Research Journey

Module 13

The development of a scientific research project is a non-linear process, marked by successive iterations between theoretical review, methodology, and writing. In this project, the initial path was structured in five "sprints" that helped shape the proposal, from the formulation of the research question to the writing of some key sections of the first draft of the paper (introduction, justification, objectives, and methodology).

Formulating the Research Question

The project idea came from a professional curiosity about how a few tech companies, mostly based in developed countries, are concentrating control over digital infrastructure, computing power, and data. By observing how this affects access to artificial intelligence (AI), especially in emerging countries, a central question emerged: to what extent does this centralization undermine the technological sovereignty of these countries?

This first stage was exploratory. Through initial readings and conversations with professionals in the field, I realized that this is a topic of both scientific and political importance. As a result, I defined the central research question:
How does the centralization of infrastructure and AI models by large tech corporations reshape global power dynamics and impact the economic and technological sovereignty of emerging markets?

Building Theoretical Foundations

Once the main problem was defined, I began searching for theoretical references to better understand the topic. I read authors like Kate Crawford (2021), E. Ferrari et al. (2023), and F. van der Vlist et al. (2024, 2025), who explain how AI, when based on highly centralized platforms, can increase inequalities between rich and poor countries. I also studied Eisenhardt (1989) and Yin (2015), both key references in qualitative research and case study methodology.

At this stage, I identified the main concepts that structure the analysis, such as digital sovereignty, technological dependence, data colonialism, alternative infrastructures, and technical interdependence. I also explored technologies that may help decentralize AI usage, such as edge computing, blockchain, and federated learning.

Academic Writing

Next, I focused on understanding how to write a scientific paper. More than just following formatting or citation rules, I learned how each section plays a specific role in guiding the reader and presenting the research effectively.

I analyzed national and international articles, especially in the fields of political science, technology studies, and the digital economy. This helped me observe how authors structure their arguments, connect theory with data, and build clear and well-defined research questions.

I also deepened my knowledge of different types of qualitative research, when to use single or multiple case studies, and what criteria ensure the validity of a study in this approach.

Structuring the Text

With the theoretical and methodological foundations in place, I moved on to writing two key parts of the paper: the introduction and the methodology.

In the introduction, my goal was to clearly show why the centralization of AI is such a relevant issue today. I presented the main challenges involved, the research objectives, and the guiding research question. I used recent data and key authors to show that this is not only a technical issue, but one that also has political, economic, and social implications — especially for developing countries.

In the methodology section, I chose a qualitative approach, combining Eisenhardt's strategy of multiple case studies with Yin's method for analyzing real-world phenomena in context. The research plan includes semi-structured interviews with professionals working in tech and financial companies in Latin America. Participants will be intentionally selected based on their level of digital maturity and experience with decentralized technologies like blockchain and edge computing.

In addition to interviews, secondary sources such as technical reports, academic papers, and public documents will also be used to enrich the analysis. The data will be analyzed using an iterative logic, including careful reading of transcripts, coding of key excerpts, organizing them into categories, and comparing findings with the literature — all to ensure a deep and reliable analysis.

With this, I completed the first written version of the project, bringing together all the elements developed in the previous stages. The text already includes: an executive summary, presenting the research scope, relevance, and objectives; a structured introduction, connecting the problem, justification, and goals; and a detailed methodology, outlining all steps of the research.

With the project at an advanced stage, the next steps will be conducting the interviews, analyzing the data collected, and writing the remaining sections of the paper.

Module 14

The project evolved with the consolidation of the theoretical framework, the beginning of the qualitative phase, and continuous refinement of the research article. This stage was essential to deepen the conceptual foundation and initiate empirical data collection through interviews with technology leaders from companies.

Consolidating the Theoretical Framework

With the research question defined, the focus shifted to deepening the conceptual foundations necessary to support the analysis. I explored key authors who investigate the relationship between digital infrastructure, computational power concentration, and technological dependence, such as Kate Crawford (2021), Ferrari et al. (2023), van der Vlist et al. (2024, 2025), and Ahmed et al. (2023).

The theoretical review helped consolidate central concepts for the project, including digital sovereignty, data colonialism, and decentralized alternatives to AI centralization, such as edge computing and federated learning. I also deepened the understanding of AI as strategic infrastructure and a structural factor in contemporary geopolitical inequalities.

Beginning of Qualitative Interviews

Alongside the theoretical deepening, I structured the semi-structured interview guide for technology executives and leaders from Global South companies. The goal is to understand how these organizations perceive and address their dependence on foreign AI infrastructure, as well as possible pathways to strengthen technological autonomy.

So far, two interviews have been conducted and two more are scheduled. I am constantly seeking contact with professionals from companies such as Mercado Livre, iFood, BTG Pactual, Stone, Nubank, Gerdau, Embraer, and Latam to expand the scope and diversity of the research.

Ongoing Review of the Article and Concepts

Throughout this module, I maintained a continuous process of reviewing the research article and the theoretical concepts as new readings took place. This iterative approach ensured greater alignment between the theoretical framework, methodology, and empirical data. Ongoing

revision also allowed adjustments to the interview guide and research direction, preparing the ground for the data analysis phase.

Module 15

The third stage of the project marked a decisive moment in the research process, characterized by the completion of the qualitative data collection, the finalization of the coding and analytical framework, and the consolidation of the theoretical foundation. This module represents the transition from data gathering to structured interpretation, establishing the empirical and conceptual basis for the article's final discussion.

Completion of Qualitative Interviews

During this stage, all planned semi-structured interviews with technology leaders were successfully conducted. The participants, occupying strategic positions in highly recognized organizations, provided in-depth insights into the dependence on large technology providers, digital sovereignty, and strategic decision-making in AI infrastructure management.

The interviews revealed recurrent patterns across different institutional contexts, such as concerns about vendor lock-in, financial and operational asymmetries, and the impact of infrastructure centralization on innovation capacity. Moreover, respondents highlighted pragmatic strategies for mitigating dependency, including the development of internal technical teams, adoption of multi-cloud and decentralized architectures, and initiatives to strengthen data governance and autonomy.

These accounts provided robust empirical material for thematic coding and comparison with existing theoretical perspectives, deepening the understanding of how organizations in the Global South operationalize notions of technological sovereignty in

Finalization of the Methodological Framework and Coding Tree

Following the completion of the interviews, I finalized the coding tree that structures the qualitative analysis. The coding process synthesized empirical findings into analytical categories that capture the multidimensional nature of AI infrastructure dependence—technological, economic, political, and institutional.

The resulting framework integrates five main analytical axes:
1. Technological Dependence and Vendor Lock-In
2. Digital Sovereignty and Autonomy
3. Economic and Strategic Costs

4. Innovation and Technological Capabilities
5. Mitigation and Decentralization Strategies, complemented by
6. Geopolitical and Regulatory Dimensions

Consolidation of the Theoretical Framework

The theoretical section was thoroughly revised and finalized in light of the empirical findings. The literature review now integrates contributions from authors such as Crawford (2021), Ferrari et al. (2023), van der Vlist et al. (2024, 2025), Ahmed et al. (2023), and Salama et al. (2023), establishing a solid conceptual bridge between AI centralization, infrastructure geopolitics, and digital sovereignty.

This consolidation reinforced the interpretive alignment between theory and evidence, framing the interviews within broader debates about computational power concentration, data colonialism, and the emerging quest for technological autonomy in the Global South.

The completion of this stage positions the research for the next and final phase—data interpretation and synthesis, where the empirical findings and theoretical insights will converge into a coherent analytical narrative and set of conclusions.

Module 16

The final stage of the research project was dedicated to consolidating the study for academic evaluation and dissemination. This module focused on three main fronts: identifying potential journals and conferences for submission, preparing the presentation for the examination committee, and finalizing the research article. Together, these activities marked the transition from analytical production to academic communication.

Identification of Submission Venues

At this stage, I conducted a systematic search for academic journals and conferences aligned with the themes of digital sovereignty, AI infrastructure, political economy of technology, and Global South studies. The objective was to identify outlets whose scope and audience are compatible with the interdisciplinary nature of the research, combining technology studies, political economy, and qualitative analysis.

Priority was given to journals that value critical perspectives on digital infrastructures, governance, and inequality, as well as those open to qualitative and case-based methodologies. This process also involved reviewing submission guidelines, methodological expectations, and

evaluation criteria to ensure that the article meets academic standards and has realistic publication potential.

This step reinforced the importance of positioning the research within ongoing international debates and clarified how the contribution dialogues with broader scholarly communities beyond the immediate institutional context.

Preparation for the Examination Committee Presentation

In parallel, I prepared the presentation for the examination committee. The focus was on synthesizing a complex and multifaceted research project into a clear, structured, and compelling narrative. The presentation was organized to highlight the motivation behind the study, the central research question, the theoretical framework, the methodological design, and the main empirical insights derived from the interviews.

Special attention was given to articulating the relevance of the topic, demonstrating methodological rigor, and clearly explaining how the empirical findings contribute to discussions on AI centralization and technological sovereignty in emerging markets. This exercise required translating dense theoretical and qualitative material into accessible arguments, strengthening my ability to communicate academic research to diverse audiences.

Finalization of the Research Article

The final task of this module was the comprehensive revision and completion of the article. This involved refining the introduction and theoretical framework, strengthening the articulation between theory and empirical findings, and polishing the discussion and conclusion sections. The language, structure, and coherence of the text were carefully reviewed to ensure clarity, academic rigor, and internal consistency.

The conclusions were refined to emphasize the main contributions of the research, highlighting how infrastructure centralization reshapes power relations and constrains technological autonomy in the Global South, while also pointing to concrete strategies and emerging alternatives identified in the empirical material.