Tampere University

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AI POLICY IMPLEMENTATION IN FINNISH UNIVERSITIES

Challenges and Implications for Research and Development from a Multilevel Governance Perspective

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ABSTRACT

José Luis Riega Cayetano: AI Policy Implementation in Finnish Universities: Challenges and implications for Research and Development from a Multilevel Governance Perspective
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Universities operate within a layered AI governance landscape, where international principles and emerging regulations (such as the EU AI Act) define external boundaries, national arrangements translate them, and institutional rules make them workable in daily research. Within this structure, the integration of AI tools, particularly generative models, is reshaping research practice and has intensified the demand for transparency, documentation, and secure infrastructure. Despite growing attention to ethical guidance and data safeguards, the literature remains focused on pedagogy, offering limited insight into AI governance in research. In Finland, universities have a highly autonomous system supported by strong coordination mechanisms and shared e-infrastructure (e.g., CSC and LUMI). These national resources provide common baselines for research infrastructure and policy implementation, but still require institutional interpretation and adaptation to local workflows and capacities to meet evolving regulatory and ethical expectations. In this context, this thesis examines how artificial intelligence (AI) policy is implemented in Finnish universities across international, national and institutional levels, and explores the challenges and implications for research and development (R&D).

To address this, the study adopts a qualitative multiple-case design focused on Tampere University and the University of Helsinki, using semi-structured interviews and document analysis. Guided by a multilevel governance and policy implementation framework, the study finds that implementation often emerged bottom-up, using soft instruments such as checklists and ethical templates, especially in the absence of detailed mandates. Both universities engaged with transparency and disclosure norms in research, but their approaches varied depending on internal capacities and interpretive discretion. A distinction emerged between governance focused on research practices and the oversight of applied or deployment contexts, where formal risk-based structures aligned with the EU AI Act were limited or under development. These patterns illustrate how the theoretical framework helps to explain how universities adapt external policy expectations through internal routines. Among its practical implications, the study highlights that transparency norms alone are insufficient; R&D settings require capacity-building, clear intake processes, and tailored guidance to support responsible AI use in high-autonomy university contexts.

Keywords: Artificial intelligence, AI governance, higher education, Research and development, policy implementation, multilevel governance

The originality of this thesis has been checked using the Turnitin Originality Check service.

Use of Artificial Intelligence in Thesis

The AI tools used in my thesis and their purposes are described below:

1) ChatGPT 4o and o3
    - Early support for the outlining section process
    - Assisting with writing tasks such as structuring sections and clarifying concepts
    - Summarising and understanding the main ideas of lengthy texts.

2) ChatGPT 5 Thinking
    - Suggesting improvements to the outlining sections and supporting reasoning processes.
    - Brainstorming ideas for the research problem and for the coding process.
    - Revising and suggesting improvements to the codebook proposed by the author
    - Supporting the understanding of theoretical concepts and refining theoretical coherence.
    - Finding and organising the quotations and their author pseudonyms

3) Perplexity Pro
    - Identifying candidate sources (all sources verified manually)
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4) Grammarly free version
    - Conducting grammar checks and suggestions in the body of the thesis

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I acknowledge that I am fully responsible for the entire content of my thesis, including the parts generated by AI, and accept accountability for any violations of ethical standards in publications.

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LIST OF ABBREVIATIONS

AI: Artificial Intelligence
ALLEA: All European Academies (European Federation of Academies of Sciences and Humanities)
ChatGPT: Chat Generative Pre-trained Transformer (OpenAI)
CSC: IT Center for Science (Finland)
DMP: Data Management Plan
DPO: Data Protection Officer
DPIA: Data Protection Impact Assessment
EC: European Commission
ERA: European Research Area
EU: European Union
EUA: European University Association
EuroCC: European HPC National Competence Centres (EuroCC)
EuroHPC: European High-Performance Computing Joint Undertaking (EuroHPC JU)
FCAI: Finnish Center for Artificial Intelligence
GDPR: General Data Protection Regulation
GenAI: Generative Artificial Intelligence
GPAI: General-purpose Artificial Intelligence
HE: Higher Education
HEI: Higher Education Institution
HIIT: Helsinki Institute for Information Technology
HPC: High-Performance Computing
IESALC: UNESCO International Institute for Higher Education in Latin America and the Caribbean
IP: Intellectual Property
IPR: Intellectual Property Rights
IT: Information Technology
JU: Joint Undertaking
LUMI: EuroHPC supercomputer hosted by CSC (Kajaani, Finland)
LUMI AI: LUMI's AI resources/programme (at CSC/LUMI)
MARIHE: Master in Research and Innovation in Higher Education
MLG: Multilevel governance
NCC: National Competence Centre (in HPC context)
OECD: Organisation for Economic Co-operation and Development
PI: Principal Investigator
R&D: Research and Development
RDI: Research, Development and Innovation
RCF: Research Council of Finland
TAMK: Tampere University of Applied Sciences
TAU: Tampere University
TENK: Finnish National Board on Research Integrity
Traficom: Finnish Transport and Communications Agency
UAS: University of Applied Sciences
UEF: University of Eastern Finland
UH: University of Helsinki
UNESCO: United Nations Educational, Scientific and Cultural Organization
Unifi: Universities Finland (Rectors' Council)
UCL: University College London
EIT: European Institute of Innovation and Technology
OJ: Official Journal of the European Union
SWD: Commission Staff Working Document

1. Introduction

1.1. Background

Artificial intelligence (AI) has been integrated across different sectors of society, including the higher education sector. As a result, universities worldwide, including those in Finland, responded by quickly drafting guidelines or internal recommendations to address the integration of Generative AI (GenAI) in teaching and research activities, particularly following the release of ChatGPT by OpenAI in late 2022 (UNESCO, 2023). In Finland, the University of Helsinki (Finland's largest university) published guidelines for the use of artificial intelligence in teaching in February 2023 (University of Helsinki, 2023). In addition to this, Tampere University, the second largest university, followed with institutional guidance covering research, teaching and knowledge work (Tampere University, 2023). These actions illustrate how higher education institutions (HEIs) are adapting their internal governance to the rapid progress of GenAI technologies across society.

Universities act as implementers of research integrity and legal norms and translate external frameworks into institutional "policies, processes, resources and infrastructure" (ALLEA, 2023, p. 3). Therefore, they must balance innovation and academic integrity with compliance and emerging legal or ethical duties (Gupta & Nyamapfene, 2025). At the European level, the European Union Artificial Intelligence Act (2024) establishes risk-based obligations that universities must interpret with existing procedures, such as the General Data Protection Regulation (GDPR) and sectoral ethics frameworks. At the same time, the European Code of Conduct for Research Integrity (ALLEA, 2023) remains as the reference for EU-funded research and reinforces expectations of responsible practice across institutional settings. In Finland, a distributed oversight model is being legislated, creating a transitional phase as universities adjust internal processes (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, HE 46/2025).

Existing literature on AI in higher education has primarily examined its applications in teaching and learning, with systematic reviews registering uses, benefits, and integrity concerns in pedagogy (Ali et al., 2024; Zawacki-Richter et al., 2019). This thesis shifts the focus to implementation: how policies are interpreted and enacted within Finnish universities and how these processes influence research and development (R&D). The analysis combines a structured look at the determinants that condition implementation with an interpretative reading of how actors present expectations in practice, as discussed in Chapters 3 and 4.

Finland is a suitable setting because its universities operate with strong legal autonomy and self-governance (European University Association (EUA), 2023; Universities Act, 558/2009) and maintain relatively stable research-industry links and EU exposure (OECD, 2017, 2025). This combination of institutional autonomy, horizontal coordination networks, and European-level rulemaking provides a relevant context for studying policy implementation processes in higher education. The details of the Finnish system and governance landscape are provided in Chapter 2.

The rest of this chapter outlines the research problem, identifies the gap addressed by the study, and presents the research aim and questions. It concludes with a brief overview of the thesis structure.

1.2. Research problem

Finnish universities operate within a layered AI governance structure. At the European level, the Artificial Intelligence Act sets coordinated, risk-based obligations; Finnish authorities are introducing national supervisory arrangements through legislation; and research integrity duties are grounded in the European Code of Conduct (ALLEA, 2023; European Union Artificial Intelligence Act, 2024; Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, HE 46/2025; Ministry of Economic Affairs and Employment, 2025). At the same time, universities have legal autonomy in organising their internal governance, developing how the external requirements become institutional rules, processes and support (Universities Act, 558/2009). These conditions create an ongoing task of *implementation* that involves interaction between external expectations and internal university processes, as universities do not just *translate* external frames but also *co-construct* guidance and procedures in response to evolving EU and national-level developments.

Although guidance has developed rapidly, there is still limited visibility into *how* universities actually interpret and operationalise AI-related expectations for research practice, shared infrastructure and support services. Evidence from sector analyses highlights that capacity, skills and governance arrangements need to be built deliberately if implementation aims to be effective and equitable (EUA, 2025). In Finland, the obligations under the AI Act, for example, for general-purpose AI (GPAI), began to apply from 2 August 2025, although the national arrangements for supervision, sanctions, and notified bodies are still pending in Parliament. Therefore, universities need to organise and document compliance internally during a period when national oversight lines are not yet fully operational (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 46/2025; Ministry of Economic Affairs and Employment, 2025). In the same line, infrastructure, data, skills and governance mechanisms for AI in science are still under development (EUA, 2025).

These implementation decisions have consequences for research practice and innovation, because they influence data governance, the steering and effective use of shared computing and data services, monitoring and traceability arrangements, and the availability of expert support (ALLEA, 2023; Council of the European Union, 2025; CSC - IT Center for Science, 2025b; European Union Artificial Intelligence Act, 2024, Art. 12; OECD, 2023). Finland benefits from nationally coordinated capacity, most notably through the LUMI system and the LUMI AI Factory (CSC - IT Center for Science, 2025). However, their effective use depends on the coordination across institutional, national and EuroHPC levels (including NCC Finland under the EuroCC 2 programme[1]) and on staff capabilities that science policy assessments identify as an ongoing constraint in systems adopting AI (HPC in Europe Portal, n.d.; OECD, 2023; EuroHPC JU, 2023). Sector input also emphasises distributed and transparent access models, public-interest funding bases, the independent role of the academic community in governance, and alignment with EU values and oversight principles, which are conditions that directly cross with university-level implementation (EUA, 2025).

As outlined in the points above, this study examines implementation as the interaction between the levels and actors involved in this process. It focuses on how external frameworks are engaged, adapted and enacted through internal policies, procedures, resourcing and oversight, and on the interpretative work of policy makers and practitioners within universities. This approach follows a multilevel governance framework, which views policy processes as dispersed and interconnected rather than linear, and it recognises that guidance is often co-produced by the academic community as conditions evolve (Piattoni, 2010). In terms of analysis, determinants from implementation research (goal clarity, resources, incentives and authority, monitoring, and actor discretion) are used as explanatory categories to make sense of observed practices, not as fixed variables. They are explored together with actor-centred themes on understanding, coping and coordination in a fast-developing field, so organisational explanations remain connected to what people actually do and how they reason about it (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

In summary, the problem addressed in this study is to understand how two Finnish universities interact with multilevel AI governance to organise responsible research and innovation under evolving legal and ethical expectations, with a focus on research rather than teaching. This leads to the research questions outlined in subsection 1.4.

[1] EuroHPC's phase 2 NCC programme, 2023-2025; phase 1 ran 2020-2022 (EuroHPC JU, 2020)

1.3. Research gap

Policy activity on artificial intelligence (AI) has increased at the international, national and institutional levels (European Union Artificial Intelligence Act, 2024); however, it remains uncertain how these governance layers are interpreted and enacted within universities (Jin et al., 2025; Wang et al., 2024). In the Finnish context, the University of Helsinki (UH) and Tampere University (TAU) have issued internal guidelines and policies that cover topics such as responsible AI use in education and research, which reflect global developments (Tampere University, 2023, 2024; University of Helsinki, 2024). At the same time, Wu et al. (2024) suggest, in their comparative study of institutional guidance, that AI governance in universities rarely takes the form of a single "rulebook"; instead, it is a set of advisory instruments that are interpreted locally and are often owned by multiple units and tailored to specific roles. This thesis addresses the gap between multilevel policy frameworks and daily practice inside institutions through the examination of how AI policies are implemented in Finnish HEIs and how those implementation choices relate to research and development (R&D) processes.

The first gap identified covers the translation of external obligations into internal guidance where research is involved. The existing studies show that institutional AI guidance typically involves multiple units (e.g., IT services, teaching and learning centres, libraries, research services) and different expectations by role (faculty, students, researchers, staff), which suggests complex internal governance architectures (Wu et al., 2024). However, there is a lack of evidence about how supranational and national rules, such as EU-level measures and emerging national supervisory arrangements (see subsection 2.6 for details), are translated, prioritised, and aligned across those internal settings when the context is research rather than classroom practice. Comparative research from different regions also reports that there is fragmentation in policy application, which strengthens the case for analysing how rules at different levels interact in practice within universities (Dai et al., 2024; Stracke et al., 2025; Ullah et al., 2024). Therefore, this study examines how multilevel expectations are operationalised in university guidance through the focus on two Finnish universities, which are active research institutions operating within a characteristic public governance model that has legal autonomy but requires alignment with the EU and national framework (EUA, 2023; Universities Act, 558/2009).

The second gap centres on the focus of the research on AI policies in HEIs. Global reviews and institutional surveys document a fast dissemination of GenAI[2] guidelines with a strong focus on teaching, assessment and academic integrity (Funa & Gabay, 2025; Jin et al., 2025; Ullah

[2] See Chapter 2

et al., 2024; Wang et al., 2024). In contrast, fewer studies investigate how AI policies are implemented in relation to research and what that might mean for research practice, infrastructure and support. Where research is discussed, it often appears as an extension of general integrity or IT guidance rather than as a distinct area of policy implementation in research settings.

Different studies suggest possible reasons why the implications of AI policies for R&D remain underexamined. One of them may be that the public release of GenAI triggered immediate concerns about assessment, academic integrity and student conduct, so the early institutional guidance mostly focused on pedagogy and classroom practice, as global and regional reviews document (Funa & Gabay, 2025; Jin et al., 2025; Ullah et al., 2024; Wang et al., 2024). Another potential cause is that research governance is more complex to codify, including research integrity codes, ethics review, data management, IP and funder/publisher requirements. Regarding this point, Smith et al. (2025) note that, in comparison, there has been "little attention" paid to the impacts on research so far, and they propose a specific institutional framework to fill that gap; they call for practical arrangements to make policy work. This thesis, therefore, places R&D implications at the centre, because it explores how concrete implementation choices affect research practice in Finnish universities.

The third gap is the geographical coverage of the existing literature. Many empirical research and policy analyses focus on English-speaking systems or high-ranking institutions (e.g., U.S. Big Ten universities) and regional reviews, with fewer peer-reviewed, multi-case studies from Finland (Dai et al., 2024; Jin et al., 2025; Wang et al., 2024; Wu et al., 2024). There are works about the Nordics, for example, analyses of Danish university policies (Driessens & Pischetola, 2024), but their findings cannot be assumed to generalise to Finland's legal and organisational setting. Finland's universities have developed public guidelines for teaching and for research (Tampere University, 2023, 2024; University of Helsinki, 2024), but there is a lack of empirical analysis that follows implementation inside universities, especially with a research or R&D focus. The Finnish cases (UH and TAU) in this thesis, therefore, extend the evidence beyond the dominant Anglophone and non-Finnish Nordic samples and keep the analysis attached to institutional practice.

In conclusion, this study addresses (i) how multilevel expectations are operationalised inside universities conducting research, (ii) the underexamined implementation of AI policies and their implications for R&D, and (iii) the lack of empirical studies about Finland. The contribution of this study is to link a multilevel governance perspective to concrete organisational routines in two Finnish universities. It complements reviews oriented to teaching with implementation evidence focused on research. In addition to this, it provides specific analysis about Finland in a literature still dominated by cases from English-speaking countries.

1.4. Research purpose and questions

The purpose of this thesis is to examine how AI policies are implemented across governance levels in two Finnish universities (Tampere University and the University of Helsinki) and to identify the challenges and implications for research and development (R&D). This responds to the gaps identified above (subsection 1.3). First, there is limited evidence on how EU, national and institutional AI policy instruments are implemented within Finnish universities. Second, there is a lack of knowledge about what enables or constrains that implementation in practice. Finally, the description of the implications for research and development, including how institutions balance regulatory compliance, institutional autonomy and innovation, remains insufficient.

This purpose is captured in the main research question, which asks how implementation occurs and what implications it carries for R&D. The following five secondary questions build upon this main question. RQ1 aims at the "how" by tracing the interpretation and operationalisation of policy instruments at the EU, national and institutional levels. RQ2 focuses on the conditions, such as capacity, roles, coordination and monitoring, that either enable or hinder implementation. RQ3 looks at how universities manage tensions between regulatory compliance, institutional autonomy and innovation in a rapidly evolving context. RQ4 covers the consequences by asking about influences on research practices, innovation outcomes and collaborative activities. Finally, RQ5 brings in stakeholder perspectives to connect process and outcomes and to ground the R&D implications in the experiences of policymakers, administrators and researchers.

Therefore, the study is guided by the following main research question and five secondary questions:

Main research question

How are AI policies implemented in Finnish higher education institutions at international, national and institutional levels, and what challenges and implications does this have for research and development?

Secondary research questions

RQ1. How do Finnish universities interpret and operationalise international, national and institutional AI policy instruments within the context of their R&D activities?

RQ2. What are the key factors that facilitate or hinder the implementation of AI policies in Finnish HEIs?

RQ3. How do universities manage tensions between regulatory compliance, institutional autonomy, and innovation in a rapidly evolving AI governance context?

RQ4. In what ways do AI policies influence research practices, innovation outcomes, and collaborative activities within Finnish universities?

RQ5. How do key stakeholders, including policymakers, university administrators, and researchers, perceive the process and outcomes of AI policy implementation in relation to R&D within Finnish universities?

1.5. Structure of the thesis

This thesis is organised into seven chapters, structured to reflect the research process from problem framing to theoretical development, evidence generation and interpretation.

The opening chapter introduces the study by presenting its background, outlining the research problem and gap, and formulating the purpose and guiding questions. It ends with this structural overview to show where findings and arguments will appear.

Next, the second chapter reviews the literature and establishes key concepts and the scope of the study. It defines central terms, such as *AI governance*, *regulation*, and *policy*, and clarifies how *implementation* is approached in higher education. This is followed by a mapping of the AI governance landscape across international, national, and institutional levels, a review of institutional responses worldwide, and a discussion of how AI affects research and development (R&D). The chapter finishes by situating the two case institutions within the Finnish policy and higher education context.

The theoretical lens is presented in Chapter 3, which combines multilevel governance and policy implementation theory. This framework is used to interpret how AI policy is translated into practice. The chapter also details how the two perspectives are integrated to provide a layered understanding of implementation dynamics, an approach that is reviewed in the discussion chapter.

To explain how the evidence was produced and analysed, Chapter 4 outlines the research design, case selection, and sampling strategies. It then details the data collection and analysis methods, the rationale for integrating interviews and document analysis, and the ethical protocols followed. This chapter clarifies how the evidence is generated and analysed.

Chapter 5 presents the empirical findings from Tampere University and the University of Helsinki. Each case is reported separately to preserve institutional specificity, beginning with the determinants matrix results and followed by interpretative themes. This structure allows both within-case insight and cross-case comparison.

Building on the findings, Chapter 6 offers a cross-case discussion of the findings through the integrated theoretical framework. It begins with a brief synthesis of the two cases and the interpretative patterns, then identifies the recurrent patterns through which implementation occurred, using both multilevel governance and policy implementation theory. From there, the chapter reflects on the study's theoretical contributions and practical implications before closing with a discussion of limitations and the weight of the evidence. This structure allows the discussion to move from case-specific insight to broader claims about AI governance and implementation dynamics in higher education.

Finally, Chapter 7 brings the thesis to a close. It answers each of the five research questions in turn and synthesises them into a main claim about how AI policy is being implemented in Finnish universities. The chapter concludes by highlighting the study's theoretical and practical contributions and by offering targeted recommendations and directions for future research.

2. Literature Review

2.1. Key concepts and scope

This subsection explains how the terms "AI governance", "regulation", and "policy" are used in this thesis, how "implementation" is understood in the context of higher education, and where the analytical scope is delimited. The final paragraph offers a short orientation to the governance levels and the actors that will be addressed throughout the thesis

This thesis uses 'AI governance' to refer to the ensemble of rules, norms, institutions and practices that influence the development and use of AI systems, as well as the oversight and accountability arrangements around them (Dafoe, 2023; Wirtz et al., 2022). Within this frame, 'regulation' refers to binding legal instruments adopted by public authorities (legislative or administrative processes) and 'policy' is used here as a working term that covers both binding rules and non-binding instruments such as strategies, recommendations and institutional guidelines that steer behaviour (Bullock et al., 2023; UNESCO, 2022; Zou et al., 2025). In line with this, to avoid terminological confusion later when discussing "policy implementation", this thesis adopts 'AI policy' as an *umbrella term* that includes hard law, such as the EU Artificial Intelligence Act, and soft instruments, such as national strategies or university guidelines (G'sell, 2024; UNESCO, 2024; Zou et al., 2025).

On the one hand, when the term 'Hard law' is mentioned, it refers to binding statutes or regulations with enforceable obligations (Wirtz et al., 2022). In the European context, the model example is the EU AI Act, a risk-based framework with market access conditions and responsibilities for providers and deployers (European Union Artificial Intelligence Act, 2024). On the other hand, the 'Soft instruments', mentioned above, include international recommendations, sector guidance, national AI strategies and institutional rules that influence practice even when they are non-binding (UNESCO, 2024; Wirtz et al., 2022). In education and research, UNESCO's Recommendation on Ethics of AI and its guidance for GenAI have become outstanding reference points used by governments and HEIs to orient principles and practice (UNESCO, 2022, 2023). At the institutional level, research integrity codes work in a similar way as soft normative standards that universities translate into local procedures and responsibilities across research workflows (ALLEA, 2023). Consistent with this mixed landscape, the thesis uses 'policy' as a simplified label to refer to both hard and soft instruments, and specifies law, regulation, guideline or strategy when needed (Bullock et al., 2023; Moore & Lookadoo, 2024).

A brief note about GenAI is necessary because most of the current debate in HE focuses on these systems. In this thesis, 'GenAI' refers to the models that can produce new content (e.g., text, images, code or audio) in response to prompts (UNESCO, 2023). In the EU law, generative models are treated under the concept of GPAI models and systems (European Union Artificial Intelligence Act, 2024). The AI Act introduces GPAI to adapt models that display important generality and can perform, in a skilful way, a wide range of distinct tasks, and it links this to tiered obligations and transparency requirements, especially where those models support high-risk applications (European Union Artificial Intelligence Act, 2024; Zou et al., 2025). Generative models are a typical example of GPAI under the Act, although the group of GPAI models is broader than just generative systems, and the Regulation does not define "generative AI" as such (Zou et al., 2025). This thesis, therefore, recognises GenAI as part of the wider AI governance field and, when relevant, indicates where the specific GPAI responsibilities cross with university practice.

Another concept used is 'implementation', which is understood as the set of activities through which organisations translate policy goals and rules into routines, procedures and decisions in everyday operations (UNESCO IESALC, 2023). This includes interpretation, resource mobilisation, role assignment, monitoring and adaptation (Hill & Hupe, 2014). In the university context, implementation typically relies on distributed actors and "operational governance", where central steering must be tailored to professional discretion and existing research and administrative processes (Hill & Hupe, 2014; UNESCO, 2023). This thesis examines implementation in that practical sense: how universities make external and internal AI instruments work in their R&D settings, through guidance, services, committees and documentation pathways and not only through formal compliance texts (ALLEA, 2023; UNESCO, 2023).

The analytical focus of this study is research and development (R&D), and not pedagogy or assessment. R&D here covers research practices, data and ethics governance, intellectual property and commercialisation interfaces, research infrastructures, and research support services. Different teaching-related uses, such as coursework policy or academic integrity, fall outside the scope, except where they directly refer to research practice or shared institutional controls (ALLEA, 2023; UNESCO, 2023). This boundary aligns with current institutional guidance that distinguishes researcher responsibility and transparency in projects, and directs market-oriented or real-world testing to initial legal review under EU law (European Union Artificial Intelligence Act, 2024; University of Helsinki, 2024).

To allow a better orientation, the thesis follows a three-level map consistent with multilevel governance thinking: international, national, and institutional levels (Attard-Frost & Lyons, 2025). At the supranational level, international recommendations and the EU AI Act establish normative direction and legal limits that frame national and institutional choices (European

Union Artificial Intelligence Act, 2024; UNESCO, 2022). At the national level, sector authorities, governmental guidance and performance agreements steer HEIs, often employing international templates. Finally, at the institutional level, universities implement, through local policies and "living" guidance, procurement and data pathways, documentation and review mechanisms that embed external requirements into research workflows (ALLEA, 2023; UNESCO, 2023). The typical implementation actors include central administration and legal services, data protection and information security, IT and research computing, research services, and research ethics or data committees. These actors translate ethical and legal principles into local rules, service paths and documentation responsibilities that researchers can follow (ALLEA, 2023; UNESCO, 2023; University of Helsinki, 2024). There are also horizontal networks at, and across, these levels, such as EUA (supranational), national rectors' associations (national), and shared e-infrastructures, that support coordination and peer learning without displacing university autonomy (UNESCO IESALC, 2023).

This orienting map keeps the structure stable across the analysis. A detailed interpretation of how these levels and actors interact is developed in Chapters 3 and 5.

2.2. AI governance landscape across levels: international, national and institutional

This subsection summarises the layered governance environment where universities interpret and apply AI-related expectations. It focuses on international instruments with "vertical" direction, the EU regulatory regime, national steering, and institutional policies that are formed within higher education organisations.

At the international level, UNESCO's *Recommendation on the Ethics of Artificial Intelligence* is a normative instrument that covers many sectors, was adopted by Member States, and establishes principles and policy areas, including a dedicated area on *Education and Research*, intended to guide governments and higher education institutions in developing governance arrangements for AI (UNESCO, 2022). Its status as a recommendation makes it non-binding, but it is widely used as a reference point by ministries and higher education institutions (HEIs) (UNESCO, 2024). Another outstanding and foundational instrument is the UNESCO *Beijing Consensus on Artificial Intelligence and Education*, which complements the *Recommendation on Ethics* by calling on states and HE sectors to develop system-wide strategies, strengthen teacher and researcher competencies, and insert ethical or data-governance safeguards for AI use in education systems (UNESCO, 2019). In addition to those, the recent G7 commitments indicate soft law expectations that can be translated into EU, national and institutional practice, including a pledge to accelerate public-sector adoption and to lower barriers for SMEs through access to computing (G7 Leaders, 2025). Beyond these documents, international policy work has mapped different regulatory approaches emerging across sectors (e.g., risk-based, rights-based, standards-led, and hybrid models), which later inform regional and national policymaking (UNESCO, 2024). In addition to this, these approaches emphasise transparency, accountability, data protection and oversight mechanisms that universities must later interpret (UNESCO, 2024). A recent analysis of UNESCO IESALC (2025) of the higher education's role inside national AI strategies highlights that HEIs are expected to contribute across three fronts: advancing AI research and innovation, building human capital through curricula and upskilling, and operationalising ethical guidance in institutional practice. These are expectations that make international soft law "travel" into university procedures via national and institutional policy. Some non-EU jurisdictions are also implementing hard and soft law directions through legislative proposals, executive or policy instruments (UNESCO, 2024; UNESCO IESALC, 2025b), but detailed national contrasts are beyond the scope of this subsection

Within the EU, the Artificial Intelligence Act establishes a risk-based regulatory regime for AI systems placed on the EU market or put into service. Furthermore, it assigns obligations to providers and deployers, alongside importers, distributors and authorised representatives (European Union Artificial Intelligence Act, 2024). The Act forbids certain practices, imposes ex-ante requirements for high-risk systems, and sets transparency obligations for limited-risk uses (including specific disclosures such as those applicable to deepfakes and certain emotion-recognition applications). This creates compliance issues for universities depending on their role in development, procurement, or use (European Union Artificial Intelligence Act, 2024). Moreover, the Act introduces obligations tailored to GPAI models. These are particularly relevant for research-intensive universities that develop or engage with models that can be repurposed across tasks. These provisions cross with institutional processes for research governance, procurement and risk assessment (European Union Artificial Intelligence Act, 2024). The enforcement relies on national authorities and penalty regimes established under the Member State law, which means that the EU framework is operationalised through national oversight designs that universities then meet (European Union Artificial Intelligence Act, 2024).

Although the direct and applicable EU rules guide the overall governance, national administrations organise supervision, designate competent bodies, and may issue sectoral guidance that influences how research organisations and HEIs interpret obligations in practice. In those settings, national AI strategies frequently assign HE a role in research capacity, talent development, and ethical awareness, which creates expectations that need to be reflected in university policies and support services (UNESCO IESALC, 2025b). In addition to this, the international reviews of regulatory approaches note that national implementations contrast in the balance between legal requirements and standards-based soft instruments, which affects how universities operationalise compliance and innovation (UNESCO, 2024). These national differences are addressed further in subsection 2.6. Here, the national level is presented as the intermediary that translates EU requirements and international guidance into sector-specific oversight and support mechanisms (UNESCO IESALC, 2025b).

At the institutional level, HEIs have developed policies and guidance that translate external expectations into roles, processes and supports for staff and students, with common emphases on academic integrity, assessment, privacy/data governance, transparency of AI use, and capacity-building for different stakeholder groups (An et al., 2025). Also, the evidence across institutions presented by An et al. (2025) shows that these instruments are typically advisory, multi-owner and tailored by role (e.g., staff, students, researchers), which requires coordination across academic, IT, legal, ethics and research support units to work in practice. According to Mahrishi et al. (2025), in their mapping of global initiatives, in a similar way, they argue that university-level frameworks should combine ethical use guidelines, strong data governance arrangements, and skills development to align practice with regulatory and soft law expectations and sustain innovation. These institutional responses work within the EU/national framework, for instance, by inserting transparency responsibilities for certain AI uses or by screening procurement/use cases for “high-risk” characteristics. In addition to this, it uses international ethical guidance to organise principles and training (European Union Artificial Intelligence Act, 2024; UNESCO, 2022).

To sum up, the international soft law (e.g., UNESCO instruments) provides the ethical and rights themes vocabulary that ministries and HEIs adopt when outlining responsibilities for education and research; in that way, they develop institutional policy language and staff development agendas (UNESCO, 2019, 2022). On the other side, the EU AI Act establishes binding obligations that become relevant whenever a university acts as a provider or deployer, procures AI-enabled tools, or integrates GPAI into research infrastructures and services, connecting regulatory categories to research operations and support functions (European Union Artificial Intelligence Act, 2024). The national oversight arrangements and strategies facilitate how these obligations are communicated and monitored within the HE sector, because they interact with open science, research integrity and data-protection rules that already structure research practice (UNESCO IESALC, 2025b). Finally, institutional policies implement these expectations by defining allowed uses, documentation and disclosure practices, and data-management safeguards. They also establish escalation to ethics or data oversight bodies, and create training pathways, which are the concrete mechanisms that influence R&D workflows and researcher behaviour examined in the following chapters (An et al., 2025; Mahrishi et al., 2025).

2.3. AI governance within HEIs worldwide

Universities around the world reacted quickly to the spread of GenAI, initially issuing guidance or provisional rules and often shifting from bans or 'wait and review' positions to allowing the use with safeguards. This shift is documented in institutional cases (e.g., Denmark) and cross-institutional reviews (Dabis & Csáki, 2024; Driessens & Pischetola, 2024), and in broader sector guidance, it is warned that bans are neither feasible nor desirable (Molina et al., 2024). These institutional responses have typically taken the form of soft governance instruments aimed first at guiding and then governing the use of AI across university functions (Jin et al., 2025). This AI governance is typically operationalised through a combination of recommendation guidelines, data and research integrity controls, role-specific support services, staff and student training, and multi-unit oversight, rather than a single "rulebook" as noted above (An et al., 2025; Jin et al., 2025). These arrangements seek to steer everyday choices (e.g., when AI tools may be used, what must be documented, and how data should be handled) and leave room for professional discretion in teaching and research workflows (An et al., 2025; Wang et al., 2024; Wu et al., 2024).

To organise this unequal field, the literature suggests a group of recurring governance patterns (Jin et al., 2025; Wang et al., 2024; Wu et al., 2024). Making groups by pattern, rather than by country, supports later analysis in this thesis, because the same pattern can be enacted under different legal contexts, but faces comparable implementation choices (Hill & Hupe's "operational governance" logic, as presented in subsection 2.1). To make sense of this heterogeneous practice across the systems, the thesis organises these recurrent arrangements into four governance patterns, which support the later implementation analysis.

In many institutions, central teams issue high-level guidance that explains opportunities and risks of GenAI, but the decisions about permitted use (especially in coursework) are given to course leaders who adapt the expectations to the disciplinary needs (An et al., 2025; Wang et al., 2024). In addition to this, the guidance is typically supplemented with sample syllabus text and recommended disclosure practices (An et al., 2025). Recent studies of leading US universities report that institutional pages commonly encourage responsible experimentation, frame AI literacy as a shared goal, and offer exemplar statements that instructors can adopt or modify, which keeps oversight close to the classroom and aligns with academic integrity norms (An et al., 2025; Jin et al., 2025). European universities show similar decentralisation. For example, Danish universities rewrote assessment guidance and provided faculty-facing materials and allowed programmes to set local rules, often using web portals to organise evolving advice (Driessens & Pischetola, 2024). Furthermore, Stracke et al. (2025), in their review of 15 HE policies from eight European countries, emphasise three key areas: AI literacy, teaching and assessment orientation, and uneven research coverage.

A second pattern focuses on risk, integrity and legality, using wide institutional "do and don't" rules for specific contexts (e.g., examinations, submission declarations, or storage of sensitive data), sometimes introducing explicit restrictions or controlling certain uses (Driessens & Pischetola, 2024). In this model, formal policies reference existing conduct regulations and assessment procedures. Furthermore, some of the common instruments are updates to exam regulations, standard plagiarism language that includes AI assistance, and obligatory disclosure statements (Driessens & Pischetola, 2024; Wang et al., 2024). Outside Europe, Dai et al. (2024) observe, in their review of Asian universities, in a similar way, that central policies standardise assessment rules (e.g., when AI use is forbidden or must be declared), with less detailed coverage of research use beyond general concerns.

A third pattern pictures AI governance through existing research integrity, data classification and privacy regimes. In this case, IT and legal-security units specify what data may be entered into external AI services, forbid uploading confidential or personally identifiable information, and direct higher-risk uses to existing review networks (An et al., 2025). At the same time, researcher guidance emphasises responsible authorship (e.g., disclosure of AI assistance), source and citation practices, and alerts with human subject or proprietary data. In addition to this, the pages that focus on the staff and administration also highlight compliance with institutional data policies (An et al., 2025). These arrangements rely on existing organisational capacities, such as data protection offices, ethics boards, and security protocols, rather than building AI-specific oversight structures from scratch (Wu et al., 2024).

A fourth pattern underlines the fact of making it work through services, such as libraries, centres for teaching and learning, and IT units that curate tool explainers, comparison charts, checklists (e.g., encouragement to consider bias, data sharing, and explainability), and training offers (Funa & Gabay, 2025; Gupta & Nyamapfene, 2025). These resource hubs typically promote exemplar policies, classroom activities, workshop calendars, and "getting started" guides. They place AI literacy as a skill to be built across roles, not only controlled (Wang et al., 2024). In the case of Asia, the reviews also highlight staff development and student training as "promising practices," and observe gaps in sustained capacity-building for specific research use cases (Dai et al., 2024).

According to Wu et al. (2024), comparative analyses show that guidelines are created and maintained by several units (IT, teaching and learning centres, libraries, AI centres, and, sometimes, offices of the president/provost), “each of the units has a specific emphasis on roles and activities impacted by GenAI, contributing to more comprehensive guidelines addressing the needs of different stakeholders” (p. 15).

A consistent finding across the reviews consulted is that the publicly available institutional guidance is larger for teaching and assessment (e.g., syllabus clauses, exam rules, academic honesty) than for research practice (e.g., data governance in lab settings, model development, procurement of AI services for projects) (Jin et al., 2025). U.S. institutions offer extensive materials for instructors, and the guidance tailored for researchers tends to be shorter and framed via general data-protection concerns and integrity norms, as noted by An et al. (2025) that “less than 20% of the universities provided GenAI guidelines for researchers” (p. 21). In the case of the Asian reviews, there is a similar emphasis on assessment and academic integrity, with fewer concrete institutional guidance for research use beyond generic warnings and capacity-building (Dai et al., 2024). This imbalance reinforces the thesis’s focus in RQs 4-5 on R&D consequences and stakeholder perspectives, where topics such as institutional rules, services and documentation directions are still in development (An et al., 2025; Dai et al., 2024).

2.4. Policy implementation in HE

Universities implement policy through distributed, multi-unit arrangements rather than a single centralised unit. This makes coordination, role clarity, and tailored guidance key for policies to change practice (Wu et al., 2024). Policy communication is itself an implementation factor; when guidance is adapted to the role, practical and aligned with existing norms, it is more likely to be enacted (Greenspan, 2025; Moore & Lookadoo, 2024). Furthermore, Al-Omari et al. (2025) argue that the fast pace of AI development introduces moving targets for rules and roles, so institutions need adaptable governance that can be updated as technologies and risks evolve. At the course level, policy framing and explanations influence behaviour and attitudes, which indicate that the articulation of rules matters for compliance and learning (Greenspan, 2025).

In practice, the AI-related policies and guidance are produced and maintained by several units, and disseminated via resource hubs with templates, explainers, checklists and training (Wang et al., 2024; Wu et al., 2024). Universities also integrate AI expectations into existing processes (e.g., data protection and information-security rules, research ethics pathways, procurement screens) (Gupta & Nyamapfene, 2025). Specifically, legal and IT units commonly operationalise handling of data restrictions and direct higher-risk uses to established review networks aligned with GDPR and institutional privacy regimes (Al-Omari et al., 2025). At the level of the course, many institutions implement policy through syllabus statements, assessment rules, and disclosure conventions that are periodically updated and communicated to staff and students (Wang et al., 2024).

First, regarding role clarity and coordination, implementation is stronger when responsibilities across central administration, legal/privacy, IT/security, research services, and teaching support are explicit, and there is support for cross-unit coordination (Wu et al., 2024). Second, dedicated capacity for guidance, training, and oversight matters and resource gaps and skills shortages are frequently cited challenges, especially for smaller institutions (UNESCO IESALC, 2025a). Third, integrating AI-related guidance into existing institutional processes reduces friction and normalises compliance (Gupta & Nyamapfene, 2025). Fourth, clear templates, exemplars, and scheduled update cycles help staff apply rules consistently and adjust as technologies shift (Moore & Lookadoo, 2024). Fifth, effective leadership and communication improve the shared understanding and reduce confusion about acceptable use (Moore & Lookadoo, 2024). Finally, institutions benefit from sector exchanges through horizontal learning networks or stakeholder collaboration to share practices and reduce duplication as guidance evolves (UNESCO IESALC, 2025a).

Common barriers mirror the absence of these enabling conditions. The fast-evolving pace of technology might outpace update cycles, so static guidance can become quickly obsolete unless governance is deliberately adaptable (Al-Omari et al., 2025). Moreover, fragmented ownership can create overlaps or gaps when multiple units issue guidance without coordinated supervision (Wu et al., 2024). In addition to this, data privacy restrictions and algorithmic bias concerns complicate local control and increase the compliance burden (Al-Omari et al., 2025). Finally, unequal resourcing and variations in AI literacy across institutions and roles contribute to disparities in use and implementation quality (Mahrishi et al., 2025; UNESCO IESALC, 2025a).

Overall, effective implementation in universities depends less on a single rulebook and more on coordinated roles, integrated processes and the capacity to revise guidance as technologies and risks evolve (Al-Omari et al., 2025). In addition to this, the communication design is part of the implementation work, because clear and tailored guidance supports consistent practice (Moore & Lookadoo, 2024). At the same time, policy framing can influence behaviour and perceptions, which matters for compliance and innovation goals (Greenspan, 2025). These features motivate the study's focus on actors, implementation processes, and the factors that facilitate or hinder R&D-related AI policy enactment. The analytic lenses used to examine them are organised in Chapter 3.

2.5. AI and R&D in HEIs

This subsection focuses on how AI shapes research practice inside universities, with particular attention to four recurrent thematic areas in the literature: (i) early-stage research design and integrity; (ii) data and compute infrastructure; (iii) collaboration, funding, and IP/publishing; and (iv) the translational line from research to application (Council of the European Union, 2025; EUA, 2025; OECD, 2023; Smith et al., 2025).

At the design stage, AI use increases existing responsibilities for transparency, human oversight and data protection (UNESCO, 2023), and guidance recommends explicit disclosure of AI assistance in research processes and outputs as part of integrity practice (ALLEA, 2023; S. M. Smith et al., 2025). The European Code of Conduct specifies that researchers must report methods, including the use of AI or automated tools, and recognises publications, data, code and software as research results that must be managed and cited (ALLEA, 2023). The Code (ALLEA, 2023) also frames non-disclosure of AI or automated tools as an unacceptable practice, and calls for clear institutional policies, training and environments that support reproducibility and accountability. At the institution level, consistent frameworks for research use emphasise documenting the choice of tools and prompts, safeguarding confidential data, and ensuring that human researchers retain responsibility for interpretation and authorship (Smith et al., 2025). Sector analyses further underline the need to strengthen documentation, validation and uncertainty handling in AI-related science to protect reliability and replicability (OECD, 2023).

Evidence highlights limited access to suitable computational resources (e.g., HPC systems, GPUs) and high-quality, well-described datasets as key limitations for AI-intensive research in universities (OECD, 2023). At the EU level, the Council conclusions call for equitable access, connected AI-enabling infrastructures and improved interoperability around HPCs and AI Factories, alongside cross-border collaboration (Council of the European Union, 2025). In addition to this, the EUA sector input argues for a distributed system with transparent access mechanisms and a strong public-interest funding base, led by the academic community and committed to environmental sustainability (EUA, 2025). In this thesis, the European framing connects what “infrastructure” involves, and the national Finnish arrangements are treated in subsection 2.6 to avoid duplication and to remain focused here on research-practice implications (Council of the European Union, 2025).

The OECD (2023) encourages multidisciplinary programmes and funding that connect domain science with AI expertise and laboratory automation, instead of isolated projects. Institutional frameworks and global guidance converge on aligning AI use with existing research-integrity norms (e.g., authorship accountability, method disclosure) and with evolving publisher/funder rules that universities must translate into practical guidance for researchers (ALLEA, 2023; S. M. Smith et al., 2025; UNESCO, 2023). In addition to this, EU-level conclusions emphasise developing guidelines and technical solutions for responsible AI use in scientific publishing that address transparency, integrity, ethical practice and intellectual-property issues (Council of the European Union, 2025). Moreover, EUA (2025) highlights the importance of equitable access and publicly grounded methods to ensure that AI use in research serves innovation ecosystems and non-commercial inquiry.

As research outputs move towards application, the expectations tighten around traceability, rigour, risk management and safeguards for participants and society, which institutions operationalise through documentation, oversight and directing through existing review routes (OECD, 2023). In the EU context, the Council of the European Union (2025) highlights the alignment of research uses of AI with integrity and societal trust as systems approach deployment contexts, which implies governance arrangements that anticipate transitions and support responsible adoption.

To remain aligned with the empirical focus on research (rather than teaching or administration) in two Finnish universities, this subsection identifies key evidence-based pressure points without detailing the entire R&D workflow.

2.6. Finland: Policy and HE sector context

Finland runs a binary higher education system comprising universities (yliopisto) and universities of applied sciences (UAS) (ammattikorkeakoulu), with universities oriented to research-based higher education and doctoral training, and UAS focusing on applied education at bachelor's and master's levels (European University Association (EUA), 2023). Within this system, there are 14 universities in total, 13 under the Ministry of Education and Culture's administrative branch, and the Finnish National Defence University is under the defence administration (Ministry of Education and Culture, n.d.-a; Universities Act, 2009). In addition to this, universities can take one of two legal forms: public-law corporations or foundation universities. These are defined under the Foundations Act. Examples include Aalto University and Tampere University, which are operated by foundations as provided in the Universities Act (558/2009).

Regarding autonomy, Finland is characterised by high organisational, staffing and academic autonomy, and medium-high financial autonomy, a pattern that has remained stable into the 2020s (EUA, 2023). The steering of the State is exercised through a block-grant and four-year performance agreements, with institutions retaining discretion over internal allocation of core funding (EUA, 2023; Ministry of Education and Culture, n.d.-b). In this decentralised governance setting, universities hold significant institutional discretion in how they organise internal rules, services and support, within the national steering framework (EUA, 2023; Universities Act, 2009). The current university agreements for 2025–2028 were finished in autumn 2024, as part of the ministerial negotiations and were linked to the Ministry of Education and Culture's (OKM) steering and financing framework (Ministry of Education and Culture, n.d.-b; University of Oulu, 2024). Some recent Finnish macro-policy priorities include increasing higher education attainment and addressing R&D human capital constraints to support productivity and innovation, which frame the sector context for institutional choices (OECD, 2025). These priorities are situated alongside reported shortages in high-skill R&D roles, which influence universities' capacity to scale AI-intensive activity (OECD, 2025).

In the case of digital policy and e-infrastructure, they provide enabling conditions for AI in university R&D. Finland's Digital Roadmap highlights data economy, skills and infrastructure. The key national assets mentioned in this group are the CSC - IT Center for Science and LUMI (Government of Finland, 2023). At the EU level, Finland hosts the LUMI AI Factory, a EuroHPC initiative that integrates compute, data and expert support for researchers, start-ups and SMEs (CSC - IT Center for Science, 2025b; EuroHPC JU, 2023). These infrastructures are already mobilised for AI-intensive research and cross-border experimentation, and are featured in the EU's 2025 monitoring of Finland's digital progress (European Commission, 2025a). National collaboration platforms, such as the Finnish Center for Artificial Intelligence (FCAI), also connect universities, research institutes and industry, providing a channel between research and application (European Commission, 2025a; Finnish Center for Artificial Intelligence (FCAI), 2025).

In the field of national AI policy, Finland has pursued AI policy mainly through time-bound programme instruments as the main strategy. In 2017, it introduced the programme "Finland's Age of AI", which lasted until 2019. Then, in 2020, the government launched the *Artificial Intelligence 4.0* programme. It established a long-term vision for AI development from 2020 to 2030, focused on ecosystem development, skills and trust. It emphasised the support of AI research, promotion of collaboration between academia and industry, improvement of AI education and alignment of ethical guidelines with the EU policies. The programme finished in 2022, and its final report outlined key findings and recommendations for subsequent policy (Ministry of Economic Affairs and Employment, 2022). From 2024 onwards, the binding reference for AI governance comes from the EU Artificial Intelligence Act, and Finland is preparing the national arrangements through the Government Proposal HE 46/2025 to supplement the Regulation. It outlines a cooperation model between competent authorities, establishes a sanctions mechanism, and allocates market-surveillance and coordination tasks for implementation in Finland (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 2025). According to the Ministry of Economic Affairs and Employment, provisions for (among others) GPAI models apply from 2 August 2025, and the elements of the national framework (e.g., authority tasks and sanctions) proceed via domestic legislation (Ministry of Economic Affairs and Employment, 2025). For universities, the relevance is double, because they will need to interpret institutional responsibilities where activities intersect with regulated AI (e.g., procurement or deployment of high-risk systems), and they will continue to uphold research-integrity norms that meet alongside regulatory compliance (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 2025).

Peer forums act as translation networks from legislation to practice, which enables institutions to share approaches and “borrow” templates across the sector (European University Association (EUA), 2023). The Council of Rectors of Finnish Universities (Unifi) responded to the Government proposal HE 46/2025 and highlighted the research and education freedoms and the need for proportionate and clear sector guidance (Unifi, 2025). In a similar way, the Finnish Education Employers (Sivista) welcomed the EU-level harmonisation and supported the designation of national authorities and sector-specific implementation support (Sivista, 2025). In parallel, CSC-centred networks and inter-university groups provide shared templates, technical advice and training offers that help standardise practice across institutions when deploying or procuring AI-enabled services (CSC - IT Center for Science, 2025; Government of Finland, 2023).

This descriptive system and policy section is used in Chapters 4–5 to operationalise how EU and national-level settings are interpreted in institutional policies, services and oversight in the two Finnish case universities.

3. Theoretical Framework

The governance of artificial intelligence (AI) is increasingly characterised by multilevel dynamics and institutional differences. Regulatory efforts have spread across different levels, international guidelines (e.g., UNESCO Ethics Recommendations), supranational legislation (e.g., the EU AI Act), national legislation and proposals (e.g., Finland's Government Proposal HE 46/2025 to supplement and implement the EU AI Act), and institutional policies developed by individual universities (Attard-Frost & Lyons, 2025). These layered frameworks reflect not only the rapid pace of AI adoption but also the normative motivation to align technological innovation with ethical, legal, and societal expectations.

In this evolving regulatory landscape, higher education institutions (HEIs) appear as important but under-analysed places of AI policy implementation. Finnish universities, in particular, operate within a decentralised governance model that grants significant institutional autonomy, while simultaneously engaging with supranational and national policy directives. As AI governance extends into research, education, and administrative domains, universities must interpret and translate these different policy inputs into operational practices. This creates a complex implementation environment characterised by both vertical policy layering and horizontal actor discretion.

Understanding how AI policies are enacted in Finnish HEIs, consequently, requires a theoretical approach that can capture: (a) the multi-tiered architecture of contemporary policy systems, and (b) the conditional dynamics of policy implementation at the institutional level. In order to meet these analytical demands, this research combines Multilevel Governance (MLG) theory (Piattoni, 2010) with a policy implementation lens (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980). MLG provides a look at where authority resides and how decisions are distributed across supranational, national, and institutional levels. The implementation framework complements this by focusing on how and why certain policies materialise in practice, highlighting factors such as goal clarity, resources, actor beliefs, and organisational capacity.

Previous research shows that combining a multilevel lens with implementation analysis fits higher education and AI governance contexts. In European higher education, MLG has been used to explain how institutions address EU-level coordination and national steering, and develop their own strategies (Fumasoli, 2015). This indicates a good explanatory use for university settings. In multilevel policy systems, implementation studies emphasise interdependence, capacity, and coordination across organisational layers, which draws on universities' distributed units and their ties to ministries and EU rules (Conteh, 2013). In AI governance specifically, recent work conceptualises AI as a multi-scale governance system covering legal, organisational, and technical domains. This reinforces the analytical value of a combined MLG and implementation approach for examining how rules are interpreted and enacted within research organisations (Attard-Frost & Lyons, 2025). Finally, treating implementation as operational governance centres the analysis on how front-line discretion, routines, and resource constraints condition policy adoption in universities, which is directly relevant for research integrity, data governance, and R&D pipelines (Hill & Hupe, 2014).

The integration of these two perspectives supports a thoughtful analysis of AI policy implementation in Finnish universities. It helps to account for the variation in institutional responses and clarifies the implications for research and development (R&D). The following sections elaborate on each component of the framework and present a conceptual model to guide the empirical analysis.

Other frameworks could also have been used to study this problem, but each would have shifted the focus away from the layered implementation dynamics covered here. First, the *Advocacy Coalition Framework* explains policy change through coalitions organised around shared beliefs, operating across different institutional arenas, with change typically occurring over longer periods (Smith & Larimer, 2017). This framework is valuable for finding learning and contestation, but it is less effective for analysing short-term organisational adoption of a new regulatory regime within universities (Smith & Larimer, 2017). Second, the *Multiple Streams approach* helps to explain the agenda-setting when the problem, policy, and politics streams converge, but it offers limited analytical leverage for post-enactment implementation and compliance within implementing organisations (Birkland, 2020; Smith & Larimer, 2017). Third, the *Punctuated Equilibrium* model focuses on macro-level changes in policy attention, including gradual shifts and disruptive punctuations. It takes the policy subsystem, rather than intra-organisational routines and discretion, as its primary unit of analysis (Smith & Larimer, 2017). Fourth, *Network or policy network* approaches are useful for analysing actor interdependence, but much of this horizontal coordination is already captured in Multilevel Governance theory, which situates networks within vertical authority structures and complex institutional arenas (Bache & Flinders, 2004). Finally, in the context of AI-specific approaches, *ecosystem frameworks* emphasise the assembly of regulatory setups supporting functions (e.g., standards, testing, insurance, training), but while these are important at the system level, they offer little explanation of how rules are translated into local practices within university units (Wirtz et al., 2022). Following this study's emphasis on how EU and national-level rules are interpreted and enacted within Finnish universities, a combined MLG and implementation lens captures both cross-level steering and the operational behaviour of implementing units in view (Conteh, 2013; Hill & Hupe, 2014).

3.1. Multilevel governance lens

Multilevel Governance (MLG) emerged to describe the European Union in terms of policy arrangements that are "less than a federation, more than a regime" (Wallace, 1983:403, as cited in Piattoni, 2010), where authority is distributed vertically across multiple levels of government and horizontally among a diversity of public and private actors (Piattoni, 2010). In contrast to traditional state-centric models of policymaking, MLG theorises that governance increasingly takes place in overlapping arenas, challenging the notion that state sovereignty, territory, and exclusive competence necessarily align (Piattoni, 2010).

Beyond Piattoni, the foundational study by Hooghe and Marks (2001) differentiate between "Type I", which are general-purpose jurisdictions with non-overlapping memberships, and "Type II", which are task-specific jurisdictions with flexible, overlapping memberships, and specific task jurisdictions with flexible, overlapping memberships, focusing on how authority is dispersed across levels and venues (Hooghe & Marks, 2001). The next works consolidate MLG as a family of theories about authority reallocation, venue connection, and polycentric problem-solving, including in digital and intense knowledge domains (Hooghe et al., 2020). This subsection follows Piattoni because her formulation integrates three analytic dimensions, centre–periphery, domestic–international, and state–society, that together work in higher-education settings where EU legislation, national steering, and university–stakeholder relations intersect (Piattoni, 2010).

Piattoni (2010) conceptualises MLG through three intersecting analytical dimensions: centre–periphery, domestic–international, and state–society. Each dimension explores a different axis along which governance is reconfigured and offers a way to interpret how AI regulation materialises across systems such as Finnish higher education.

a) Centre-Periphery: Territorial redistribution of authority

This axis examines how power and decision-making authority are redistributed from the central state to subnational or peripheral actors, such as regions, municipalities, or, in this research case, autonomous universities. It challenges assumptions about hierarchical policy control (top-down) and instead emphasises governance *from below* or *at the edge*s (Piattoni, 2010). In Finland, universities operate under a strong autonomy regime, particularly after the Universities Act, which gave institutions legal personality and considerable freedom over internal governance and budgeting (Universities Act, 558/2009). This means that even when the Ministry of Education and Culture can set strategic priorities, such as through national AI strategies, universities have discretion in how these are interpreted and implemented in research governance, ethics procedures, or infrastructure development.

b) Domestic-International

The second axis explores how national policy processes are increasingly embedded in transnational regulatory spaces. In Piattoni's terms, the domestic-international dimension captures the scalar reconfiguration of policymaking, whereby international and supranational bodies (such as the EU, OECD, or UNESCO) apply influence over domestic policy agendas and institutional behaviours (Piattoni, 2010).

In the case of AI governance, this is exemplified by the far-reaching influence of the EU AI Act, a risk-based legislative framework developed at the supranational level that national governments are expected to introduce and adapt into their legal systems. For Finnish universities, this creates a governance context in which institutional policies must follow national regulations, which in turn are themselves shaped by European mandates. This two-way dynamic, where domestic actors learn and contribute to international norms, highlights the relevance of MLG as a tool for tracing how global AI principles find power in local institutional settings.

c) State-Society

The third axis investigates the increasing involvement of non-state actors (private firms, NGOs, professional associations, and epistemic communities) in governance processes that were traditionally the domain of public institutions. Piattoni (2010) uses this dimension to highlight how authority is increasingly exercised through *networks*, *partnerships*, and *co-regulation* mechanisms rather than through "command-and-control" models.

This is particularly relevant in AI policy, where implementation is often led by expert communities covering law, ethics, and computer science; by technology firms with substantial R&D capacity; and by civil society regulators supporting algorithmic transparency and accountability. In Finnish higher education, these horizontal connections materialise in collaborative research consortia, public-private partnerships, and engagement with EU-funded innovation ecosystems (e.g. Horizon Europe or EIT Digital[3]). These kinds of configurations blur the line between state

[3] https://www.eitdigital.eu/

authority and societal participation, reflecting what Piattoni calls the emergence of *“polycentric governance”* arrangements.

Therefore, these dimensions applied to the AI governance context can be characterised as follows:

- **Vertical interaction**: supranational directives such as the EU AI Act, its national implementation in Finland, and institutional policies developed by individual universities.

- **Horizontal networking**: policy coordination among ministries, research funding agencies, technology companies, and civil society organisations.

- **Knowledge integration**: the co-production of AI governance by legal, technical, and ethical communities operating across levels and sectors.

This reflects that Finnish universities are not passive implementers but rooted actors in a multilevel policy system. They operate within a hybrid governance configuration where authority, legitimacy, and resources circulate across supranational, national, and institutional levels. This positioning requires them to engage simultaneously with European legislation, national regulatory guidance, and internal strategic objectives and maintain ties to broader horizontal networks, such as consortia, public-private partnerships, and standard-setting organisations (Piattoni, 2010).

This theoretical lens is especially pertinent for analysing AI regulation, because it exemplifies regulatory complexity and interdependence. The EU AI Act sets risk-based obligations that must be interpreted and operationalised by national governments and further translated by HEIs into research practices, funding strategies, and ethical oversight. Meanwhile, the horizontal governance layer comprises dynamic alliances, including industry partnerships, research consortia, and normative communities that model how AI is understood and governed at the operational level.

In summary, MLG provides a framework for mapping authority that identifies where AI governance decisions are made, negotiated, and potentially contested. It helps situate Finnish HEIs within this broader governance ecosystem, emphasising that their actions are influenced by, and may in turn determine, rules, norms, and strategic priorities developed across multiple levels of governance.

3.2. Policy implementation lens

In order to understand how AI-related regulations go from abstract instructions to concrete practices within universities, it is necessary to engage with a strong line of policy implementation research. Classic studies treat implementation as a process charged with ambiguity and reinterpretation, modelled by institutional design and the actors tasked with delivery.

Implementation research is a broad field covering classic top-down, bottom-up, and synthesis models (Birkland, 2020). Mazmanian and Sabatier's framework is used here because it offers a clear set of descriptive variables (e.g., problem tractability, statutory clarity/goal structure, and the socioeconomic and political environment of implementation) that map directly onto AI governance under the EU AI Act, where legislated obligations, technical uncertainty, and organisational capacity condition outcomes (Mazmanian & Sabatier, 1983). Hill and Hupe complement this perspective by reconceptualising implementation as "operational governance" (Hill & Hupe, 2014, p. 181), placing emphasis on the multi-actor interaction across levels, the centrality of discretion and routines, and the translation of formal rules into everyday practices, characteristic features of universities' research and R&D workflows (Hill & Hupe, 2014). In multilevel systems, these perspectives complement MLG as they connect cross-level steering to the organisational and street-level mechanisms through which policies are actually implemented (Conteh, 2013).

The initial model proposed by Sabatier and Mazmanian (1980) identifies three sets of variables determining implementation success: the tractability of the problem, the statute's capacity to structure action, and the broader political and institutional context. Within this schema, six preconditions[4] are postulated: (1) clear and consistent objectives, (2) adequate causal theory, (3) structured implementation process, (4) committed implementing officials, (5) active support from interest groups or key players, and (6) stable socio-economic conditions. These variables help explain why some policies "stick", even in complex domains like AI governance, while others fail during execution.

Other authors challenged the notion of where implementation authority resides. Building on this, Hill and Hupe (2014) reject linear models of delivery in favour of a layered view of governance, and they distinguish three interacting levels: the constitutional (overarching legal and political mandates), organisational (medium-level rules, incentives, and routines), and operational (frontline enactment and discretion). Rather than assuming a single *chain of command*, they describe a web of interdependent organisations operating across levels of the

[4] These conditions include clear objectives, adequate resources and supportive constituency coalitions.

state and sector boundaries. In a similar way, Birkland (2020) further situates implementation within an iterative policy cycle. He frames implementation not as a terminal phase but as a generative place for learning, contestation and revision. In his view, failure is not only a breakdown of delivery but a signal for recalibration, realignment, or even a reconceptualisation of the original policy goals. In accordance, this study treats four diagnostic concerns as guides for analysis. The first one, *Problem tractability*, asks how far aims such as 'ethical AI' can be made observable and actionable within research and teaching practice. The second one, *Statutory precision*, concerns how clearly and specifically the EU AI Act and Finland's implementing proposal define risk classes and procedural mandates, and how these interact with institutional policies. The third one, *Resource distribution,* directs attention to whether universities have the organisational capacity (expertise, time, tooling) to interpret and enact rules, and whether these capacities vary systematically across the sector. Finally, actor discretion examines how local implementers (e.g., research ethics committees, IT administrators, principal investigators) exercise judgment under ambiguity as they translate abstract principles into everyday R&D routines. These emphases follow classic accounts that connect implementation outcomes to goal clarity, legal structuring, and resources (Sabatier & Mazmanian, 1980), and to the 'operational governance' exercised by street-level and meso-level actors (Hill & Hupe, 2014).

Furthermore, policy outcomes cannot be read directly from top-level directives. The implementation is shaped by actor beliefs, intra-organisational politics, and the interaction of formal mandates with informal norms. Actor coalitions, built by epistemic communities in law, ethics and technology, may either reinforce or reinterpret implementation goals, sometimes in ways not anticipated by designers of the policy.

All these insights highlight that implementation is not a simple technical phase of "rolling out" AI regulations. It is a governance process produced by structure, agency, and interaction, where rules are interpreted, resources allocated, and legitimacy negotiated across multiple organisational and normative grounds.

3.3. Integration of the models

Using these frameworks together means that the research adopts what Conteh (2013) describes as a multi-actor, multilevel implementation lens in which policy outcomes emerge from strategic coordination across jurisdictions and policy subsystems. This coordination includes not only vertical intergovernmental relations but also horizontal networking across public agencies, private industry, and civil society actors. Policy implementation in this view is not the linear execution of central plans, but a process of negotiation, adaptation and feedback shaped by institutional capacities and the relational dynamics of actors inserted in specific governance contexts (Conteh, 2013). For this purpose, Table 1 conceptualises the implementation of AI policy in Finnish higher education institutions (HEIs) as a multilevel governance (MLG) field structured by two core dimensions:

a) **Levels of governance**: supranational (EU), national (Finland), and institutional (HEIs), representing the vertical axes along which norms, authority, and resources travel.
b) **Determinants of implementation success**, drawn from (Sabatier & Mazmanian, 1980): goal clarity, financial and human resources, incentives and authority mechanisms, monitoring systems, actor beliefs, and inter-organisational networks.

Table 1. Conceptualisation of AI policy implementation and MLG approach

Levels/Determinants	Goal clarity	Resources	Incentives	Monitoring	Actor beliefs	Inter-organisational networks
European Union						
National (Finland)						
Institutional (University)						

According to Conteh (2013), in multilevel systems, policy implementation evolves through recursive learning, interdependence, and institutional adaptation. It does not follow hierarchical command. This logic supports an integrative framework focused on how EU directives and national policies are interpreted and enacted by Finnish universities, how horizontal networks, such as those between research ethics boards, interuniversity working groups, CSC-centred networks, and collaborative research consortia, influence resource distribution and norm diffusion, and how operational-level actors (researchers, IT administrators) translate abstract principles into concrete R&D practices.

This integrative framework guides the empirical coding of implementation dynamics and the explanation of variation in R&D implications across institutional settings. In addition to this, MLG finds where obligations and guidance originate (EU, national, institutional), while implementation variables explain the variation in how UH and TAU translate these into research integrity controls, infrastructure pathways (e.g., CSC/LUMI), and R&D commercialisation processes. The operationalisation of these elements into concrete indicators and codes is presented in Chapter 4.

4. Methodology

4.1. Research design

This study adopts a qualitative research design grounded in multiple case studies. This approach is appropriate for investigating the implementation of artificial intelligence (AI) policies across diverse organisational contexts, especially within decentralised higher education systems. According to Creswell (2014), qualitative research is most effective when the aim is to explore how individuals make sense of complex processes in their natural settings, with emphasis on meaning, institutional dynamics and social interaction. In line with this, the study seeks to understand how AI governance frameworks are interpreted and operationalised by key actors situated at different levels of policy influence (European, national, and institutional) within the Finnish higher education system.

In order to investigate the multilevel character of AI policy implementation, the original design of the study included three case institutions (the University of Helsinki, Aalto University, and Tampere University). However, due to access constraints, the analysis focuses only on two universities: the University of Helsinki and Tampere University. These cases were purposively selected based on (i) their visible engagement with AI in education and research, (ii) their participation in national and European AI initiatives, and (iii) the availability of institutional AI strategies or guidelines. As Yin (2018) notes, case study designs are especially suitable for investigating contemporary phenomena within real-life contexts where the boundaries between the phenomenon and its context are not clearly evident, and they benefit from drawing multiple sources to establish triangulation. Creswell (2014), in a similar way, emphasises developing a profound understanding of a bounded system through multiple forms of data.

The research is structured by an integrated theoretical framework that combines Multilevel Governance (MLG) theory (Piattoni, 2010) and policy implementation theory (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980). The MLG lens describes the vertical and horizontal layering of AI policy authority, ranging from EU-level regulation (e.g., the EU AI Act), through national strategy to internal institutional guidelines, while the implementation perspective examines variation in policy implementation, with a focus on determinants such as goal clarity, available resources, actor discretion, and monitoring systems. This integration supports a dual analytical purpose: to map how AI policies are translated across governance levels and to understand the institutional and actor-level dynamics that shape their implementation. The framework is operationalised through an analytical matrix that combines governance levels (EU, national, institutional) with implementation determinants, allowing within-case and cross-case comparison. This layered design helps to explain convergence and divergence in AI policy implementation and its implications for R&D practices in Finnish universities.

The analytic strategy was theory-driven in the sense that the codebook and the determinants matrix were grounded in the theoretical framework (multilevel governance and policy implementation determinants), which provided an initial deductive structure for coding and within-case matrices. At the same time, abductive reasoning was applied to refine codes and interpretative categories in response to surprising or recurrent patterns in the data, moving back and forth between theory and evidence. This approach is consistent with abductive qualitative analysis and "systematic combining" in case research, in which emerging insights initiate continuous dialogue with the theoretical frame (Dubois & Gadde, 2002; Tavory & Timmermans, 2014).

The epistemological stance of this study is a pragmatist-interpretivist. Pragmatism grounds the purposive selection of methods that best address the research questions, prioritising useful explanation over adherence to a single method orthodoxy (Creswell, 2014; Morgan, 2014). Within that pragmatic frame, an interpretivist approach recognises that policy implementation is enacted through actors' meanings, routines and locally situated judgements. Therefore, the interview narratives and institutional documents are treated as situated accounts rather than neutral facts. The abductive reasoning connects these interpretative accounts to the theoretical lenses to generate plausible explanations for observed implementation patterns (Tavory & Timmermans, 2014).

4.2. Case selection and sampling

This study uses a purposeful, criteria-based sampling strategy to select institutional cases and interview participants. The selection logic reflects the research aim to explore how AI policies are implemented across governance levels and institutional settings in Finnish higher education. In line with Creswell's (2014) recommendations for case study research, cases are chosen not to represent the broader population statistically, but to provide analytically in-depth, context-sensitive insights that support theoretical elaboration and comparative reasoning.

Two universities form the primary units of analysis: the University of Helsinki and Tampere University. These institutions were selected based on three criteria. First, they have demonstrated institutional engagement with AI through published strategies or guidelines, dedicated research programmes, or participation in national initiatives (e.g., FCAI, AI Hub Tampere). Second, they differ in institutional profile and strategic orientation: the University of Helsinki is a classical research-intensive university, and Tampere University combines technical, social and applied science traditions. This variation is valuable for comparing different pathways of implementation. Third, these universities are Finland's largest HEIs (Tampere University, 2025a; University of Helsinki, 2025) and among the most internationally connected. This positioning ensures that they are subject to multiple levels of policy influence, from European frameworks like the EU AI Act to national strategies and institutional regulations.

In addition to institutional cases, nine interviews were conducted with key stakeholders situated at different governance levels. Participants were selected using purposive sampling based on their involvement in AI policy interpretation, decision-making, or implementation. They reflect a diversity of roles and perspectives across institutional, national and supranational levels of governance and were grouped into broader categories to reduce re-identification risk. The participants' names and roles were pseudonymised and organised into categories, as shown in Table 2.

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Table 2. Stakeholders interviewed (pseudonym)

Level	Category	Pseudonym
Institutional	Senior administrator	INS_Administrator
Institutional	Policy implementer	INS_Implementer_01
Institutional	Policy implementer	INS_Implementer_02
Institutional	Policy implementer	INS_Implementer_03
Institutional	Policy implementer	INS_Implementer_04
Institutional	Policy implementer	INS_Implementer_05
National	National policymaker	NAT_Policymaker
Supranational	External stakeholder	SUP_Stakeholder_01
Supranational	External stakeholder	SUP_Stakeholder_02

This sample meets the proposed target (four institutional participants at TAU, two at UH, one specialist from the Ministry of Education and Culture, and two from a supranational association) and includes informants engaged in AI policy design, implementation and interpretation at both institutional and system levels. This sample size is appropriate for qualitative case study work, where the emphasis is on depth, contextual specificity and analytic insight rather than breadth, and where saturation is reached through focused, insightful cases rather than statistical generalisation (Creswell, 2014). In some cases, snowball sampling within institutions identified individuals with relevant expertise who were not publicly listed.

4.3. Data collection

This study uses a qualitative data collection strategy, combining semi-structured interviews, document analysis, and, where possible, contextual public data. This approach allows a rigorous exploration of the formal design and lived experience of AI policy implementation, addressing gaps between intended objectives and operational realities. As Creswell (2014) emphasises, qualitative inquiry benefits from using multiple sources of data to build an in-depth, contextualised understanding of complex social phenomena.

4.3.1. Semi-structured interviews

The core of the empirical data is taken from semi-structured interviews with selected stakeholders at institutional, national, and supranational levels. This method is appropriate for eliciting participants' interpretations, beliefs, strategic reasoning, and assessments of implementation challenges, dimensions that are often inaccessible through policy documents alone. The interviews (see Appendix A) were designed to explore five thematic areas aligned with the research questions: (1) role and background, (2) interpretation of AI policies, (3) implementation practices and tensions, (4) implications for research and development (R&D), and (5) stakeholder reflections and recommendations.

Interviews were conducted online (via Zoom or Microsoft Teams) and on-site at Tampere University city centre campus. Each interview lasted approximately 35-50 minutes. Participants received a formal invitation by email, along with an information sheet, a consent form, and a privacy notice (adapted from TAU's template). Following Tampere University's ethical procedures, participants provided written or recorded verbal informed consent.

All interviews were audio-recorded, and then the recordings were stored on encrypted devices. After the transcription and pseudonymisation (to ensure participant confidentiality), all files were stored securely on Tampere University's institutional OneDrive.

4.3.2. Transcription strategy

Due to the presence of diverse accents and occasional disfluencies, the automatic transcriptions (via Microsoft Stream) were manually corrected to ensure accuracy. The following light cleaning approach was applied:

- Redundant or meaningless repetitions (e.g. "the the," "so so") were removed.
- Self-corrections and meaningful hesitations (e.g. "a secret-, a secretary…") were retained when relevant for reflecting the speaker's process of meaning-making.

This approach aligns with common standards in thematic analysis, where the focus lies on the semantic content of responses rather than detailed linguistic analysis (Braun & Clarke, 2006; Nowell et al., 2017).

4.3.3. Document analysis

As a complement to the interviews, a document analysis was conducted to explore the official discourse, regulatory frameworks, and strategic priorities related to AI policy at different governance levels. The key documents analysed are summarised below, along with their codes.

- **TAU_AIPOLICY:** At the institutional level, the *Tampere University's AI Policy* (Tampereen korkeakouluyhteisön tekoälypolitiikka) defines the local scope, responsibilities and oversight for AI use across research and teaching.
- **TAU_AIGuide_Research:** Additionally, the *AI in Research guideline* details researcher obligations around disclosure, data protection and ethics processes in research workflows (Tampere University, 2024, 2025b).
- **UH_AIGuide_Research:** At the University of Helsinki, the *Use of Generative AI in Research* guideline clarifies the researcher's responsibility, expectations for transparency in publications, and how the EU AI Act applies to research conducted solely for scientific R&D versus real-world testing (University of Helsinki, 2024).
- **FIN_Proposal:** At the national level, the *Government proposal to supplement the EU AI Act* in Finland was analysed, which defines competent authorities and the central contact point (Hallituksen Esitys Laiksi Eräiden Tekoälyjärjestelmien Valvonnasta Ja Siihen Liittyvien Lakien Muuttamisesta [Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws], 2025). Alongside this, the *sectoral responses by Unifi* (Universities Finland) [**Unifi_Response]** and *Sivista* (Finnish Education Employers) **[Sivista_Response]** were reviewed to capture higher-education stakeholders' expectations for implementation (Sivista, 2025; Unifi, 2025).
- **EU_AI_Act:** At the supranational level, the *EU Artificial Intelligence Act (Regulation (EU) 2024/1689)* was analysed, focusing on research-relevant provisions (e.g., sandboxes and deployer obligations for high-risk AI) (European Union Artificial Intelligence Act, 2024).

These documents have two purposes: (1) to capture the stated objectives, roles and monitoring arrangements across levels; and (2) to compare those formal designs with actors' interpretations and practices in the findings chapters. The documents were included if they (i) originated from institutional, national, or the EU-level authorities or representative bodies and (ii) were current during data collection (2024-2025). Each document was coded with a unique name, and relevant information was extracted into the determinant categories and R&D issues. Where there were web-hosted guidelines that are periodically updated, I recorded the document date and access date and retained local copies for auditability (Bowen, 2009).

4.3.4. Rationale for method integration

Each method addresses a different dimension of the implementation process. The document analysis provides access to policy framing and institutional intent; the interviews offer insight into discretion, interpretation, and lived implementation challenges. Contextual indicators, where applicable, help situate institutional practices within their broader structural and resource contexts. This method improves the study's validity and supports critical comparison between policy design and policy enactment.

4.4. Data analysis

The analysis process integrates structured coding based on a theoretical matrix with thematic and interpretative analysis, enabling the examination of the formal conditions of AI policy implementation and the meanings that actors assign to their experiences.

4.4.1. Analytical approach: determinants matrix and interpretative themes

The analysis combined two complementary tracks. First, a structured determinants matrix was used to assess the conditions for policy implementation across levels (supranational, national and institutional) using the categories goal clarity, resources, incentives/authority, monitoring, actor beliefs/discretion, and inter-organisational networks (see Table 1). These determinants were adapted as analytical categories, not as one-to-one restatement of the original six preconditions proposed by the classic implementation studies (Sabatier & Mazmanian, 1980), with an interpretative focus (Birkland, 2020; Hill & Hupe, 2014). Moreover, this was operationalised and aligned with the multilevel governance focus of this study. Second, an interpretative, actor-centred track developed themes about how stakeholders understand and respond to AI policy within research settings. The matrix organises structural conditions for implementation across levels, and the actor-centred themes address the subjective understandings and strategic adaptations developed by the stakeholders involved in those policies.

Hill and Hupe (2014) present the concept of actor discretion within "webbed" governance, which gives legitimacy to variation, coping and improvisation. Birkland (2020) treats failure as a *means for recalibration*, highlighting how institutions can 'fail well' by learning and adjusting as policies are translated into practice. This approach allows the analysis to evaluate formal implementation conditions and, at the same time, examine how different stakeholders interpret policy effectiveness and define successful implementation in the rapidly evolving field.

Table 3. Summary of analytical approach

Track	Purpose	Unit of analysis	Output
Determinants matrix	Explore conditions influencing implementation by level	Coded segments added into level x determinant cells	Short cell summaries and illustrative quotations; within-case matrix narrative
Interpretative themes	Interpret construction of meaning, discretion, tensions	Thematic clusters across data sources	Thematic narratives with cross-links to determinants

Each university case was analysed in two ways: first, through the matrix to identify how different levels (EU, national, institutional) develop the implementation. The information and comments from the coded segments were used to fill each level × determinant cell. For every cell, a paragraph summarised the finding and listed 2–4 illustrative quotations that met the code criteria. Second, the theme-coded segments were reviewed to consolidate overlapping ideas, define clear theme boundaries, and relate themes to determinants and levels (e.g., *legal ambiguity* × *goal clarity at national level*). For each case, the themes are presented with short analytic summaries and a small number of quotations.

4.4.2. Data preparation and codebook development

Before the coding, the interviews were transcribed and those transcripts were pseudonymised, lightly cleaned and imported into ATLAS.ti[5]. The transcripts and document sources were assigned to document groups by level (EU, national, institutional) and by case (TAU, UH). The institutional documents (e.g., TAU AI policy and research guidelines, UH research and general AI guidelines) were prepared, and the names were coded as separate documents. After this, a codebook of 33 codes was developed in preparation for the coding process. The codes were grouped by determinants and levels for the matrix, and by interpretative themes for actor-centred analysis. For each code, "use/don't use" criteria and examples were specified. Some

[5] All analyses were conducted in ATLAS.ti (desktop), using code-document tables, memos, and comments in each coding.

interpretative theme codes were adapted from the data or newly proposed based on emerging patterns in the interviews.

The determinant definitions were made focused on the most empirically traceable and policy-relevant dimensions, which are the following:

- **Goal clarity**: from conditions (1)[6] and (2)[7] of (Sabatier & Mazmanian, 1980). It refers to the clarity and internal consistency of policy objectives.
- **Resources**: It involves technical, financial, and human capacity to implement policies (support units, roles, processes).
- **Incentives/Authority**: It implies the formal or informal requirements, compliance expectations and decision-making authority affecting research.
- **Monitoring systems**: This dimension consists of the mechanisms to track compliance, learning, and risk, including reporting lines and tools.
- **Actor beliefs/Discretion**: added to take into account flexibility, discretion or divergence in interpretation (Hill & Hupe, 2014). It involves values, risk perceptions, professional norms, and space for judgment in applying AI policy.
- **Inter-organisational networks**: influenced directly by Hill and Hupe (2014), as implementation occurs in "webbed governance settings". Therefore, it comprises collaborations and dependencies across the EU, national, institutional, and industry spaces that influence implementation.

The matrix reflects the multilevel governance perspective: the rows (supranational, national, institutional) represent vertical governance levels, and the columns (determinants) make visible how power, resources and authority are distributed and vary across levels. Therefore, the purpose of the matrix is to *map* variation across levels, which is a key concern in MLG.

Furthermore, the interpretative thematic codes were developed, capturing stakeholder perceptions of effectiveness, reflections on ethical or regulatory ambiguity, definitions of "success" in implementation (not limited to compliance), tensions between regulation and institutional autonomy and adaptive or coping strategies. This coding helped to interpret policy impact beyond deterministic conditions and revealed how actors build meaning and legitimacy in a fast-changing policy field.

[6] Condition 1: Clear and consistent objectives (clear goals)
[7] Condition 2: Adequate causal theory (adequate resources)

Naming conventions

Each code combined level and determinant labels for the matrix track, (e.g. EU_Goal_Clarity, *NAT_Resources, TAU_Monitoring, UH_Incentives_Authority)* and used plain labels for interpretative themes (Legal_Ambiguity, *Success_Definitions, Strategic_Adaptation*). This enabled a layered mapping of how different determinants manifest at different governance levels.

4.4.3. Coding procedure

First, a pilot of the codebook was conducted on one transcript from each case, and following minor wording adjustments, the entire dataset was coded. The unit of coding was a segment (a sentence to a short paragraph) with enough meaning. Double coding was allowed when a passage clearly met criteria for (a) a determinant and (b) an interpretative theme, or when a statement spanned more than one governance level (e.g., an institutional actor interpreting an EU rule). Each coded segment included a brief comment to understand the reasoning behind the selection, and in the cases of ambiguity, the comments documented the rationale for inclusion.

4.5. Ethical considerations

This research follows the ethical principles and data protection regulations established by Tampere University[8] and the Finnish National Board on Research Integrity. All participants were contacted via email and invited to participate voluntarily. Before each interview, they received an information sheet outlining the research purpose, procedures, and their rights as participants; a consent form covering participation and to data processing; and a privacy notice detailing the processing of their personal data in accordance with the General Data Protection Regulation (GDPR).

Participation was entirely voluntary, and informed consent was obtained in writing or via recorded verbal agreement before the start of each interview. The consent procedure clarified that participation could be withdrawn at any time without penalty and that only pseudonymised data would be used in the thesis.

[8] Instructions for students concerning data protection: https://opiskelijanopas.tuni.fi/en/tampere-university/studying-0/academic-integrity-and-study-regulations/instructions-students-concerning-data-protection

The interviews were conducted in English, either virtually via Zoom or Teams or on-site, depending on the interviewee’s preference. All the recordings were stored securely on encrypted devices. After transcription and pseudonymisation, datasets were uploaded securely to Tampere University’s institutional OneDrive. The identifying details (such as names, exact titles, or institutional units) were omitted or generalised to ensure confidentiality.

4.6. Methodological limitations

As is usual with qualitative research, this study is subject to several limitations related to scope, generalisability, access, and temporal constraints. These limitations do not undermine the value of the findings but provide necessary boundaries for interpretation and further research. First, due to the two-case qualitative design focused on Finland, the study does not aim for statistical generalisation and may not capture the total diversity of Finnish HEIs. Second, the purposive sample prioritised role relevance, and this enables depth, but it may underrepresent some perspectives. Third, the interview data are susceptible to elite bias (the overrepresentation of senior actors’ perspectives) and retrospective rationalisation (participants' tendency to reconstruct past events as more coherent than they were in practice). The triangulation with documents might have mitigated it, but did not remove this risk. The policy documents can be incomplete or evolving, and to account for different document versions, access dates were recorded and local copies stored. In addition to this, the timing of fieldwork (2024–2025) coincides with the ongoing EU/national implementation activity. In consequence, some institutional arrangements may still be in development. Finally, although thematic analysis followed established procedures and included checks for consistency, the interpretation is inevitably shaped by the researcher’s theoretical framework.

5. Findings

This chapter presents the evidence from the interviews and document triangulation without yet being interpreted. As stated in Chapter 4, the findings are presented separately for each case (TAU and UH). Each case begins with a brief overview of its governance background and setting, followed by an analytical map to guide the presentation of findings, as shown in Table 4.

Table 4. Analytic map for Chapter 5 (within-case reporting)

Chapter 5 analytic element (within case)	Purpose and output	Addresses RQs
Determinants matrix (by level: Supranational–national–institutional)	Short cell syntheses with 2-4 illustrative quotations, showing how rules are translated and what enables/constraints exist.	RQ1-RQ2
Interpretative themes (per case)	Short analytic narratives explaining meanings, discretion, tensions, and R&D effects, with cross-links back to determinants/levels.	RQ3-RQ4
Stakeholder voice (quotes across both rows)	Attributed quotations with pseudonyms that ground both tracks in participants' perceptions.	RQ5

5.1. Tampere University (TAU) case

Governance configuration

At Tampere University, AI is governed centrally through an AI Policy approved by the Rector, which applies to both TAU and TAMK. Implementation is led by IT Services (AI virtual team, AI architect, legal/data specialists) with a plan to channel approvals through a single compliance pipeline.

Policy instruments

TAU uses two main policy instruments: (a) a formal AI Policy issued by rectoral decision and (b) "living" research guidelines on the use of AI in research (and also an intranet checklist), which together operationalise responsible use, documentation and transparency.

5.1.1. Determinants matrix findings

5.1.1.1. Goal clarity

This dimension refers to the extent to which policy objectives related to AI are defined, internally coherent, and consistently communicated across levels of governance (supranational, national, institutional). Following Sabatier and Mazmanian (1980) model, and Hill and Hupe's (2014) emphasis on actor-level interpretation, this dimension explores how clearly AI-related goals are articulated in formal strategies, laws, and institutional documents. Table 5 summarises the synthesis by level with illustrative quotations.

Table 5. Findings (goal clarity) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	At the EU-level, interviewees describe the goals as emerging but still not defined for higher education. There is recognition that EU governance will influence HEIs' practices, but it is still unclear how it will do it.	*"maybe they're still not exactly clear how those will develop."* (NAT_Policymaker) *"I think it's still maybe developing that that areas as well."* (NAT_Policymaker) *"sometimes it is that you don't even feel that we speak the same language with the sort of lawyers who are developing these so. It's I mean..."* (NAT_Policymaker)	EU-level goals are acknowledged, but not yet fully specified in operational terms. Therefore, the translation from the law to practice remains an ongoing issue.

National (Finland)	At the national level, respondents stated that there is no single unifying AI strategy, but there is pending legislation (authorities and sandboxes) and calls for national guidance. There is clarity that the EU AI Act will be implemented through a distributed oversight model, but the timetable and specifics create a period of "transition" for universities.	*"I don't think we have AI strategy at the moment, so we have the digitalization compass."* (NAT_Policymaker) *"Traficom will be the general like body overseeing the AI Act… it will be a distributed model in Finland."* (INS_Implementer_05) *"there's a lack of general knowledge on AI Act… There's a kind of need for general, maybe national level guiding on AI Act,"* (INS_Implementer_01)	National goal clarity is evolving. The direction exists, but universities face a waiting phase until the authorities/sandbox laws and broader guidance are enacted.
Institutional (TAU)	Interviewees describe an intent to implement policy, ensure safe and controlled AI use, socialise expectations, and move towards defined success criteria, while acknowledging some gaps in formal goal setting/metrics that still need to be decided. There are formal policy instruments (AI policy approved by the Rector; research guidelines) that publicly specify purpose, scope, and responsibilities.	*"it's important that the AI policy is implemented, because if it's only a paper, then it really doesn't help."* (INS_Implementer_01) *"we have like six groups of different… metrics… but we don't have currently goals for those…"* (INS_Implementer_03) *"the strategy goals for the AI uses in Tampere university is to be ahead of the usage… forefront."* (INS_Implementer_03)	The internal goal clarity is operationalised through formal policies and "living" guidance, though some performance goals/metrics are still being defined.

	Interviewees also connect goal setting to the AI Act's research. In practice, interviews use the research-deployment boundary as the orienting line: exploratory research (purely R&D) stays in the "interpretative space", but real-world testing or market intent triggers early direction to legal or ethics or IT for compliance work. This boundary is already shaping what "success" means in R&D at TAU (safe, documented research and appropriate escalation when projects move to application	*"there is big need for the guidelines because people are unsure how they can use AI in their research and how they can use it responsibly."* (INS_Implementer_02) *Objectives of the Tampere Universities' AI Policy* (TAU_AIPolicy) *Purpose of the 'Living guidelines on the responsible use of generative AI in research'*	

Takeaway for TAU. The evidence indicates that external aims are acknowledged but still being specified at the European level. Nationally, universities await further authority and sandbox arrangements and internally, TAU relies on a rector-approved policy and "living" guidance, while success metrics remain under development.

5.1.1.2. Resources

This determinant refers to the availability and mobilisation of human, financial and technical means to support organisational capacity (units, roles, processes) necessary to interpret and implement an AI policy. Table 6 summarises the synthesis by level.

Table 6. Findings (Resources) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	There are EU-level resources relevant to TAU's AI policy implementation, and they are framed around the access to European supercomputing infrastructure (e.g., LUMI[9] or LUMI AI[10]) and the development of the "AI for Science" strategy. This is linked with the HPC[11] investment and regional/national computing centres. These resources allow *technical infrastructure* and potential *strategic*	*"we have links to the European infrastructures, Lumi … and Lumi AI."* (NAT_Policymaker) *"EU is now preparing this AI for science strategy."* (NAT_Policymaker) *"one of the biggest things we need still to do in Europe is to … make HPC and more private investors invest in HPC and data factories."* (SUP_Stakeholder_02)	The EU-level capacity (LUMI, LUMI AI, AI for Science, HPC) works as external technical/public goods that TAU can use indirectly through Finnish national arrangements.

[9] LUMI stands for Large Unified Modern Infrastructure, and it is one of the most powerful and eco-efficient supercomputers in the world. It is a pan-European computing project located in Kajaani, Finland.

[10] LUMI AI is an initiative built upon the capabilities of the LUMI supercomputer to promote research and development in artificial intelligence.

[11] European High-Performance Computing (HPC) Ecosystem.

	guidance that Finnish universities can use through national intermediaries.		
National (Finland)	At the national level, resources include CSC-IT Center for Science (providing data management, computing, support), funding from the Research Council of Finland (RCF) for competence networks and infrastructure and block funding to universities tied to performance and strategy. The interview highlights that CSC services are free to use for researchers, which lowers the barrier to compliant computer and data services in AI research.	*"we are supporting a lot (via CSC) this kind of data management … for research data."* (NAT_Policymaker) *"the service (of CSC) is … free to use for the researchers."* (NAT_Policymaker) *"we are investing via the RCF … they provide the funding … we … have … computing resources and competence networks."* (NAT_Policymaker) *"the budgets for the universities have been increasing … they have block funding given by performance or the strategy."* (NAT_Policymaker)	Finland's national level reduces the cost to access to compliant AI research (CSC access) and supplements capacity (RCF).
Institutional (TAU)	TAU's operational capacity combines a virtual AI team, "train-the-trainers" diffusion, specialist roles (AI architect, information/data-security architects, DPO/legal), and central	*"the operational work is being done by the AI virtual team."* (INS_Implementer_03) *"we … train the people who train the other people in different units."* (INS_Implementer_03)	Capacity exists, but it is uneven visibility and budget fragmentation require stronger discovery and routing (so that researchers find the right

	licensing/procurement frameworks. However, people capacity and discoverability remain bottlenecks: researchers do not always find the right route on the intranet, and several enterprise tools are not fit for research datasets. In addition to this, there is a decentralised, fragmented budget.	*"We have … an AI architect … architects for data security and information security."* (INS_Implementer_01) *"There are two tracks for license and software acquisition … the general IT team and … central or decentralised software acquisition team."* (INS_Implementer_03) *"Copilot … is quite useless for research; you can't analyse different kinds of data."* (INS_Implementer_02) *"departments and the faculties have their own resources and budgets … we don't manage that at the central level."* (INS_Implementer_03)	guidance/services) and targeted enablement for research-grade tools.

Takeaway for TAU: EU/CSC assets and sector intermediaries provide a foundational support that TAU uses through expanding internal roles and training, but visibility and budgets are uneven across units.

5.1.1.3. Incentives/Authority

This determinant refers to the formal mandates, rules and enforcement mechanisms that influence AI policy implementation at the EU, national and institutional levels. It also includes incentive structures that encourage or constrain compliance.. Table 7 summarises the synthesis by level.

Table 7. Findings (Incentives/Authority) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	Interviewees highlight that the EU AI Act sets "hard boundaries" and that access to the market is conditional on the upcoming EU law. Interviewees expect a forthcoming "compliance moment" as EU requirements move towards implementation. These supranational directions influence TAU's internal drafting of rules and procurement choices before even the AI Act is fully implemented (e.g., avoiding tools that export data outside the EU). TAU's own AI policy emphasises sanction risks by referencing EU-level penalty regimes.	*"the regulation kind of sets the hard boundaries for us, so there are certain lines we cannot cross without becoming non-compliant and risking reputation or financial sanctions,"* (INS_Implementer_01) *"Because if you if you bring something to the European market, you have to follow the EU laws"* (INS_Implementer_05) *"March, April next year when you suddenly realise, oh, there's actually a regulation we need*	The legal authority of the EU creates a compliance incentive structure*: TAU's internal policy and guidance are framed as the local implementation of the AI Act, with procurement and data-handling limited by the EU law. Also, the anticipated EU-level enforcement targets develop the top-down compliance signal within TAU.*

		to comply with, this cannot just be done by the enthusiast." (SUP_Stakeholder_02) *"a lot of those services isn't like they are transferring example information outside of the EU and that's something that is basically not allowed."* (INS_Implementer_03)	
National (Finland)	At the national level, the steering presents soft incentives (performance agreements, block funding priorities, Research Council law updates) with eventual hard authority (designation of AI competent authorities and sandboxes). There is an annual monitoring under performance agreements, which adds a recurring oversight mechanism. At the same time, interviewees noted that there are current Finnish legal constraints on public entities' AI use, and the reforms are not expected until 2027. Finally, there is a common view of a kind of call for national guidance to address knowledge gaps on the AI Act. This	*"the agreements between the higher education institutions and the ministry. So, there, we have some targets and obviously then the agreements, so we monitor every year." "at the beginning of this year the new round of the agreement started... some universities... included this theme there in their block funding."* (NAT_Policymaker) *"Traficom will be the general like body overseeing the AI Act... the rules are made in the ministries... it will be a distributed model in Finland."* (INS_Implementer_05)	The national steering through agreements and future competent authority arrangements provides direction for the incentives and future pathways for enforcement. However, the delayed legal reform and knowledge gaps can reduce or delay institutional adaptation, which makes TAU's internal policy translation more important in the meantime.

	prolongs a transition period in which institutional translation carries most of the load.	*"in the Finnish law... limitations... basically limiting us... what information we can process with the AI."* (INS_Implementer_03) *"they are going to change... laws... limiting... usage of the AI in... public entities like universities... schedule... ready on 2027." (INS_Implementer_03)* *"there's a lack of general knowledge on AI Act ... need for ... national level guiding on AI Act,"* (INS_Implementer_01)	
Institutional (TAU)	Inside TAU, the formal authority is based on an AI policy approved by the rector (covering TAU and TAMK), and the governance lies with the IT Services, which has a lead team and a digitalisation manager steering the implementation. TAU is building a single pipeline to verify compliance with the policies/guidelines.	*"it's a one longer policy that's approved by the rector of the Tampere University and also for Tampere University of Applied Sciences"* (INS_Implementer_01) *"AI is governed mostly by the IT services of the university"* (INS_Implementer_02)	Based on interview account and documents, TAU's authority appears centrally endorsed (rector approval; IT Services lead; licence checks), but operationally distributed in practice (AI virtual team prepares decisions; there is unit-level engagement via checklists). The framing of the policy as the AI Act

	The responses place the AI policy as the local implementation of the EU AI Act. This policy also contains sanctions and responsibilities, reinforcing internal compliance incentives.	*"the AI is the only one that has its own checklist and limitations and guidelines in the intranet."* (INS_Implementer_03) *"we are going to try and [get] everything in the same pipeline … to be able to verify that they are compliant and following the guidelines and the policies"* (INS_Implementer_03) *"the main power is still with the directors or the IT managers of the IT services … decisions … [are] prepared … by the AI virtual team"* (INS_Implementer_03) *"that AI policy is what is actually the implementation of the AI Act in our university."* (INS_Implementer_02)	implementation and the signs of sanction risks and member responsibilities create internal incentives for compliant research workflows.

Takeaway for TAU: Authority is centrally mandated (rector policy; IT Services lead), but operational responsibility is distributed across units. Framing the policy as implementing the AI Act creates internal compliance incentives alongside professional/ethical ones.

5.1.1.4. Monitoring systems

This dimension includes the arrangements for oversight, tracking and evaluation of AI-related activities, which can include internal procedures (logs, checklists, metrics, audits), external supervision (national competent authorities, performance monitoring), and EU-level horizon scanning[12] or knowledge sharing and sector coordination that informs institutional monitoring routines. Table 8 summarises the synthesis by level.

Table 8. Findings (Monitoring systems) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	According to the interviews, the monitoring at this level is presented in a soft way, facilitated by networks, rather than formal compliance: sector associations (notably EUA) scan EU developments and share the knowledge with members. The Finnish government's proposal for legislation supplementing the EU AI regulation summarises EU-level supervision/enforcement and cooperation	*"…we sort of monitor developments at the EU level, gather our… gather the story, let's say from our members and try and feed that to the policy makers."* (SUP_Stakeholder_01) *"We act as a platform for sharing… webinar… institutional strategies for AI… another one about ethical concerns."* (SUP_Stakeholder_02)	The EU-level monitoring is indirect and focused on knowledge: watch and share rather than enforcement. For TAU, this gives an external sense-making layer to feed into its internal checklists, metrics, and leadership reviews, rather than any formal compliance audit targeted at the university.

[12] https://espas.eu/horizon.html

	mechanisms as they will be implemented nationally.		
National (Finland)	From the interviews, national monitoring covers two different ways: (a) sectoral performance monitoring via ministry university performance agreements (annual and at term end), and (b) regulatory market surveillance under the EU AI Act, where Traficom is expected to act as the general competent authority with a distributed model across agencies. Legislative arrangements include separate acts on authorities and sandboxes.	*"we monitor every year what's going on, and in the end of the performance agreement term what has been done."* (NAT_Policymaker) *"Traficom would be the general body… and it would work with other ministries… kind of a distributed model for surveillance and monitoring."* (INS_Implementer_05) *"there will be two laws… one concerned with authorities… and the other about sandboxes."* (INS_Implementer_05)	National monitoring is dual-track: strategic performance reviews by the ministry influence institutional priorities, and competent authority surveillance (Traficom and others) will affect any research or deployment that falls within the AI Act's scope. TAU's internal monitoring should therefore link the performance reporting and regulatory conformance evidence (e.g., logs, documentation).
Institutional (TAU)	At this level, TAU's monitoring infrastructure is evolving. Internally, a dedicated AI checklist exists on the intranet, procurement/workflow pipelines aim to guide AI use for pre-verification of compliance, and metrics are tracked across	*"this is a huge place, so there are a lot of things going on, and no one knows what's happening… the departments and faculties have separate budgets."* (INS_Implementer_03)	TAU has developed procedural tracks (checklist, planned single pipeline, leadership review commitments) and is building measurement capability. The main gap is cohesion, turning

	six groups, though goals are not yet set. At the same time, it is challenging to track because of the fragmented budgets and dispersed initiatives. The policy texts commit to regular management reviews and the possibility of internal audits of AI governance.	*"AI is the only one that has its own checklist and limitations and guidelines in the intranet."* (INS_Implementer_03) *"We'll try to get everything in the same pipeline to verify compliance."* (INS_Implementer_03) *"we have six groups of different metrics in place… we don't have goals yet."* (INS_Implementer_03)	dispersed activity and metrics into a goal-linked monitoring cycle. This can be aligned with the upcoming competent authority expectations.

Takeaway for TAU: Monitoring is maturing through documentation/approval pathways that exist or are being unified, but goal-aligned indicators and systematic feedback are still in development.

5.1.1.5. Actor beliefs and discretion

This determinant explores how implementers (e.g., administrators, legal/IT specialists, principal investigators), researchers, and system-level actors perceive their capacity to interpret rules, exercise discretion, or reshape requirements. It includes legal, managerial, and researcher discretion, as well as bottom-up initiatives taken in contexts of ambiguity. Table 9 summarises the synthesis by level.

Table 9. Findings (Actor beliefs and discretion) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	At the supranational level, actors expect that the interpretative space would reduce once the AI Office issues guidance, but for now, discretion is facilitated through soft coordination (EUA organising, not commanding). Associations emphasise values (autonomy, academic freedom) over uniform alignment and explicitly reject coercive steering. This leaves universities with considerable autonomy to define "responsible use" in research, constrained by the AI Act's "hard lines" but still waiting for operational guidance.	*"It won't be until early next year that we have guidelines from the AI office in Brussels."* (SUP_Stakeholder_02) *"No, no, no, we cannot tell people what to do."* (SUP_Stakeholder_02) *"Our role generally is to advocate… monitor developments at the EU level, gather the story from our members and feed [it] to policymakers."* (SUP_Stakeholder_01) *"Currently there is a lot of uncertainty and… no court decisions… [so] it's tricky."* (INS_Implementer_05)	Supranational beliefs focus on facilitation over direction. This discretion persists because there is a pending EU-level guidance. TAU perceives "hard boundaries" set by the AI Act, but also ambiguity in research contexts that must be filled locally.

National (Finland)	At this level, national steering *leans into* institutional autonomy. The ministry notes that one-size-fits-all guidance is not desirable and, instead, dialogue and peer exchange are preferred. Additionally, university lawyers should co-build the national adoption work. This delegates discretion to universities to tailor policy interpretation and implementation.	*"There's not that much support needed… many organisations have already drafted their own guidelines… we wouldn't need national guidelines because the organisations vary and they need to be… tailored."* (NAT_Policymaker) *"The Finnish system… is based and built on… autonomy. It's in our constitution."* (NAT_Policymaker) *"It's really important that we take… the lawyers from the higher education institutions to the table [when] discussing [adopting EU legislation]."* (NAT_Policymaker)	National actors *believe* that it is desirable and legitimate to have strong local discretion. They structure processes (lawyer involvement, cross-actor dialogue) that can allow institutional interpretation rather than constrain it.
Institutional (TAU)	In the case of TAU, at the operational level, researcher discretion is treated as necessary ("they need to… make the interpretation"). At the same time, implementers create	*"They need to be the ones that make the interpretation… we can remit them [to EC[13] guidance], and say 'show me your data… your*	TAU's actor beliefs validate discretion based on external guidance (EC) and internal case review. The discretion is

[13] European Commission

	“living” guidance and case-by-case support. Legal implementers stressed that in research, there’s a lot more space for interpreting the AI Act, particularly under the research-only exemption. A lack of initial senior-level direction encouraged bottom-up initiative (different policy implementers drafting AI guidelines), and there are different thoughts among researchers (from “useful guidance” to resistance to restrictions).	*plan’... we are following those.”* (INS_Implementer_02) *“Those guidelines are written because we decided to write those... lack of leadership... important to have a statement... for researchers.”* (INS_Implementer_02) *“Many of them consider [the guidelines] useful... Then there are always the difficult persons... that think all kind of restrictions are bad.”* (INS_Implementer_02) *“We have lots of trouble reaching our researchers because... they don’t feel that they are part of the university.”* (INS_Implementer_02) *“In research there’s a lot more space for interpreting the AI Act... exceptions and special cases for when AI is used in research.”* (INS_Implementer_01)	increased by initial governance gaps (no early senior-level action), which produced bottom-up policy work. However, this is confronted by sectors of the research community.

Takeaway for TAU: Interview evidence suggests broadly shared beliefs around "responsible use" and documentation; discretion is used to tailor guidance to research contexts, but risk tolerance varies by unit and collaboration type, producing uneven application.

5.1.1.6. Inter-organisational networks

As its own name describes, this dimension describes the ties and platforms connecting TAU and other HEIs, national intermediaries, EU bodies and (where evidenced) industry partners that enable information exchange, joint standard-setting and project coordination. Table 10 summarises the synthesis by level.

Table 10. Findings (Inter-organisational networks) TAU

Level	Synthesis	Illustrative evidence	Implications for TAU
Supranational (EU)	The interviews' evidence shows active European-level coordination through the European University Association (EUA). It has membership structures that include universities from Finland, a "Task and Finish group on AI" producing guidance, and continuous connection with the European Commission and Parliament via consultations and webinars. TAU has been represented through a senior administrator's role in a Learning and Teaching Steering	*"We are a membership organisation… National university associations. We would have Universities Finland as a member."* (SUP_Stakeholder_01) *"We have a dedicated work programme on AI."* (SUP_Stakeholder_01)	The supranational level provides legitimising frames and interpretative templates (EUA outputs, Commission engagement).

	Committee, with published recommendations on GenAI. These platforms work as horizontal venues for guidance and alignment around EU-level expectations.	*"Task and finish group… supports universities to respond and align to support and influence on AI."* (SUP_Stakeholder_01) *"Consultations with the European Commission on how… to support institutions… we have webinars… advocacy with the Commission and the Parliament."* (SUP_Stakeholder_01, SUP_Stakeholder_02) *"… member of the […] Learning and Teaching Steering Committee… we have recently published recommendations on the use of GenAI in learning and teaching."* (INS_Administrator)	
National (Finland)	The national coordination seems to be numerous and pragmatic. The CSC assembles multiple groups (IT directors, directors of education) where AI-related topics are discussed. Also, a University of Eastern Finland (UEF) project has shared	*"CSC… have various groups… for the IT directors… also another for the directors of education who also discuss these topics."* (NAT_Policymaker)	The national level acts as a translation and tooling space (CSC groups, UEF templates, peer guideline borrowing).

	practical templates that others can adopt. Additionally, TAU staff exchange materials with peer universities and took guidance directly on University of Helsinki guidelines, and TAU IT staff engage in bilateral benchmarking (e.g., Aalto, Jyväskylä) on AI management. These networks operate as dissemination channels for policy models and practical tools (guidelines, templates).	*"From the University of Eastern Finland project… they have presented their work with different templates that other universities can use."* (NAT_Policymaker) *"We have also contributed… we shared our materials for others and… we have used what others have shared as well."* (INS_Implementer_01) *"We also used the guidelines by the University of Helsinki as an inspiration."* (INS_Implementer_02) *"We have a lot of cooperation within the other universities… [for example] discuss with Aalto and Jyväskylä about AI management."* (INS_Implementer_03)	
Institutional (TAU)	There is limited evidence of industry collaboration in the interviews for TAU's research governance implementation of AI. One concrete example is the use of an	*"… we take consultants from Tietoevry who were doing the governance model…"* (INS_Implementer_03)	The institutional–industry link in governance design is present, but episodically (consultancy), with limited

	external consultancy (Tietoevry) to co-design the governance model and institutional policy documents. However, there are expectations from external stakeholders and collaboration partners, which indicate an anticipated collaboration with non-university actors. The research guidelines document also acknowledges cross-institutional referencing (e.g., UH guidance) as part of TAU's internalisation process.	*"Yhteistyökumppanit odottavat..." (Collaboration partners expect ...)* (TAU_AIPolicy) *"This is an internal document ... but, of course, we also used the guidelines by the University of Helsinki as an inspiration."* (INS_Implementer_02)	qualitative evidence of sustained public–private co-governance mechanisms in research policy implementation.

Takeaway for TAU: Internal links are evolving from ad hoc collaboration to planned coordination (e.g., virtual teams/one-stop pipelines), while external links to sector and national providers remain fundamental. Role boundaries and handoffs are still being standardised.

5.1.1.7. Within-case matrix summary

Through all the determinants, TAU operates under clear EU-level “hard boundaries” set by the AI Act. However, the goals for higher education are still being specified, which creates a compliance signal without full operational detail. In the case of the national steering, it is in a transition phase: there is no single national AI strategy in force, oversight is expected to follow a distributed model, with Traficom designated as the general competent authority, while separate laws on authorities and sandboxes are pending. Moreover, performance agreements provide soft steering with annual follow-up, and something that is highly relevant is that interviewees also emphasised the need for national-level guidance on the AI Act. Institutionally, TAU has formalised an AI policy (approved by the rector, which covers TAU and TAMK) and “living” research guidelines, with IT Services leading implementation via an AI virtual team; an intranet checklist and a planned single pipeline support pre-verification of compliance. Monitoring arrangements exist and are still developing. Six metric groups are currently tracked, but performance targets have yet to be defined. On top of that, fragmented budgets complicate visibility across units.

The resources align vertically and horizontally: the EU infrastructure and initiatives (e.g., LUMI/LUMI AI, AI for Science) support national capacity enablers (CSC services free to researchers, Research Council funding, block funding), and TAU adds organisational capacity (AI architect, digital leadership, train-the-trainers). Actor discretion is expected and legitimised. For instance, at the EU level, coordination plays a facilitative rather than directive role, with pending guidance from the AI Office. At the national level, institutional autonomy is emphasised, and university lawyers are drawn into adoption work. Within TAU, researchers make case-by-case interpretations with support from “living” guidance, which reflects some bottom-up policy work and mixed reception among researchers. The networks are active at multiple levels: EUA platforms (task groups, consultations, webinars); national coordination via CSC groups and peer borrowing (e.g., UH guidelines, UEF templates); and targeted consultancy support (Tietoevry). Considering all this, the configuration combines strong external compliance signs and widely shared infrastructures with limited translation and evolving monitoring. This facilitates the responsible adoption of research, though it also leads to uneven scaling due to decentralised budgets, tool limitations, and still emerging targets.

The interviewees identified certain factors as facilitators across all the levels. Implementation is enabled by shared infrastructures and peer platforms (EU), usual national coordination channels and guidance work (national), and TAU’s internal role assignment, PI-centred accountability, and research-focused guidance (institutional). All this together lowers interpretation costs and provides ready templates that groups can find in projects.

On the other hand, barriers were also identified. The implementation is hindered by continuing legal or interpretative ambiguity, fragmented local initiatives, uneven tool access, perceptions of restrictive gatekeeping, and early-stage monitoring arrangements.

5.1.2. Interpretative themes

5.1.2.1. Governance ambiguity and legitimacy

In the case of governance ambiguity, across all the levels, the actors describe a persistent ambiguity around the scope, authorities and operative boundaries of AI rules. In the case of institutional legitimacy, this is negotiated in day-to-day gatekeeping and guidance work.

At the EU level, a sector representative noted that *"for the most part of institutions operating in Europe, it's more ambiguity than clarity"*. In the case of the national level, a policymaker emphasised that an interpretative gap with legal drafters, *"sometimes… you don't even feel that we speak the same language with the… lawyers"* (NAT_Policymaker), which is a sign of uncertainty about the purpose and operation of the upcoming rules. At TAU, legal implementers, in a similar way, characterised the situation as unsettled: *"currently there is a lot of uncertainty on how the AI Act will be interpreted… there is no court rulings… we are currently in a grey area"* (INS_Implementer_01). In addition to this, the perceptions of legitimacy are mixed at the operational line: one technical implementer reported that some researchers *"see IT services as… a blocker… not [an] enable[r]"* (INS_Implementer_03), which indicates that restrictive controls can be read as interferences rather than safeguards.

For R&D practice at TAU, this combination of multilevel ambiguity and questioned gatekeeping translates into case-by-case assessments and uneven acceptance of internal controls, with researchers' project decisions often dependent on pending external guidance and internal interpretations.

5.1.2.2. Autonomy, ethics and success frames

In the case of TAU, autonomy is outlined as a protected norm that is exercised within explicit ethical and legal boundaries, and "success" is shown as consistent with values and responsible practices rather than simple compliance. At the supranational level, the sector actors emphasise non-coercive facilitation based on academic values: *"We're talking about values: academic freedom, freedom of expression, having your own thinking space"* (SUP_Stakeholder_01). Finally, national interviewees preferred tailoring over uniform rules, *"a one-size-fits-all is not necessarily good; it should be tailored"* (NAT_Policymaker), which leaves room for institutional interpretation of "responsible use."

At TAU, the autonomy is described as bounded by the internal and external norms, as it can be noted in the following quotation: *"Academic freedom is not a free for all; it is bound by law, ethics and our policies"* (SUP_Stakeholder_02). The institutional documents make these bounds concrete: *the AI Policy commits to lawful, human-rights-respecting and ethical use* (TAU_AIPolicy, §1.1; §4.1), and the research guideline assigns accountability to the PI and requires "responsible" use and transparent reporting (Tampere University, 2024). In addition to this, success is expressed supra-institutionally as conduct aligned with those values: *"Success is aligned with values, academic freedom and autonomy, but we also want people to behave responsibility"* (SUP_Stakeholder_01).

Regarding TAU's R&D practice, the project-level discretion is preserved, but investigators are expected to operationalise ethical accountability and policy duties in everyday research workflows (e.g., PI responsibility, documentation, and open reporting).

5.1.2.3. Organisational coping and learning

In the case of coping and learning at TAU, these practices are pragmatic and emergent; there are local workarounds by researchers and units that sit alongside a gradual move to formal monitoring and review. Within TAU, implementers describe dispersed activity, *"there's a lot of things going on in every corner of the university and no one knows what's happening and where and why"* (INS_Implementer_03). At the supranational level, peers characterise the sectoral situation as early-stage understanding: *"institutions were very much at the exploratory phase"* (SUP_Stakeholder_01), which characterises the organisational learning as iterative and project-led rather than fully institutionalised. In the national and local levels, coping also takes the form of shadow or disconnected arrangements: *"people buys or get the licences for the different AI services in the cloud and they just take them with their own credit cards"* (INS_Implementer_03). Alongside this, implementers note *that "our researchers probably use tools that they shouldn't use, for example, Claude or ChatGPT or so on"* (INS_Implementer_02). In parallel, formal learning loops are being specified: *TAU's AI Policy commits to regular management reviews, possible internal audits, and defined assessment procedures* (TAU AI Policy, §6.1) and allocates roles and time for capability building (TAU_AIPolicy, §4.4).

The living guidelines are used as a strategic adaptation to the uncertainty caused by the fast-paced development of AI. TAU uses the iterative guidance (such as periodic review, role-based responsibilities, and internal auditability) to absorb external uncertainty into local routines. The updates are disseminated through institutional channels, and peer exchanges allow research groups to align practices without waiting for full legal closure. This keeps workflows moving and enables further consolidation when external guidance stabilises.

The evidence suggests that research groups develop through locally chosen tools and ad-hoc fixes, while a central review, resourcing, and training arrangements are in development, which can lead to producing uneven but consolidating research workflows at TAU.

5.1.2.4. Coordination networks and research impact

The coordination around AI at TAU is primarily horizontal and based on sharing knowledge, especially with European association platforms and national intermediary groups, which channel practices that TAU then adapts through peer exchanges. At the EU level, sector bodies present coordination as organising and understanding*: "we act as a platform for sharing… one webinar… about institutional strategies for AI… another one about ethical concerns"* (SUP_Stakeholder_02). TAU is not only a recipient but also an active actor in these arenas*: "member of the […] Learning and Teaching Steering Committee… [we] published recommendations on the use of GenAI"* (INS_Administrator).

At the national level, the intermediary infrastructures and associations provide routine sites for coordination. One interviewee noted that *"CSC… have various groups… for the IT directors… also another for the directors of education"* (NAT_Policymaker), which is a sign of regularised cross-institutional exchange on AI-related operations. These national channels are complemented by bilateral HEI-to-HEI connections that support directly into TAU's policy work: *"we… discuss with Aalto and Jyväskylä about AI management" (INS_Implementer_01, INS_Implementer_03).*

These networks have practical consequences for research. The EU to national pipelines connects TAU to shared technical and policy resources (e.g., LUMI/LUMI AI; Commission-facing guidance via EUA), which lowers the cost of compliant research computing and supplies ready-made interpretative templates that TAU can localise. At the same time, the empirical material for TAU shows that industry connections are episodic in governance design (e.g., consultancy use) and less visible as a standing co-governance space for research. This indicates that coordination for R&D relies most on academic and public intermediaries rather than market relations.

Overall, the network configuration translates EU signals into national tools and peer templates that TAU can appropriate quickly by stabilising research workflows (e.g., through shared guidelines, checklists and infrastructure access) and, at the same time, leave research–industry coordination less developed in the governance of AI use.

5.1.2.5. Within-case interpretative synthesis

In TAU, the four themes have a deep connection. The persistent uncertainty around the EU AI Act and the timing or contents of supporting guidance creates interpretative space at the university level. The actors expect clarity *"from Brussels,"* and report a continuing *"grey area"* for research and operational choices. In practice, the research–deployment boundary works as the orienting line: exploratory research remains within a wider interpretative space, and real-world testing or market intent is treated as the trigger for compliance work. This challenging ambiguity is met with local efforts to confer legitimacy. The rector approved TAU's AI Policy delegates responsibilities, risk classes and oversight to the Regulation and related standards, and the Research AI Guidelines translate external expectations into accountable research practice (e.g., authorship, disclosure, privacy-sensitive inputs, and the research exemptions).

Under these conditions, autonomy and ethics become the practical frame through which *"success"* is defined: legality is necessary but not enough; staff emphasise responsible use and documentation when addressing ethical or legal misalignments in specific use cases. Coping and learning then happen through ad-hoc, dependent routines that connect policy gaps, fragmented initiatives, workarounds in tool procurement, intranet overload, and uneven reach to researchers, influenced also by national legal constraints and long timetables for reform (interviewees mentioned 2027). Implementation is led by IT Services and the AI virtual team, with a single pre-verification/approval pipeline under construction to consolidate checks. Monitoring instruments are present but consolidating: an intranet AI checklist exists, and six groups of metrics are tracked, although targets are not yet set.

Coordination networks partly conduct and stabilise this coping. The EU-level fora (EUA webinars, task-and-finish groups) provide peer learning and templates; national steering (performance agreements, upcoming competent authority surveillance) shows direction and resources, with sector bodies calling for guidance, capacity and training. Signals from EUA/CSC fora tend to reach TAU fastest, and bilateral exchanges with peer HEIs supply concrete exemplars. The industry involvement appears episodic. The combined effect on R&D is uneven: formal instruments now exist to enable responsible research, but day-to-day practice still reflects early-stage institutionalisation, variable tool access, metrics not yet tied to explicit goals, and a stronger pull from teaching-oriented debates than research governance.

5.2. University of Helsinki (UH) case

Governance configuration

The University of Helsinki organises AI-related decision-making through its existing academic governance and support units. Responsibility for AI use in research is placed on individual researchers, and teaching decisions are delegated to course-level instructors. Institutional guidance is intentionally concise and aims to provide overarching principles rather than prescriptive, rule-by-rule instructions.

Policy instruments

UH has a *Use of Generative Artificial Intelligence in Research* guideline framed as a *living* document (adapted from the ERA "living guidelines"). It emphasises transparency, verification, and privacy/IPR safeguards, and purposefully not formalised via an administrative (rector) decision to allow responsive updates.

Conventions

This section applies the same six determinants and level definitions used in subsection 5.1.1 (*Goal clarity, Resources, Incentives and authority, Monitoring systems, Actor beliefs and discretion, Inter-organisational networks*) and the three levels (Supranational, national, institutional). To avoid repetition, definitions are not restated here.

5.2.1. Determinants matrix findings

The supranational and national level frameworks applicable to the University of Helsinki are the same as those described for Tampere University, as both cases operate under a shared EU and Finnish policy baseline (see subsection 5.1.1). Therefore, to avoid redundancy, the following tables focus only on the specific University of Helsinki evidence and implementation features. Only elements that were concretely documented for UH are included in the EU and national rows. Comparative insights across cases, such as shared constraints, diverging intermediaries, or institutional strategies, are not included in this section but are synthesised in Chapter 6 (see subsection 6.1).

5.2.1.1. Goal clarity

Table 11. Findings (goal clarity) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational[14] (EU)	For UH, in the supranational level, the goal clarity is attached to the AI Act's research or R&D boundary: purely scientific R&D is out of scope, but the deployment to real-world conditions or market-facing use triggers the Regulation. UH's *Use of GenAI in research* guidelines presents this boundary explicitly for researchers. The voices of sector-level actors emphasise the need for clear guidelines and AI literacy to translate EU rules into practice	*"The EU's AI Act does not apply if an AI system is developed and put into service solely for scientific research and development purposes." (UH_AIGuide_Research*). *"At the moment, that plays a very, very little role also because it's... not implemented. The actual authorities are not always clear... It won't be until early next year that we have guidelines from the AI Office in Brussels."* (SUP_Stakeholder_02) *"For the most part of institutions operating in Europe, it's more ambiguity than clarity." (SUP_Stakeholder_01)*	The R&D/market boundary creates a recurring compliance stage at the point of external pilots or commercial intent. UH's GenAI in research guidance already centres documentation and transparency, which suggests early internalisation of this boundary.

[14] There is no *additional specific UH supranational interview evidence beyond the TAU baseline (§5.1.1). The policy texts were used where it was appropriate.*

		"there's a lot of consensus. We need some, some clear guidelines… [and] the importance of AI literacy in general." (SUP_Stakeholder_02)	
National (Finland)	In the case of the national level, goal clarity for UH is influenced by the upcoming implementation laws (competent authorities and sandboxes) and a distributed enforcement model (Traficom with ministries). UH staff report direct involvement in commenting on Finland's positions and on the draft laws, which is a sign of early awareness and alignment.	*"we actually worked… with the Ministry to work out the Finnish responses… we were very much involved in also commenting on the regulation when it was in progress."* (INS_Implementer_05) *"there are two laws… One is about the authorities… and one is about the sandboxes. We have been giving inputs to the statements given by the universities on this."* (INS_Implementer_05) *"Traficom will be the general like body overseeing the AI Act… it will be a distributed model in Finland."* ((INS_Implementer_05)) *"in University of Helsinki, we have guidelines… for research. And very recently there has also*	The developing distributed oversight and sandbox legislation set external expectations. UH's actors direct involvement in consultations suggests lower internal ambiguity and smoother alignment as the instruments are finished.

		been guidelines related to the application of the AI Act in research." (INS_Implementer_05)	
Institutional (UH)	UH has written a concise, updateable "living" guidance that adapts ERA guidelines content into a UH-specific instrument. Goal clarity is operationalised through researcher responsibility, transparency/reporting, privacy/IPR[15] safeguards, and ethics recommendations. The choice not to formalise via a rector's decision was deliberate to keep updates agile.	*"we… cannot just say… our policy is the ERA policy… we needed an own institutional policy… more concise and… more concrete, so it would be easy to understand."* (INS_Implementer_04) *"we have said from the outset that these guidelines… are like [living] documents… we… adapt the guidelines according to new developments."* (INS_Implementer_05) *"Researchers are responsible for their own use of GenAI… you must always verify the output of GenAI."* (UH GenAI in Research guideline).	The "living" guideline combines researcher responsibility, transparency and privacy/IPR safeguards, which supports an agile, researcher-centred approach that prioritises updatability over formal regulation.

Takeaway for UH: The EU R&D/market boundary is explicit in UH's research guideline. Nationally, UH staff report direct involvement in consultation on the coming oversight and sandbox laws, and institutionally, living guidance operationalises responsibilities and transparency while keeping updates agile.

[15] IPR stands for Intellectual Property Rights

5.2.1.2. Resources

Table 12. Findings (Resources) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational (EU)	The EU-level infrastructure and investment channels (e.g., LUMI / "LUMI AI factory") provide capacity that UH uses, but the access or logistics and sustainability costs are outstanding. The interviewees noted a push toward even larger initiatives ("gigafactories"), and the fact that financing models imply reliance on private co-investment to secure access to public-interest. Overall, EU resource direction exists, but there is uncertainty on timings and modalities for research use.	*"we have links to the European infrastructures, Lumi and now we have the continuation for Lumi, Lumi AI, which is on the pipeline."* (NAT_Policymaker) *"you need these high-performance computers and they're too expensive to do with just with taxpayers money. You need some really big private investors going in here... we just want to safeguard a portion of this really being done for public, public values and with researchers."* (INS_Implementer_05) *"we have this Lumi AI factory and now the, the newest thing going on in the Commission is to do something even bigger, which is called gigafactories. I think it's a little bit unclear to*	The access to LUMI/LUMI AI and future "gigafactory" initiatives represents an expanding capacity resource, but with uncertainty regarding the time. UH interviewees explicitly reference LUMI AI factory/gigafactories, which suggests slightly higher importance of EU-scale compute for research use.

		everybody what it exactly is." (INS_Implementer_05)	
National (Finland)	Finland's resource combines university, CSC/LUMI and EU services, but are fragmented from the researcher's point of view. Human capital is the key bottleneck, and local IT duties are perceived as optimised for "office" rather than research processes. Sector organisations involved in higher education highlight that there is a need for more resources from authorities and targeted training to support compliance	*"the bottleneck is people, where do we find enough people, that is something that is deeply sort of worrisome to us."* (NAT_Policymaker) *"at the moment the IT infrastructure at the university, it's sort of focused on how can you perform your sort of office duties?... But how can you actually support the research processes?"* (NAT_Policymaker) *"quite scattered. So, you have some services from the university, you have some that are provided by CSC and some that perhaps even might come from the Europe. So how do you combine these and how does it the individual researcher... find the services that you need?"* (NAT_Policymaker) *"Developing and using compliant AI applications incurs costs for universities... [and] authorities have sufficient resources and expertise... [and] organise targeted training, for example, organised by the Ministry of Education and*	From the researcher's point of view, services remain fragmented and skills are a requiring limitation. An effective understanding depends more on clearer indications and coordinated training than on additional platforms.

		Culture." (Unifi response to Government Proposal) *"It is important that the authorities are immediately guaranteed sufficient resources and expertise for their tasks." (SIVISTA response to Government Proposal)*	
Institutional (UH)	UH has provided enterprise-type tools and guidance for researchers (e.g., Copilot, CurreChat[16], Kontra[17]) and assumes responsibility for the technical elements of the tools it provides. There are AI literacy resources (MOOCs), and the new research guideline consolidates the general principles for AI use. However, interviewees report unachieved training demand and fragmented ways to discover the AI instructions on the intranet.	*"The University assumes responsibility for the technical elements of the tools it provides, but limits its responsibility to providing instructions to researchers on using the tool in question."* (UH_AIGuide_Research) *"Improve your 'AI literacy'… The University's own MOOCs, Elements of AI and Ethics of AI, serve as good starting points."* (UH_AIGuide_Research) *"researchers need more training on this matter, but we have not yet been able to maybe solve this problem comprehensively."* (INS_Implementer_04)	There are enterprise tools and guidance, but unfulfilled training demand and scattered instructions indicate that discoverability and capability, not simply tool availability, are the current bottlenecks for UH.

[16] ChatGPT for the University of Helsinki.
[17] Machine translation between English, Swedish, and Finnish.

		“we have… one page in our Internet where everything is listed, but that's about it… they are quite separated everywhere.” Plenty of people… don’t know even that this exists. So, there is a need for training and disseminations” (INS_Implementer_04)	

Takeaway for UH: Capacity is supported by EU-scale compute (LUMI/LUMI AI, possible “gigafactories”) and the CSC/LUMI ecosystem. However, from a researcher’s standpoint, the main bottlenecks lie in human capacity and fragmented access pathways.

5.2.1.3. Incentives/Authority

Table 13. Findings (Incentives/Authority) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational (EU)	The AI Act sets binding compliance boundaries that UH must notice when research outputs are tested in the real world or move towards market access. This creates a clear "compliance stage" that limits bottom-up experimentation. EUA and other sector bodies provide guidance but do not have coercive powers. UH's GenAI in research guidance operationalises the Act's research exemption and directs researchers to engage with Legal Services if they have commercialisation in their plans.	*"March, April next year when you suddenly realise, oh, there's actually a regulation we need to comply with, this cannot just be done by the enthusiast."* (INS_Implementer_04) *"The EU's AI Act does not apply if an AI system is developed and put into service solely for scientific research and development purposes. However, the regulation does apply if the system is tested in the real world or if you are planning to bring an AI system to market… please contact Legal Services as early as possible." (UH_AIGuide_Research).* *"Because if you bring something to the European market, you have to follow the EU laws."* (INS_Implementer_05)	The AI Act's transition initiation (from research-only to real-world testing/market) operates as the principal limitation on otherwise bottom-up experimentation. It is important to note that at UH's there is an explicit internal research page mapping the AI Act's scope and warnings.
National (Finland)	At this level, the authority is being formalised through a distributed oversight model with	*"it seems to be that the Traficom will be the general body, but the actual oversight*	The oversight environment is consolidated with a distributed

	Traficom as the general body and additional sectoral competent authorities, backed by a separate law on regulatory sandboxes. The soft steering continues via performance agreements and annual monitoring. UH actors report direct engagement with the ministry and sector bodies on the draft of legislation and implementation guidance.	*responsibilities are probably distributed among several authorities."* (INS_Implementer_05) *"There are two laws, as I understand... [one on] AI Act [competent] authorities and [one on] sandboxes."* (INS_Implementer_05) *"we worked with the Ministry and the stakeholders of the universities,... mainly shaping our responses, statements to the proposals."* (INS_Implementer_05) *Government proposal (supplementing the EU AI Regulation) specifies competent authorities, with Traficom assigned general tasks, and establishes national AI regulatory sandboxes. (Government proposal §2; §29).* *"we have these performance agreements... we monitor the universities annually."* (NAT_Policymaker)	supervision model (Traficom and sectoral authorities) and sandbox law. The participation of UH's actors in giving inputs positions it to anticipate supervisory expectations.

Institutional (UH)	UH practices internal authority through formal guidance for research and teaching. At the same time, it acknowledges that researchers should not be expected to break down policy "word for word"; instead, clearer, concise institutional rules are being developed. The right to decide on the use of AI on courses, teaching and the assignment is the responsibility of teachers and on research of researchers.	*"We have guidelines for [teaching], for [research], and [recently] for the AI Act application in research…"* (INS_Implementer_05) *"we don't expect [researchers] to read through every policy… there should be a concise guideline… more clear."* (INS_Implementer_05) *"On pedagogical grounds, course teachers can restrict or prohibit the use of large language models on their courses… If students use [LLMs] where prohibited… this constitutes cheating." (UH teaching guideline).* *"Researchers are responsible for their own use of GenAI… The University… limits its responsibility to providing instructions to researchers on using the tool in question."* (UH_AIGuide_Research).	UH's arrangement (course-level authority in teaching and researcher responsibility in research) reflects a decentralised authority model that relies on concise institutional guidance rather than rule-by-rule explanation.

Takeaway for UH: Authority is decentralised by domain: teachers decide on courses, researchers are responsible for research use. Compliance incentives are shaped by the coming AI Act, and institutional guidance is deliberately concise to support practical enactment.

5.2.1.4. Monitoring systems

Table 14. Findings (Monitoring systems) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational (EU)	The EU-level monitoring relevant to UH is indirect and informational: sector bodies (EUA) scan developments, assemble members, and channel findings to policymakers and universities. Interview evidence characterises EU-level activity as horizon scanning and peer learning rather than compliance auditing. With the supply of templates and directions, UH can internalise its own procedures.	*"We… monitor developments at the EU level, gather… the story… from our members and try and feed that to the policy makers."* (SUP_Stakeholder_01) *"We act as a platform for sharing… [a] webinar… about institutional strategies for AI… [and] another one about ethical concerns."* (SUP_Stakeholder_01) *"We did a series of events… useful in building some kind of community and sharing best practice among our member institutions."* (SUP_Stakeholder_02)	The leading EUA horizon scanning works as informational monitoring, providing peer signals and templates that UH can internalise without direct compliance surveillance.
National (Finland)	Two tracks are relevant for UH: (a) performance monitoring by the ministry via annual and term-end performance agreements; and (b) regulatory surveillance	*"We monitor every year what's going on, and in the end of the performance agreement term what has been done."* (NAT_Policymaker)	The performance-agreement tracking exists with AI Act supervision. UH's proving needs are likely to centre on

	under the AI Act, with Traficom expected as the general competent authority operating a distributed model, alongside separate acts on authorities and sandboxes.	*"Traficom will be the general… body overseeing the AI Act… it will be a distributed model in Finland."* (INS_Implementer_05) *"There will be two laws… one concerned with authorities… and the other about sandboxes."* (INS_Implementer_05)	documentation already produced through ethics/DPIA/DMP and publication transparency.
Institutional (UH)	UH has introduced documentation controls (transparency in outputs and DMP/DPIA[18]/ethics integration), but it lacks systematic data on the understanding/impact of its guidance. Monitoring capacity is being expanded in processes (e.g., updating ethics committee instructions) and normatively (publication disclosure), but diffusion gaps remain, which is a sign of further need to connect guidance with tracking and training.	*"We don't have such data at all… there are plenty of people who don't know even that this exists. So, there is a need for training and… disseminations."* (INS_Implementer_04) *"If AI is part of research, then it should be considered in ethics review requests… every committee should be able to review AI… we'll… update [the] descriptions."* (INS_Implementer_04) *"If you… take advantage of GenAI, you should mention it in your publication."* (INS_Implementer_05)	Transparency and documentation mechanisms exist, but awareness and data on understanding the processes remain unequal. The diffusion and measurement rather than additional rulemaking are the immediate monitoring challenges.

[18] DMP/DPIA refers to Data Management Plan (DMP) and Data Protection Impact Assessment (DPIA).

		"When substantially using GenAI… indicate the name of the tool and the version used, the date of use, how the tool was used, and for what step or purpose." (UH_AIGuide_Research) *"You may describe your use [of GenAI] in the research plan or in the data management plan."* (UH_AIGuide_Research) *"Before beginning a… project… a data protection impact assessment is required if you collect or use data related to individuals."* (UH_AIGuide_Research)	

Takeaway for UH: Monitoring is partly indirect (EUA horizon scanning, ministry performance monitoring, AI-Act supervision) and partly internal (publication disclosure, DMP/DPIA/ethics touchpoints). The awareness and usage data are uneven, which reflects a need to link guidance, training and tracking more tightly.

5.2.1.5. Actor beliefs and discretion

Table 15. Findings (Actor beliefs and discretion) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational (EU)	The beliefs of sector actors emphasise enabling discretion through values, non-coercive coordination rather than uniform mandates. UH connects its research guidance to EU/ERA living guidance. In addition to this, the actors note that academic freedom is bounded by ethics and law. This leaves room for institutional judgment pending detailed EU-level operational guidance.	*"These guidelines are based on the European Research Area (ERA) Forum Stakeholder's document 'Living guidelines on the responsible use of generative AI in research'."* (UH_AIGuide_Research). *"there are maybe fundamental values that are shared by all universities… institutional autonomy, academic freedom… maybe success would be if the implementation of AI aligned with those values,"* (SUP_Stakeholder_01) *"It's then academic freedom is not a free for all. I mean, I cannot come tomorrow to a high-performance computer and say… I want to build my foundational model."* (SUP_Stakeholder_02) *UH interviewee on institutional guidance: "they are based on the EU guidelines that exist…*	The coordination led by values preserves the institutional judgement and bounds it by ethics and law. Moreover, UH's link to ERA "living" guidance reflects this posture.

		distilling the most important things from the general EU guidelines" (INS_Implementer_05)	
National (Finland)	National steering outlines discretion as legitimate: the autonomy is constitutional, and general guidance is undesirable. Policymakers show co-production with university lawyers, reinforcing institution-level interpretative authority.	*"we wouldn't need national guidelines because the organisations vary and they need to be sort of tailored."* (NAT_Policymaker) *"the Finnish system... is based and built on the trust, on the autonomy. It's in our constitution,"* (NAT_Policymaker) *"It's really important that we take... the lawyers from the higher education institutions to the table [when] discussing [adopting EU legislation]."* (NAT_Policymaker)	The autonomy pattern and co-production with HEI lawyers legitimise institution-tailored interpretations. UH's involvement in these sites supports its internal discretion.
Institutional (UH)	In the case of UH, it places the responsibility and verification on researchers. This requires transparency about GenAI use, and keeping discretion at the project level for where/how to describe use. UH actors view GDPR as a tighter limitation than the AI Act in research contexts and are	*"Researchers are responsible for their own use of GenAI... you must always verify the output of GenAI... because you as the users are responsible for the contents and outputs."* (UH_AIGuide_Research) *"The details included, however, remain up to the author's discretion."* (UH_AIGuide_Research)	In the institutional level, beliefs emphasise researcher responsibility, verification and transparency. The GDPR and AI Act transition are considered a substantial boundary. The discretion operates at the project level.

	moving to make EU/AI Act implications concrete through UH legal guidance.	*"The EU's AI Act does not apply if an AI system is developed and put into service solely for scientific research and development purposes… If you have any plans to commercialise… contact University's Legal Services as early as possible."* (UH_AIGuide_Research) *"we needed an own institutional policy… more concise and… concrete, so it would be easy to understand."* (INS_Implementer_04, INS_Implementer_05)	

Takeaway for UH: Shared beliefs align around values-based discretion (autonomy and academic freedom bounded by ethics and law). Decisions about how to describe the use of GenAI are made at the project level, with an emphasis on verification. The GDPR is often perceived as a stricter boundary in this context.

5.2.1.6. Inter-organisational networks

Table 16. Findings (Inter-organisational networks) UH

Level	Synthesis	Illustrative evidence	Implications for UH
Supranational (EU)	For the purposes and scopes of this research, the EUA works as UH's primary EU-level coordination and understanding hub for AI implementation through membership structures, a dedicated AI work programme, and continuous exchanges (webinars, consultations). This externalises practices and channels sector positions to EU policymakers. These horizontal actors provide templates and peer learning that UH can internalise into research governance.	*"We are a membership organisation, so our members are consisting of the National University associations… We would have Universities Finland as a member."* (SUP_Stakeholder_01) *"In the last year or just over a year, we've kind of taken a dedicated work programme on AI."* (SUP_Stakeholder_01) *"We did kind of a series of… events… useful in terms of building some kind of community… and sharing best practice among our member institutions."* (SUP_Stakeholder_01) *"We act as a platform for sharing… [a] webinar… about institutional strategies for AI… [and]*	The engagement via EUA provides a stable exchange of peer practice and sector signals that lowers interpretation costs for UH without imposing uniformity.

		another one about ethical concerns." (SUP_Stakeholder_01)	
National (Finland)	UH participates in national fora via sector associations (Unifi, Sivista) and direct ministry-facing work. National statements emphasise HEIs' central role in AI RDI and the need to recognise universities in AI Act implementation. UH interviewees also reported engaging with ministries on national positions.	*"Although research is excluded from the regulation on artificial intelligence, universities' RDI activities are often carried out in collaboration with the business community… in which case the activities are regulated by the regulation… National legislation must therefore also recognise higher education institutions."* (Unifi's response to the Government proposal) *"Universities play a major role in the development of artificial intelligence and artificial intelligence systems."* (Sivista response to the Government proposal). *"We actually worked… with the Ministry to work out the Finnish responses to different proposals… commenting on the regulation when it was in progress."* (INS_Implementer_05)	The association channels (Unifi, Sivista) and ministry work offer an anticipatory guide as implementation details evolve. UH's participation supports timely internal alignment.
Institutional (UH)	UH utilise research-intensive networks (e.g., FCAI) and bilateral connections for	*"Academic persons… are involved in national discussions and in the FCAI centre… I think there*	Intermediary roles (e.g., FCAI participation, bilateral

	benchmarking and coordination (e.g., University of Turku). The internal coordinators act as intermediaries to other universities and national bodies (TENK), which enables the adoption of external guidance into UH research practices.	*is some also in the TENK guideline drafting work."* (INS_Implementer_04) *"I have cooperation with the University of Turku… we are doing coordination."* (INS_Implementer_04) *"It is really important… that we have persons like me in these positions who coordinate and then speak with other universities."* (INS_Implementer_04) *"The 'Living guidelines on the use of AI in research'… are based on the 'Guidelines for the use of AI in research' issued by the ERA Forum… approved by Finland's Advisory Board."* (UH_AIGuide_Research)	coordination) act as channels through which external guidance is translated into research-group routines. The benefits depend on the sustainability of these connections.

Takeaway for UH: UH's supranational coordination is channelled through EUA (work programme, webinars, consultations), providing peer templates and sector signs that can be internalised without imposing uniformity. The national links (e.g., through UNIFI/ministries) complement this.

5.2.1.7. Within-case matrix summary

In all the determinants, UH works under a clear supranational boundary: research conducted solely for R&D purposes is out of scope of the EU AI Act, but any move to real-world testing or market-facing use becomes a compliance situation. At the national level, Finland is consolidating a distributed oversight model with Traficom as the general node and a complementary sandbox regime. The soft steering continues through performance agreements. In the case of the institutional level, UH internalises these signals through a "living" research guideline that links responsibility with researchers, requires transparency about GenAI use, and derives commercialisation plans to Legal Services. In the case of resources, it is shown that there is vertical complementarity, but practical frictions: EU-level capacity (LUMI/LUMI AI and prospective "gigafactories") aligns with national provision (CSC); however, from a researcher's point of view, it looks fragmented. In addition to this, human-capital limitations persist. At UH, enterprise tools (e.g., Copilot, CurreChat, Kontra) and AI-literacy resources exist, but unachieved training demand and the fact of discovering the guides through the intranet hinder usability. Monitoring is centred on documentation (DMP/DPIA/ethics; publication acknowledgements), supplemented by EUA horizon scanning and national performance reviews; however, UH lacks systematic data to adapt and disseminate its guidance. Actor beliefs across the levels legitimise discretion bounded by law and ethics: the sector settings emphasise non-coercive coordination, the national outline focuses on institutional autonomy and co-production with university lawyers, and UH sustains the project-level discretion and recognises GDPR and AI Act transition as hard limits. In the case of inter-organisational networks, UH is connected by EUA platforms, national associations (Unifi, Sivista), and research-intensive networks (e.g., FCAI), with intermediary coordinators translating external cues into internal research routines. Overall, UH's configuration connects strong external compliance signals and active networked understanding with evolving internal measurement and capacity.

Some factors were identified as facilitators by the interviewees. Among them were the existing guidelines from the EC, such as the ERA "living" guidance, which were translated into an agile UH research guideline and transparency norms. In addition to this, there was also access to shared compute (CSC/LUMI; pipeline to LUMI AI), direct engagement in ministerial consultations, intermediary roles with networks (EUA, Unifi/Sivista, FCAI, bilateral HEI ties) and the autonomy bound by law that allowed the university actors to take their own decisions (discretion).

On the other hand, some of the barriers noticed by the interviewees were the fragmented service pathways (university/CSC/EU) and the difficulty in discovering the AI guidelines in the intranet. Moreover, the human-capital bottlenecks, the unmet coordinated training demand for lawful and effective GenAI use, the monitoring data gaps despite existing documentation duties, the uncertainty around emerging EU capacity initiatives, along the upcoming national distributed-oversight/sandbox setting. Finally, the higher exposure to AI Act obligations in industry-collaborative RDI was also mentioned as a barrier.

These patterns work as a bridge to the interpretative themes (§5.2.2) on governance ambiguity and legitimacy, autonomy/ethics/success frames, organisational coping and learning, and the role of coordination networks in shaping research practice.

5.2.2. Interpretative themes

5.2.2.1. Governance ambiguity and legitimacy

At all three levels, actors describe a continuing uncertainty about the scope, authorities and operative boundaries of AI rules at UH, despite legitimacy is built through a careful internal interpretation and visible, updateable guidance. At the supranational level, a sector actor noted that “for the most part of institutions operating in Europe, it’s more ambiguity than clarity”. Another supranational expert, in a similar way, expressed that “the actual authorities are not always clear… It won’t be until early next year that we have guidelines” (SUP_Stakeholder_02). In Finland, a policymaker highlighted the existence of interpretative gaps with legal drafters: “sometimes… you don’t even feel that we speak the same language” (NAT_Policymaker). This is a sign of uncertainty about the purpose and operation of upcoming instruments.

At the institutional level, UH actors emphasise detailed internal interpretation to sustain legitimacy: “every single sentence in our policy was quite carefully discussed and interpreted” (INS_Implementer_04). They also characterise the EU text as complex, with reliance on emerging interpretative assistances: “the AI Act is… very complicated legal text… the Commission is… publishing… guidelines of how to interpret things” (INS_Implementer_05). UH’s guideline of use of AI in research makes the boundary conditions explicit as follows: “The EU’s AI Act does not apply if an AI system is developed and put into service solely for scientific research and development purposes… [but does apply for] real world [testing] or… market” (UH_AIGuide_Research).

For R&D practice at UH, this setting translates into careful, case-by-case compliance judgments based on the “research vs. deployment” boundary, early consultation with Legal

Services when projects approach real-world testing or commercialisation, and reliance on living guidance to document and justify choices.

5.2.2.2. Autonomy, ethics and success frames

In the particular case of UH, the autonomy is applied as project-level discretion bounded by ethics and transparency duties. The "success" is outlined in terms of aligning values rather than just following rules. At the supranational level, sector representatives describe success as fidelity to shared university values: "maybe success would be if the implementation of AI aligned with those values" (SUP_Stakeholder_02). On the other hand, national actors legitimise institutional discretion and highlight constitutional autonomy and reject general mandates: "the Finnish system… [is] built on… autonomy," and universities "need… tailored" guidance (NAT_Policymaker).

At the institutional level, UH operationalises this through the researcher's responsibilities and ethics procedures. A UH interviewee states: "if you in your research take advantage of GenAI, you should mention it in your publication" (INS_Implementer_05). Ethics governance is also being expanded, so that AI use is routinely reviewable: "every committee should be able to review AI" in ethics submissions (INS_Implementer_05).

Overall, the autonomy is retained but bounded by disclosure and ethics review expectations. The success is framed as an alignment with academic values and responsible conduct. For UH's R&D practice, this means that investigators keep design choices over tools and methods. In this way, they ensure transparent reporting of GenAI use and readiness to justify it in ethics review.

5.2.2.3. Organisational coping and learning

At UH, coping and learning mechanisms are pragmatic and focused on the documents, with often adjustments to the processes. In the case of diffusion and training, they remain uneven. Interviewees noted that UH lacks consolidated feedback on guideline adoption: "we don't have such data at all… plenty of people… don't know… need for training and disseminations" (INS_Implementer_04). At the supranational level, EUA facilitates peer learning and understanding through community events, as stated as follows: "we did a series of events… useful in building some kind of community and sharing best practice" (SUP_Stakeholder_01). These can be used by UH as templates for local routines. In Finland, the support is framed as a rise of awareness rather than directive oversight: "we need to raise awareness and that's perhaps something that the ministry could support" (NAT_Policymaker). In UH, learning cycles are channelled through documentation and review: the research guideline indicates where GenAI use can be recorded in research plans or DMPs and emphasises publication transparency (UH_AIGuide_Research). Finally, implementers are updating ethics routes so that “it’s important to explain the use of AI in ethics review requests” (INS_Implementer_05).

For R&D practice at UH, this means research groups are stabilising workflows via disclosure, DMP/ethics integration and learning is limited by irregular dissemination and constrained monitoring data on how guidance is understood and used.

5.2.2.4. Coordination networks and research impact

The coordination around AI governance at UH is organised through layered networks that connect EU fora, national associations, and bilateral links, with practical effects on research routines. At the supranational level, UH engages through EUA’s platforms where “we did kind of a series of… events… useful in terms of building some kind of community… and sharing best practice among our member institutions” (SUP_Stakeholder_01). In the national field, the expectations emphasise peer exchange: a policymaker noted that universities “will need to talk to each other and share… good practises” (NAT_Policymaker).

Within UH, coordination is directed through research-intensive and bilateral links. One coordinator described early process benchmarking: “I was discussing with [a] University of Turku person… I asked how did you do it” (INS_Implementer_04). The same actor highlighted fixed national connections: “Academic persons… are involved in national discussions and in the FCAI centre… also in the TENK guideline drafting work” (INS_Implementer_04). These ties are complemented by internal cross-unit collaboration (research lawyers, IT, ethics), but this kind of “umbrella” structures have limited formal authority across employers, “HIIT does not have own rules” (INS_Implementer_05).

In the case of the research impact, these networks provide templates, routes for horizon scanning, and escalation points when projects approach activities related to the market. UH_AIGuide_Research guideline translates the EU boundary condition into practice: the AI Act “does not apply… solely for… R&D,” but applies when “tested in the real world” or moving to market, triggering early contact with Legal Services (UH_AIGuide_Research).

One implication for R&D practice at UH is that participation in EUA/national fora and bilateral exchange supplies workable models and clarifications. In the same way, internal and external links direct projects towards early legal/ethics review as they shift from research to application.

5.2.2.5. Within-case interpretative synthesis

In UH case, the four themes follow a pattern where persistent governance ambiguity is handled through cautious, text-based interpretation and internal legitimising procedures. The uncertainty at the supranational and national levels is translated locally into a clear operational boundary (research versus deployment). Therefore, legitimacy rests on documenting how projects act relative to that line and consulting Legal Services as work approaches real-world testing or commercialisation. The autonomy is exercised within that boundary as researcher-level discretion, but it is explicitly tied to ethics and transparency duties: the investigators decide on tools and methods. They also ensure disclosure of GenAI use and readiness to explain it in ethics review.

The coping and learning mechanisms are organised around documents and process integration: UH's living guidance, DMP fields and ethics pathways work as the primary carriers of practice, and the dissemination and monitoring of data remain uneven. The coordination networks provide the missing framework: EUA platforms, national forums and bilateral ties provide templates, vocabulary and escalation points that help standardise responses without displacing institutional autonomy. These networks also direct horizon scanning and offer external reference cases when interpreting grey areas of the AI Act.

For R&D practice, the result is a pragmatic bounded discretion: day-to-day research continues with increased transparency, and translational projects engage earlier with legal/ethics support as they move toward testing or to market activity.

These dynamics reflect both vertical alignment (EU → national → institutional) and horizontal coordination (EUA, Unifi/CSC, peer universities), which will be developed further in the Discussion chapter.

6. Discussion

6.1. Cross-case synthesis

Across the two cases, implementation takes place within a stable vertical governance framework supported by non-coercive horizontal coordination mechanisms. In the vertical dimension, both universities interpret the EU AI Act as establishing a research-only exemption, with compliance requirements triggered at the stage of real-world testing or commercial intent (European Union Artificial Intelligence Act, 2024, Article 2(8), Rec. 25; University of Helsinki, 2024). This threshold is reflected in institutional guidance through "living" research rules and early engagement with legal support when commercialisation is anticipated (Tampere University, 2025b; University of Helsinki, 2024). At the national level, both universities operate under Finland's emerging model of distributed oversight, where Traficom works as the central node in coordination with sectoral authorities. This is complemented by a regulatory sandbox law and soft steering mechanisms embedded in performance agreements (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 2025). This configuration (clear legal boundaries but incomplete operational detail) aligns with a multilevel governance (MLG) perspective of centre-periphery authority with state-society interdependence (Piattoni, 2010). It is also related to the model of "operational governance", where frontline discretion is expected under ambiguous mandates (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

The similarities between the cases outweigh their differences. Both universities rely on updateable guidance over rigorous rule-by-rule policies and assign primary accountability to researchers and principal investigators (PIs), operationalised through transparent documentation practices in research workflows (Tampere University, 2025b; University of Helsinki, 2024). Monitoring mechanisms are present, but they are still in development and tend to rely on soft tools, such as checklists, internal routing, and leadership reviews, rather than formal auditing or target-based evaluation cycles (Tampere University, 2025b). Capacity constraints are also comparable. From the perspective of researchers, bottlenecks in human resources and fragmented service pathways, across institutional, national (CSC), and EU infrastructures, continue as practical challenges, despite access to substantial shared computing capacity (e.g LUMI/LUMI AI) (Sivista, 2025; Unifi, 2025). In practice, the resulting approach can be characterised as precautionary and documentation-driven: researchers are expected to maintain transparent routines and escalate to legal or compliance teams as projects approach deployment (University of Helsinki, 2024). This pattern core expectations of implementation theory, particularly in contexts where goal clarity remains partial and the effectiveness of policy centres more on people and institutional workflows than on infrastructure (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

The differences reflect institutional choices within a shared regulatory environment (same system). TAU has a rector-approved AI Policy, an intranet AI checklist, six metric groups (without set targets yet), and is building a single pre-verification/approval pipeline under IT Services leadership (Tampere University, 2024, 2025b). Interview data indicate mixed perceptions of gatekeeping and recall a history of bottom-up drafting in periods when senior-level direction was limited. In contrast, UH maintains concise and updatable research guidance, without requiring rectoral endorsement, to preserve agility. The university delineates the boundary between R&D and market deployment in its documents (University of Helsinki, 2024) and provides enterprise tools (Copilot, CurreChat, Kontra) alongside AI-literacy MOOCs. However, users report gaps in training availability and issues with intranet discoverability. UH actors have also engaged directly with the Ministry on legislation concerning competent authorities and sandbox frameworks, helping align institutional practices with anticipated national oversight (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 2025; University of Helsinki, 2024). Overall, TAU leans toward centralised policy and pipeline-building, while UH favours concise, researcher-driven guidance and proactive engagement in policy development.

On the horizontal axis, peer coordination substitutes for coercion. EUA platforms, such as work programmes, task-and-finish groups, and webinars, support sense-making and offer templates. CSC convenes national working groups through which practical tools and exemplars are shared, and bilateral ties facilitate the quick exchange of materials (e.g., TAU borrowing UH's guidance or UEF templates). Industry involvement appears episodic in the evidence, with limited examples such as consultancy support at TAU, rather than any systematic co-governance channel. These dynamics are consistent with the state-society dimension of MLG: networks help reduce interpretation costs and diffuse tacit norms without imposing uniformity (Hill & Hupe, 2014; Piattoni, 2010).

To sum up, the shared pattern is one of bottom-up enactment bounded by clear legal limits but shaped by ongoing operational ambiguity. Legality sets the outer frame, and transparency and documentation work as the *de facto* controls, and capacity and workflow integration emerge as the main limiting factors. The differences, TAU's formalised structure and central pipelines versus UH's concise guidance and early-stage policy engagement, primarily affect the speed and coherence with which each university can convert dispersed practice into goal-linked monitoring, as EU and national instruments continue to evolve. This reflects the importance of institutional structuring and statutory clarity in shaping implementation outcomes (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

6.2. Interpretation of cross-case patterns

This subsection interprets the cross-case regularities identified in Chapter 5 through the lenses of Multilevel Governance (MLG) and implementation theory. Four key patterns are discussed: bottom-up implementation under legal ambiguity (particularly the research/deployment boundary), the use of horizontal templates and peer learning, soft governance through transparency and documentation, and capability bottlenecks. Each pattern is linked to underlying mechanisms of discretion, coordination, and monitoring, as well as to previous evidence from higher education studies.

6.2.1. Pattern 1: Bottom-up implementation under legal ambiguity (R&D-deployment boundary)

In both universities, day-to-day implementation remains bottom-up and led by researchers, grounded in a shared interpretation of the EU AI Act's research exemption: purely scientific R&D remains out of scope, whereas real-world testing or commercial intent activities trigger compliance obligations and early referral to legal support (Tampere University, 2025b; University of Helsinki, 2024).

This pattern reflects a combination of clear outer boundaries and incomplete operational detail, which invites discretion at the frontline. The "research versus deployment" line emerges as a coping device under conditions of partial statutory precision and delayed EU interpretative materials. From an implementation theory perspective, such conditions increase reliance on organisational and street-level discretion (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980). In a multilevel governance lens, centre-periphery authority remains stable (Piattoni, 2010), but state–society interdependence enables universities to fill interpretive gaps locally while anticipating EU-level developments (Conteh, 2013).

Studies of university AI policies, in a similar way, describe provisional, values-based guidance, with more developed provisions for teaching than for research, and a reliance on soft instruments while legal specifics continue to evolve (Kim & Wu, 2024; Stracke et al., 2025; Wang et al., 2024). The European Research Area's "living guidelines" reflect this position, emphasising transparency, verification, and responsible authorship over prescriptive rules (European Commission, 2025b).

Internally, the same bottom-up dynamic is visible and was accelerated by the speed of change. In both cases, units moved first, and senior-level coordination developed later. At TAU, implementers describe drafting guidance “because we decided to write those,” citing “lack of leadership” in the very early phase. UH staff similarly described a careful, line-by-line approach to interpretation while broader structures were still developing. This is consistent with implementation theory, where partial goal specification typically leads to frontline discretion and local rulemaking (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980), and aligns with recent comparative findings on uneven policy leadership during the initial wave of GenAI guidance (Kim & Wu, 2024).

An unexpected observation is that, despite the significant volume of RDI activity in both universities, industry co-governance appears only episodically in the governance evidence. Instead, horizontal sense-making is primarily shaped by academic networks and public intermediaries rather than market actors. A plausible explanation for this, raised by one policymaker, is that the current focus on data protection and the evolving design of competent authorities is more aligned with public and sectoral governance forums at this stage. This pattern primarily informs RQ2 (conditions for implementation) and RQ3 (tensions between innovation and compliance).

6.2.2. Pattern 2: Horizontal templates and peer learning lower interpretation costs

Horizontal coordination substitutes for coercion and, in practice, provides templates for implementation. EUA’s work programme, task-and-finish groups and Commission-facing webinars offer forums where Finnish HEIs can compare drafts and converge on workable norms. At the national level, CSC arranges working groups and shares practical tools across institutions, while bilateral ties allow fast adaptation (e.g., TAU drawing on UH guidance or UEF sharing templates) (Piattoni, 2010). These networks reduce interpretation costs by providing exemplars and “good enough” rationales for local use, without enforcing uniformity, an effect anticipated by networked multilevel governance (Piattoni, 2010) and by policy implementation analyses of inter-organisational coordination (Birkland, 2020; Conteh, 2013).

The observed pattern also aligns with recent comparative analyses. Case studies of research-intensive universities in the United States highlight the role of multi-unit authorship in institutional guidance and emphasise the stabilising effect of communications from authoritative figures (Wu et al., 2024). In Europe, reviews report considerable variability across institutions, but a growing reliance on shared resources and AI literacy initiatives (Stracke et al., 2025). In the Finnish cases examined, horizontal contributions reduce uncertainty through different channels: TAU draws on EUA and IT networks for swift adoption of external materials, while UH engages in national policy discussions to align its internal guidance with emerging oversight structures. Both represent forms of lateral coordination that help manage ambiguity at a manageable institutional cost, echoing international findings (Stracke et al., 2025; Wu et al., 2024). This pattern informs RQ2 (enablers of implementation), which concerns the conditions that facilitate or hinder implementation.

6.2.3. Pattern 3: Transparency and documentation as convergent "soft control"

Both universities use documentation-based practices as their main approach to oversight in research. These include disclosing the use of GenAI, verifying research outputs, providing data-handling statements, and maintaining project records. At UH, researchers are responsible for these tasks, with verification required and only limited flexibility in how GenAI use is reported (University of Helsinki, 2024). At TAU, documentation is built into the research process through institutional guidelines and an intranet checklist, which are being connected to leadership review and a single pre-verification pipeline (Tampere University, 2025b) (University of Helsinki, 2024; Tampere University, 2025b). Monitoring efforts are still in development: TAU has introduced six metric categories but has not yet set performance targets, while UH is focusing first on improving access to guidance and training before adopting more formal audit procedures.

This emphasis on transparency and "living" rules aligns with ERA's guideline model and broader higher education literature, where public guidance typically prioritises disclosure, authorship integrity, and iterative updates over rigid prescriptions (European Commission, 2025b; Kim & Wu, 2024; Stracke et al., 2025). From an implementation theory perspective, this approach represents a rational response to policy ambiguity: when statutory goals lack precision, soft instruments that support professional judgement, such as documentation routines, checklists, and internal referral mechanisms, are more likely to be implemented than rigid *ex ante* approval processes (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980). A practical implication is the need to standardise documentation artefacts and integrate them into research workflows. This pattern primarily informs RQ3 (tensions) and RQ4 (R&D effects).

6.2.4. Pattern 4: Capability bottlenecks at access and monitoring

At the European and national levels, shared infrastructure (e.g., LUMI/LUMI AI) and CSC services reduce the cost of compliant compute and data management. However, institutional actors still face fragmented service pathways and role divisions between EU, CSC, and university responsibilities (Interview data). Internally, TAU has established a virtual AI team, created specialist roles and introduced procurement frameworks. Nevertheless, limitations in tool discoverability and fragmented budgets reduce adoption, and several enterprise tools are poorly suited to research datasets. At UH, enterprise tools and AI-related MOOCs are available, but interviewees highlight persistent gaps in training provision and dispersed intranet guidance (University of Helsinki, 2024, Interview data)

These are classic implementation-capacity challenges: adequate resources, relevant skills, and routinised service pathways are preconditions for effective policy delivery (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980). They also align with comparative studies that highlight uneven preparedness, insufficient researcher-specific guidance, and the need to complement policy with training and internal communication (Kim & Wu, 2024; Stracke et al., 2025). This pattern primarily addresses RQ2 (conditions) and RQ4 (R&D effects).

Here, the four patterns point to a shared mechanism: when legal boundaries are clear but operational details remain incomplete, universities tend to rely on frontline discretion (Hill & Hupe, 2014), peer coordination, and soft controls centred on documentation routines (Piattoni, 2010). In this context, the main constraint is not a lack of intent but limited capability, especially in staffing, training, and support systems (Hill & Hupe, 2014). These insights help explain the conditions and tensions identified in RQ2 and RQ3, and they set the stage for subsection 6.3, which integrates the theoretical lenses, and 6.4, which proposes practical steps for institutions and the wider sector.

6.3. Theoretical implications

This subsection synthesises what the integrated Multilevel Governance (MLG) and implementation lens reveals about AI policy implementation in Finnish universities, beyond what either framework offers on its own. It also links back to Chapter 3's conceptual integration of vertical authority, horizontal coordination (Conteh, 2013; Piattoni, 2010) with operational governance and implementation capacity (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

In both universities, clearly defined vertical boundaries, established externally by the EU AI Act's distinction between research and deployment, interact with soft organisational controls in the universities. These include "living" guidance and documentation routines that assign the responsibility to researchers while referring borderline cases to legal and ethics support. This vertical frame is complemented by horizontal coordination, as templates and peer learning resources circulate through EUA, Unifi, CSC, and bilateral exchanges. These channels provide *ready-to-use* instruments without enforcing uniformity. The result is a shared emphasis on transparency but uneven institutional capability, particularly in access and monitoring, where pathways, metrics, and feedback mechanisms are still developing.

First, the integrated lens clarifies how discretion operates. MLG helps to locate authority across levels and arenas (Piattoni, 2010), but the implementation theory explains why discretion remains necessary at the frontline, particularly when goals are only partially specified, and monitoring mechanisms are still emerging (Sabatier & Mazmanian, 1980). In this context, routines become the practical carriers of policy in day-to-day research practice (Hill & Hupe, 2014). Second, the integrated lens specifies the function of horizontal coordination. MLG acknowledges the role of networks in policy implementation (Conteh, 2013), and the findings illustrate that these networks actively reduce interpretation costs by circulating templates, shared vocabulary, and escalation routes (UH and TAU findings). This helps institutions to translate external expectations into local practice more efficiently, without compromising their autonomy or judgement. Third, the integration of the lens clarifies how compliance is operationalised in research settings. Policy implementation literature emphasises routines and learning processes over strict top-down control (Hill & Hupe, 2014). In both cases, living guidance, disclosure requirements, and documentation practices work as the practical mechanisms of compliance, particularly where *ex ante* approvals are impractical for exploratory research and development (UH and TAU findings). Soft monitoring and horizon scanning enable adaptive learning loops, allowing institutions to adjust practice as legal expectations evolve (Birkland, 2020).

These implications are particularly relevant for high-autonomy systems during regulatory transition, where statutory limits are externally established but operational detail continues to evolve (Piattoni, 2010), as is the case in Finnish higher education, which combines constitutional autonomy with distributed national oversight and performance-agreement steering (see Chapter 5 matrices).

Overall, the integrated lens clarifies where steering originates (vertical or horizontal) (Conteh, 2013)—, how it is translated into practice through discretion and routines (Hill & Hupe, 2014), and why outcomes converge around transparency but diverge in terms of capability (Sabatier & Mazmanian, 1980).

6.4. Practical and policy implications

Building on the four cross-case patterns, this subsection outlines practical and policy implications for universities and sector-level actors. Each implication follows from the evidence interpreted above and aligns with established frameworks on implementation and multilevel governance.

At the institutional level, one area of attention is the early identification and routing of projects approaching the research-to-development boundary (Pattern 1). A lightweight intake should flag projects approaching real-world testing and hand them to legal and ethics review through predefined pathways. This is consistent with the AI Act's research exemption and the Council's call to plan transitions, as systems move towards deployment contexts (Council of the European Union, 2025), and reflects implementation literature on the importance of routinised intake and pathway mechanisms (Hill & Hupe, 2014). Institutions can also reinforce transparency as a soft control mechanism within research workflows (Patterns 2 and 3). This involves standardising disclosure elements (e.g., such as AI assistance, data provenance, and verification steps, within data management, ethics, and authorship processes), and ensuring the resulting instruments are auditable. This aligns with research integrity guidance (ALLEA, 2023) and emerging EU-level expectations (Council of the European Union, 2025). In addition to this, addressing capability constraints at the initial review or submission stage is relevant where support pathways are fragmented (Patterns 3 and 4). A clearly discoverable contact point for advice (e.g., legal, data, HPC), systematic logging of requests to identify recurring needs, and targeted training where demand clusters, can reduce friction. This responds directly to the constraints around access, monitoring, and service fragmentation identified in Chapter 5, and the adjustments are consistent with implementation work emphasising organisational capacity in multilevel systems (Conteh, 2013) and the importance of routinisation in policy delivery (Hill & Hupe, 2014).

At the sector level, the emphasis should be on shared templates and clear escalation pathways rather than formal mandates (Patterns 2 and 4). Common checklists can help navigate the research to deployment transitions (e.g., DPIA[19] triggers, sandbox options, and escalation thresholds), and preserve institutional autonomy and local adaptation. This approach is consistent with multilevel governance accounts of horizontal coordination without coercion (Piattoni, 2010). Sector actors should also invest in joint capacity-building (Pattern 3), pooling training resources for principal investigators, ethics reviewers and research legal staff, with priority given to areas where ambiguity and demand are highest. This aligns with EU-level recommendations to upskill and reskill the research and innovation workforce for responsible AI adoption (Council of the European Union, 2025). Finally, transparent and equitable access to infrastructure is fundamental (Pattern 4). Coordination with CSC, LUMI and similar providers to use distributed access models and open calls that reflect disciplinary balance is consistent with EUA proposals for academic-led allocation and public-interest funding

[19] Data Protection Impact Assessment

mechanisms (EUA, 2025). This also reflects the Finnish infrastructure landscape discussed in Chapter 2.

At the policy level, boundary-setting should be accompanied by institutional support (Patterns 1 and 3). Clarifications on the research exemption and deployment obligations should be paired with resources that strengthen institutional intake and monitoring (staff capacity, tools and practical guidance) to ensure that vertical rules are workable in day-to-day research (Council of the European Union, 2025). National stakeholders support this view, with Unifi (2025) stressing that universities will face compliance costs and therefore require enough resources, training and advisory support. In parallel, steering efforts should prioritise transparency-focused metrics (Pattern 3). Rather than expanding formal rule inventories, performance monitoring could rely on indicators that assess the quality and consistency of documentation and disclosure within research processes. This approach reflects EU recommendations to monitor AI uptake, maintain living guidelines and reinforce research integrity (Council of the European Union, 2025). From an implementation perspective, it also builds on the insight that when statutory goals are ambiguous, soft instruments such as routines and documentation are more likely to be effective (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

These implications generalise from the patterns rather than the individual cases and apply under similar conditions of high institutional autonomy (EUA, 2023), coupled with regulatory transition and strong horizontal coordination as observed in the Finnish context.

6.5. Limitations

The claims proposed here are bounded by the study's design, timing, and access. First, the study focuses on two Finnish research-intensive universities operating within a high-autonomy system and shared horizontal supports (e.g., CSC/LUMI and EUA/Unifi coordination). Therefore, claims are framed as *analytic* rather than statistical generalisations, and transfer primarily to settings with comparable autonomy regimes and peer infrastructures (Miles et al., 2014; Yin, 2018). The patterns are strongest where multiple sources converged across cases, such as bottom-up implementation under a clear research-deployment boundary (Tampere University, 2025b; University of Helsinki, 2024) and the reliance on documentation and disclosure as "soft control" (University of Helsinki, 2024). In contrast, they are weaker where industry co-governance mechanisms appeared only episodically in the data. Second, the findings reflect a regulatory transition: while EU-level provisions of the AI Act entered into force on 2 August 2025, Finland's national legislation establishing a distributed model of competent authorities and sandboxes was still under parliamentary consideration. As a result, although obligations began applying, the national supervisory and enforcement structures were not yet fully operational (Government Proposal for an Act on the Supervision of Certain Artificial Intelligence Systems and Amending Related Laws, 2025; Ministry of Economic Affairs and Employment, 2025). Institutional interpretations are therefore likely to evolve as guidance and supervision mature. Third, although purposive sampling enabled in-depth insights from implementers, it carries risks of elite bias and retrospective rationalisation. Triangulation with institutional documents helped to mitigate, but not eliminate, these limitations, so some explanations remain provisional pending broader stakeholder coverage (Miles et al., 2014). Stating these limitations in the discussion helps to calibrate claims to the strength of the supporting evidence and suggests directions for refinement in future research (Creswell, 2014; Kornuta & Germaine, 2019).

Based on these interpretations, the study can now state precise answers to RQ1-RQ5 and articulate an overall claim regarding AI policy implementation in Finnish universities.

7. Conclusions

7.1. Answers to the research questions

This subsection summarises the main answers to the research questions based on the findings from the two case studies and the interpretations expressed in the discussion chapter through the integrated multilevel governance and implementation lens.

The first research question (RQ1) asked how Finnish universities interpret and operationalise multilevel AI policy. The findings show that they translate EU-level boundaries and national steering into institutional instruments that emphasise researcher responsibility, documentation, and early routing to legal or ethics review when projects or work move toward application. In both cases, the EU AI Act's research-deployment distinction works as the practical orienting threshold for R&D governance: research conducted strictly for R&D purposes remains in interpretative space, while real-world testing or market intent activates compliance procedures and expert consultation. Tampere University operationalises this boundary through a rector-approved AI Policy, "living" research guidelines, an intranet checklist, and a planned pre-verification pipeline. The University of Helsinki applies concise, updateable guidance adapted from ERA[20] Living Guidelines and inserts disclosure and verification expectations into research workflows. The result is institutionalisation via "living" rules rather than exhaustive codification, with monitoring systems still in development.

Regarding the enabling and constraining conditions for implementations (RQ2), the main enabling conditions include shared technical and public goods (e.g., CSC services, LUMI/LUMI AI), horizontal coordination mechanisms (such as EUA fora, Unifi and CSC working groups, bilateral exchanges), and internal specialist capacity (including legal/DPO support, AI/information security architects, and virtual AI teams). The primary constraints, on the contrary, are human capital bottlenecks, limited discoverability of guidance, fragmented service pathways across the EU, CSC, and institutional layers, and enterprise tools that are poorly matched to research datasets. Tampere University's centralised structures support the development of pre-verification pipelines, but face challenges related to visibility and budget fragmentation. The University of Helsinki's agile guidance and policy engagement reduce ambiguity but face unfulfilled training demand and dispersed intranet instructions. Overall, the binding constraint is not institutional intent but rather capacity and the degree of workflow integration.

[20] European Research Area's Living guidelines on the Responsible use of Generative AI in Research

As for the third research question (RQ3), which addressed the tensions between compliance, autonomy, and innovation, these are managed by maintaining bounded discretion for researchers within clear legal limits, coupled with transparency obligations and early escalation to support functions when projects approach deployment. Universities avoid heavy ex-ante approvals and instead rely on "living" guidance, documentation routines, and internal routing systems that respect academic autonomy but keep market-facing activity within emerging EU and national guardrails. Implementation theory helps explain this choice: when goals are partially specified, soft instruments that support professional judgement tend to be more implementable than rigid controls (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980).

Regarding the fourth research question (RQ4), which focused on the implications of AI policies for research and innovation practices, the findings show that these policies reshape research workflows by normalising disclosure of GenAI use, verification of outputs, attention to data protection, and keeping records that evidence responsible conduct. Projects moving toward real-world application are encouraged to engage earlier with legal and ethics review mechanisms. Innovation is not stopped, but it is redirected: exploratory work proceeds with documentation routines, while real-world testing must satisfy compliance thresholds. Collaboration patterns adapt in response: industry-linked RDI raises exposure to AI Act obligations, whereas peer HEI networks and CSC support structures help to disseminate feasible governance models at a manageable cost. Monitoring remains at an early stage: TAU is developing category-based tracking without performance targets, and UH prioritises discoverability of guidance and training over formal audits.

Finally, in response to the fifth research question (RQ5), which centred on stakeholder perceptions of AI policy implementation, three shared views stand out. First, the external boundary conditions are clear enough to guide institutional action, but operational detail and national supervisory arrangements are still evolving, which prolongs ambiguity in daily implementation choices. Second, it is people and process capacity, not platform availability, that emerges as the binding constraint. The respondents highlight the need for targeted training, clearer intake pathways, and additional support for competent authorities. Third, horizontal templates and peer fora are widely valued because they reduce interpretation costs without imposing uniformity; universities "talk to each other and share good practices" as a deliberate coping strategy. These perceptions were consistently reflected in both interviews and institutional documents.

In sum and in answer to the main research question, this study finds that AI policies in Finnish universities are implemented as bottom-up enactment within clear vertical limits, coordinated through non-coercive horizontal networks and sustained by soft organisational controls (documentation, disclosure, and early routing) that keep research moving while managing compliance at the research-deployment boundary. The approach is viable where institutional capacity supports it, but progress likely hinges on strengthening staff capacity, training, discoverability, and integration of monitoring into research workflows.

7.2. Theoretical and practical contributions

From a theoretical perspective, this study shows how a multilevel governance (MLG) framework, emphasising vertical authority and horizontal coordination (Conteh, 2013; Piattoni, 2010), usefully complements implementation theory's focus on discretion, routinisation, and organisational capacity (Hill & Hupe, 2014; Sabatier & Mazmanian, 1980) within a university setting. Together, these lenses identify a recurring configuration observed across cases: hard external boundaries (e.g., legal limits established by the EU AI Act), soft internal controls (such as institutional guidance and documentation routines), and horizontal supports (including shared checklists and peer practices). This combination helps to explain why Finnish universities tend to converge on transparency-centred oversight, driven by shared expectations, but diverge in their capability and speed of institutionalisation, which depend more on internal resourcing and integration. The study thus offers a pattern-based explanation that reveals what the multilevel governance and implementation lenses can offer when used in combination.

From a policy and practical perspective, the findings support actionable priorities for both institutions and sector-level actors. For universities, this includes strengthening intake and routing clarity, inserting standardised documentation artefacts (e.g., disclosure and verification elements) into everyday research workflows, and offering targeted training for researchers and support staff. In addition to this, metrics that emphasise the quality of transparency processes, rather than the expansion of formal rule inventories, appear more aligned with current implementation conditions. For sector bodies and supervisory authorities, the emphasis should fall on shareable templates, clear escalation pathways, and coordinated resourcing for supervision and training (rather than uniform mandates), which reflect how soft instruments travel more effectively in settings marked by evolving goals and high institutional autonomy.

7.3. Recommendations and future research

This study offers actionable recommendations for institutions and sector actors to strengthen AI policy implementation in research settings. The following measures align with the findings and patterns discussed in Chapters 5 and 6:

- Consolidate a single institutional intake page and routing logic for AI-related research queries, linking legal, ethics, data protection, CSC, and tool approval steps. Also, monitor *time to resolution* as a service metric.
- Integrate standard documentation fields (e.g., GenAI disclosure, verification approach, data handling) into DMPs, ethics forms, and publication workflows. Pilot non-intrusive leadership reviews tied to these artefacts to support oversight without adding excessive burden.
- Allocate funding for “train-the-trainer” programmes targeting research groups and support units, in coordination with CSC and peer universities. Prioritise tracking staff *coverage* over the number of training events delivered.

Future research could extend this work in three directions. First, a post-transition follow-up could re-examine the cases after national competent-authority and sandbox arrangements are fully in force to assess the effects of mature oversight on institutional routines. This would test whether the current soft-control equilibrium persists under new supervisory pressures, building on implementation theory about adaptation to oversight (Hill & Hupe, 2014) and policy process literature on learning under changing institutions (Birkland, 2020). Second, increasing and broadening the sample to include non-research-intensive and applied universities, as well as industry partners, would capture a wider range of RDI-specific exposure and co-governance mechanisms, addressing risks of elite bias and improving transferability (Miles et al., 2014). Third, project-level process tracing could track several research projects with practical or real-world aims from early stages to deployment to observe how the research-deployment boundary is addressed in practice and whether documentation and verification routines effectively mitigate risk (Sabatier & Mazmanian, 1980).

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9. Appendix

9.1. Appendix A: Interview questions

As the interviewees represented different governance levels and organisational roles, a general set of questions was first prepared. This served as a base for adapting more specific questions depending on each interviewee's role.

These general questions were structured into seven sections: an introductory section, five sections aligned with the five research questions, and a concluding reflective section.

- **I.** Role and Background
- **II.** Interpretation and operationalisation of AI policies (RQ1)
- **III.** Implementation dynamics (RQ2)
- **IV.** Institutional responses and coping strategies (RQ3)
- **V.** R&D implications (RQ4)
- **VI.** Stakeholder perspectives/perceptions (RQ5)
- **VII.** Reflections

Section 1: Background and role

1. Could you briefly describe your current role and how you are involved with AI-related research, policies, or digital strategy?
2. Are you familiar with any institutional, national, or EU-level AI strategies or guidelines? Which ones are more relevant to your work?

Section 2: Interpretation and operationalisation of AI policies (RQ1)

RQ1: *How do Finnish universities interpret and operationalise international, national and internal AI policy instruments within the context of their R&D activities?*

3. What AI policies or guidelines are currently relevant to your work? (Institutional, national, EU)
4. How are these policies interpreted and applied in your unit or organisation?
5. Are there any overlaps or tensions between different policy levels?
6. In your view, are policy goals clear and actionable at your level?

Section 3: Implementation dynamics (RQ2)

RQ2: *What are the key factors that facilitate or hinder the implementation of AI policies in Finnish HEIs?*

7. In your view, what supports or facilitates the implementation of AI policies in your context? (e.g., funding/resources, leadership, clear objectives, incentives)
8. What kind of challenges or barriers have you found in implementing or complying with these policies? (technical, ethical, organisational)
9. To what extent do staff and decision-makers have discretion in implementing AI policy?
10. Do you believe these AI policies and tools are capable of achieving their intended outcomes? Why or why not? What are the biggest obstacles? (policy makers)

Section 4: Institutional responses and coping strategies (RQ3)

RQ3: *How do universities address/manage tensions between regulatory compliance, institutional autonomy, and innovation in a fast-moving AI landscape?*

11. How does your institution balance compliance with AI regulations and institutional autonomy?
12. Has the fast-evolving nature of AI technology and regulations created pressure or uncertainty (in your institution)?
13. Are there any internal strategies, working groups, or practices to manage future changes in AI governance (regulations or technology)?

Section 5: R&D implications (RQ4)

RQ4: *In what ways do AI policies influence research practices, innovation outcomes, and collaborative activities within Finnish universities?*

14. In your experience, have AI policies influenced how research is conducted, reviewed, or funded in your institution?
15. Do you think AI policies encourage or constrain innovation or interdisciplinary research?
16. Have these policies had any impact on research partnerships or collaboration (e.g., with industry, consortia, other HEIs)?

Section 6: Stakeholder perspectives/perceptions (RQ5)

RQ5: *How do key stakeholders perceive the process and outcomes of AI policy implementation?*

17. Who are the key stakeholders or actors involved in AI policy implementation here?
18. How is coordination or communication handled across units (e.g., legal, ethics, researchers, administration)?
19. From your perspective, what are the most important outcomes (positive or negative) of AI policy implementation so far?
20. To what extent do you believe that current AI policies and regulations (at EU, national or institutional levels) can achieve their intended outcomes? What do you see as the main limitations or obstacles to this?

Section 7: Reflections and recommendations

21. What changes would you recommend to improve AI policy implementation in Finnish universities?
22. Are there lessons learned or good practices you would like to share?
23. How do you see the role of universities evolving in AI governance in the next 5 years?