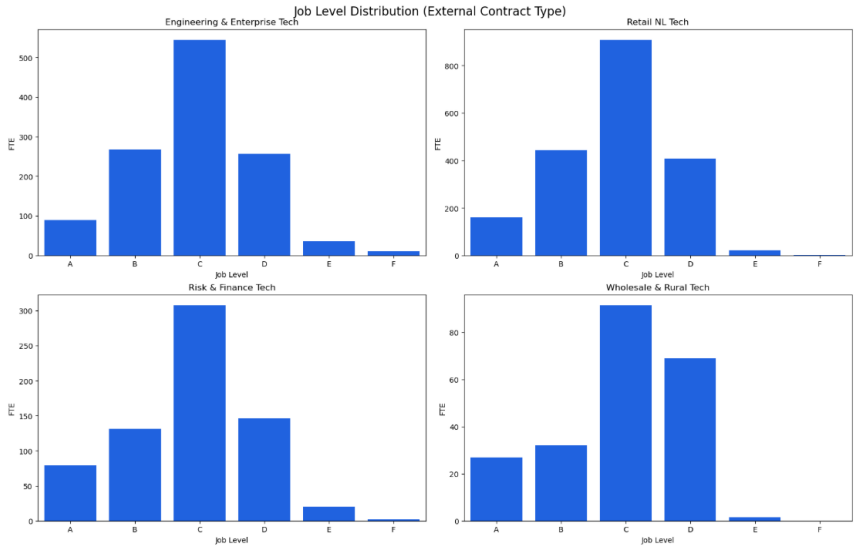

***Figure D5**: Monthly average job level distribution across tech divisions (January 2024 – February 2025, n=140,743)*

Appendix E: Additional Details on IT Staff Sourcing Decision Tree

Category:	Purpose:	Time Horizon:	Flexibility:	Rate of Change:
Systems of Innovation	Applications that address **emerging requirements or opportunities,** they enable the bank to explore new possibilities, implement emerging technologies, and test new concepts to enhance business capabilities.	0 – 12 months	High	Rapid
Systems of Differentiation	Applications designed to align with **unique business strategies,** they enhance efficiency, improve competitive advantage, and support specialized operations that set the bank apart in the market.	1 -3 years	Medium	Steady
Systems of Record	Applications that support the **core functions of the bank** essential for business continuity, ensuring accuracy, compliance, and data integrity across critical workflows like customer management and regulatory processes.	7+ years	Low	Slow
Platform Systems	Components that enable or host the innovation, differentiation and record systems.	-	-	-

Figure E1: *Gartner application categories.*

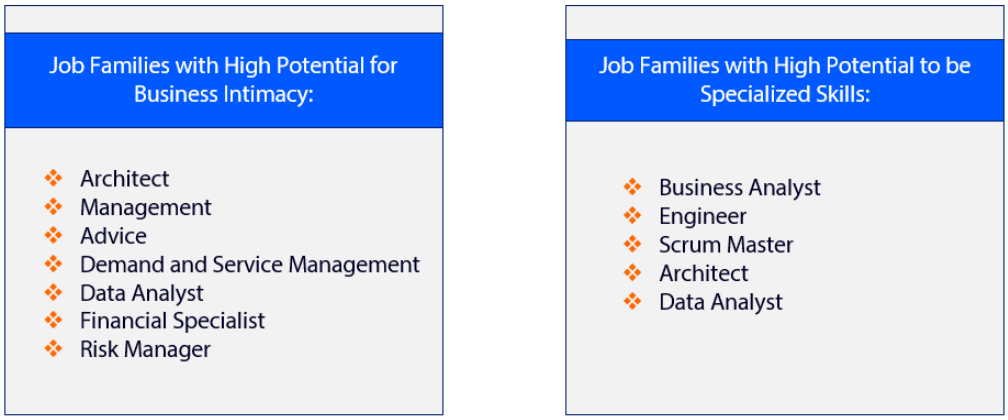

Figure E2*: Job families with high potential for Business Intimacy or Specialized Skills.*

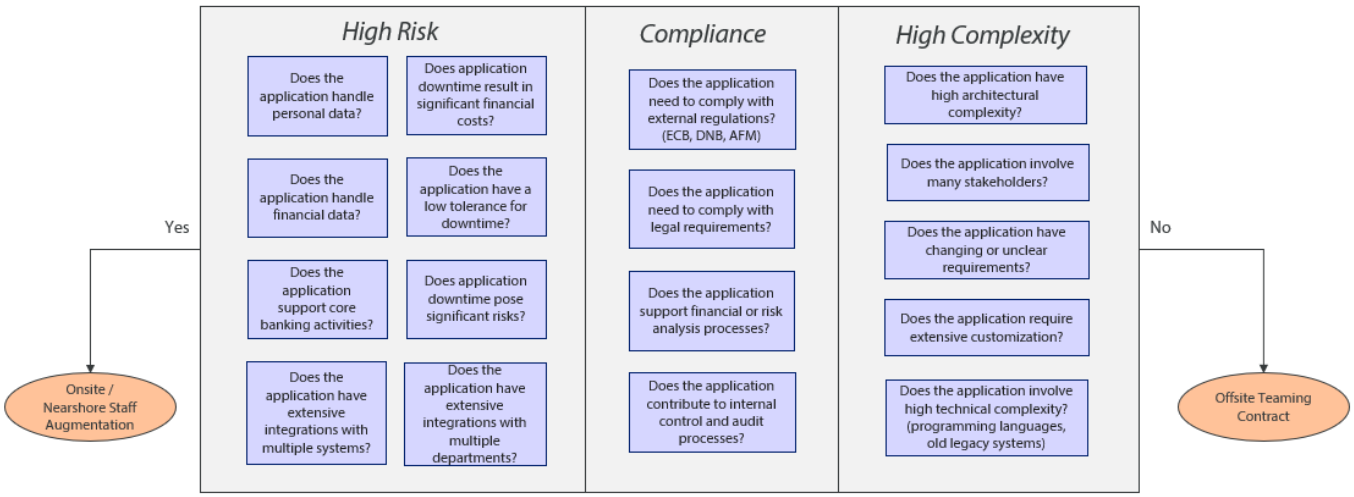

Figure E3: *Additional questions about risk, compliance and complexity.*

Appendix F: Cost Analysis

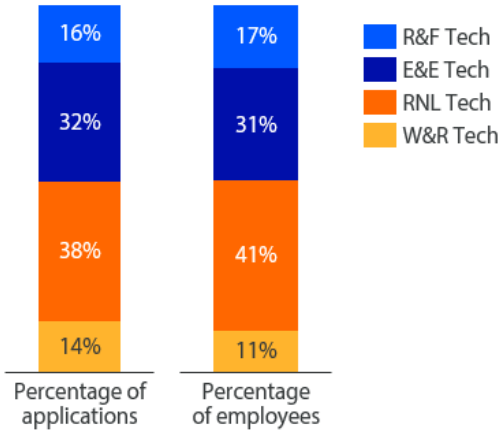

Figure F1: *Percentage distribution of applications and employees across tech divisions (February 2025, n=2533).*

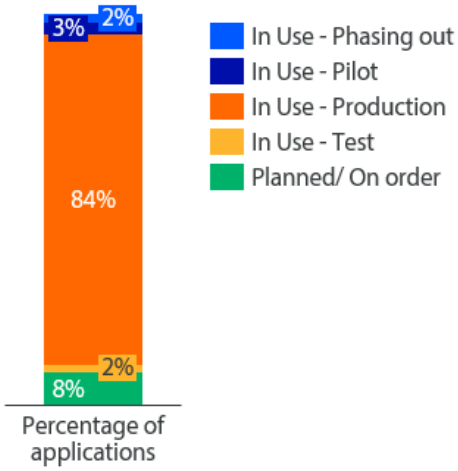

Figure F2: *Application distribution by status in percentage (February 2025, n=2533).*

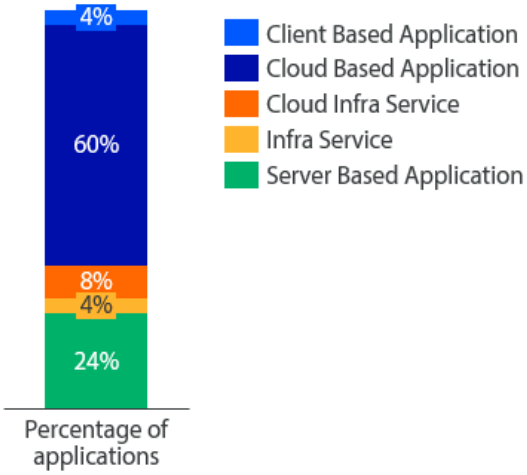

Figure F3*: Application distribution by deployment model in percentage (February 2025, n=2533).*

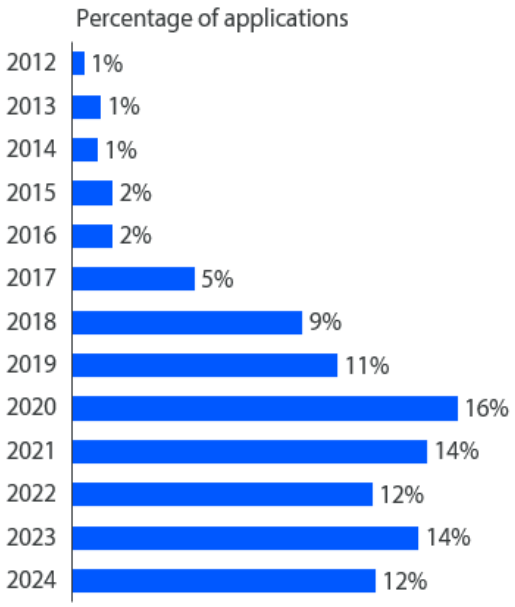

***Figure F4**: Application distribution by development year in percentage (February 2025, n=2533).*

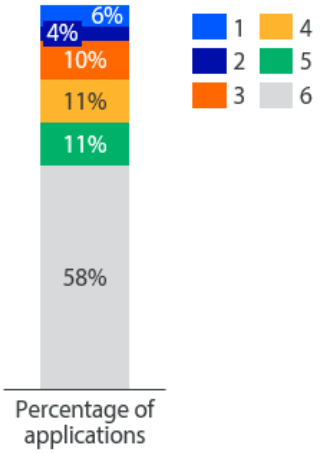

***Figure F5:** Application distribution by priority level in percentage (May 2024, n=1472)*

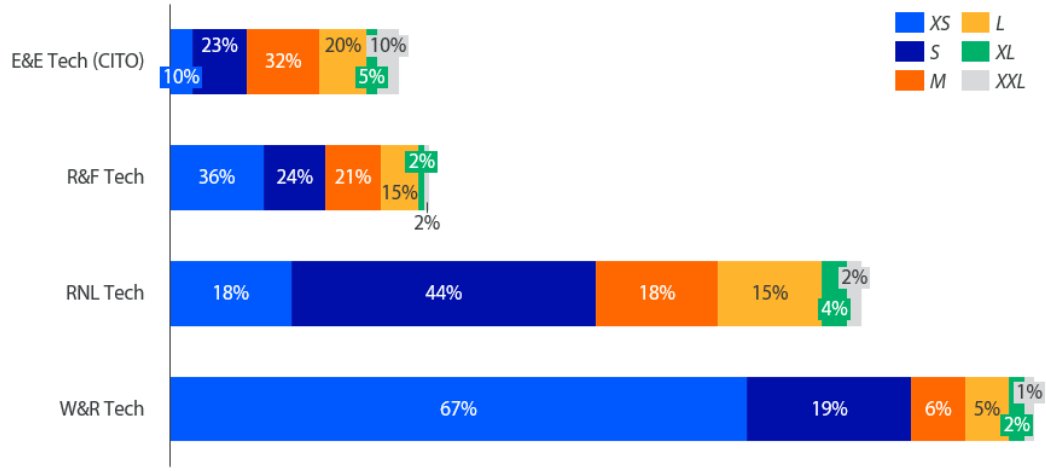

***Figure F6**: Application distribution by cost category across tech divisions in percentage (February 2025, n=2533).*

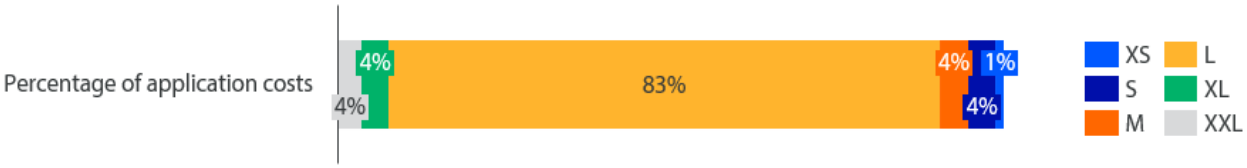

***Figure F7**: Total application cost distribution by cost category (February 2025, n=2533).*

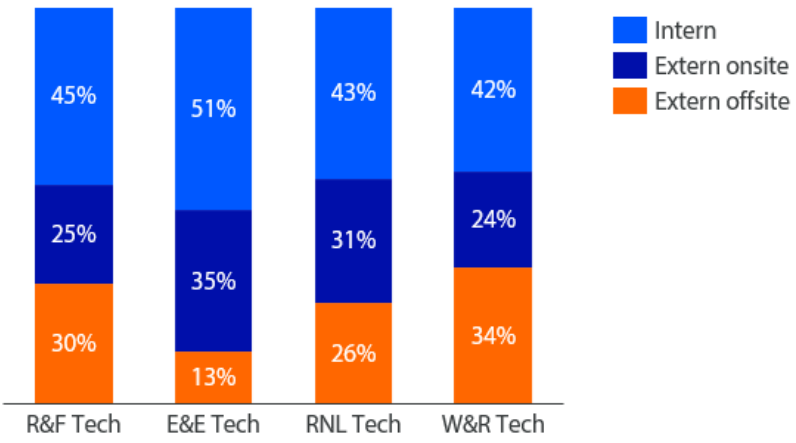

***Figure F8:** FTE distribution by work location across tech divisions (January 2024 – February 2025, n=140,743).*