
## BDMA Joint Project

# Business Plan - Scholaria

Viability of Business Projects

June 11th, 2024

Authors:
**Berat Furkan Koçak**
**Maria Camila Salazar**
**Mohamed Louai Bouzaher**
**Rana İşlek**
**Simon Coessens**

# Contents

# 1 Introduction

## 1.1 Sector

The academic research sector is experiencing significant changes driven by technological advancements and the increasing complexity of academic work. This sector encompasses universities, research institutions, and individual researchers, all contributing to the vast body of academic literature. Traditional methods of managing, organizing, and comprehending research papers are becoming increasingly inadequate given the growing volume of information, creating a critical need for innovative solutions that streamline and enhance the research process.

Artificial intelligence is revolutionizing the education sector by providing tailored and efficient learning experiences. The education sector is expected to witness a significant surge in AI adoption, with projections indicating a global market growth of around $21 billion by 2028 [2].

Recognizing this need, we have identified a niche within the academic research sector by providing AI-driven tools designed to enhance scholars' research activities. Therefore, our startup is strategically positioned at the intersection of educational technology and academic research sectors.

## 1.2 Company

Our company, named `Scholaria`, is founded on the principles of innovation and proficiency. We believe that the key to success lies in maintaining a culture of excellence and fostering a strong connection with our customers and stakeholders. This foundation ensures that our solutions are not only cutting-edge but also closely aligned with the needs and expectations of our users.

### 1.2.1 Organizational Philosophy

`Scholaria` operates on the principles of shared leadership and meritocracy. These principles are deeply embedded in our organizational culture and influence every aspect of our operations. Shared leadership means that decision-making is distributed across the organization, empowering team members at all levels to contribute their insights and expertise. This approach fosters a collaborative environment where innovative ideas can flourish.

Meritocracy is at the heart of our company values. We believe that excellence should be recognized and rewarded, regardless of position or tenure. For example, our project teams are composed of individuals selected based on their proven track record and ability to deliver exceptional results. This ensures that every part of our projects benefits from the best possible talent and expertise, dividing the tasks accordingly.

### 1.2.2 Team Structure

Contrary to traditional models that equate larger teams with greater success, `Scholaria` adopts a lean and agile team structure. We focus on building a small, highly skilled team of professionals who are not just competent but exceptional in their fields. Our hiring philosophy is simple: only work with people who strive for excellence

and can deliver results that are exponentially better than average. This approach minimizes internal complexities and maximizes productivity and innovation. Currently, our team is composed on highly skilled individuals in software development, AI development and marketing areas. Therefore, our product is focused on developing AI-driven software designed to solve complex problems effectively.

#### 1.2.3 Customer and Stakeholder Engagement

A cornerstone of our company culture is maintaining close connections with our customers and stakeholders. We actively seek feedback and suggestions, recognizing that these insights are invaluable in refining our products and services. This continuous loop of communication ensures that we remain responsive to the needs of our users and can quickly adapt to changing demands.

#### 1.2.4 Global Vision

At `Scholaria`, we encourage our team to "Think as big as you can." We do not limit ourselves by geographical boundaries, existing knowledge, or conventional practices. This global vision drives us to explore new markets, adopt diverse perspectives, and leverage cutting-edge technologies from around the world. By maintaining a broad and inclusive outlook, we position ourselves to seize opportunities and drive innovation on a global scale.

#### 1.2.5 Mission and Strategic Approach

`Scholaria's` customer-centric approach, as emphasized by the entrepreneur Pere Codina, CEO of Kompyte, has been crucial to our development process. Instead of focusing solely on product development, we prioritize understanding the distribution and utilization of our product among potential users. Pere Codina highlighted the importance of focusing on the customer first, a principle that has guided our efforts from the beginning.

We are committed to pioneering solutions in the academic research sector through a culture of innovation, proficiency, and customer-centricity. Our principles of shared leadership and meritocracy, combined with a lean team structure and a global vision, enable us to deliver exceptional value to our stakeholders while staying agile and responsive to the evolving landscape of academic research.

### 1.3 Product

`Scholaria`, our startup, is dedicated to alleviating the specific challenges faced by our target audience, including the daunting tasks of reading, organizing, and tracking academic papers. By leveraging Artificial Intelligence, we aim to revolutionize the efficiency and effectiveness of the research process.

To ensure our solution meets the real needs of our users, we engaged directly with academics at our university. Through extensive consultations and discussions, we gained valuable insights into the challenges they face in their research journeys. These interactions revealed a common set of problems: the difficulty in managing vast amounts of research papers, the inefficiency of traditional organizational methods, and the need for a smarter system to track and recommend relevant literature.

By concentrating on the academic research sector and its unique demands, we have tailored our solution to meet the specific needs of our target audience. Our interactions with academics have validated our approach and reinforced the importance of a customer-first strategy. This deep understanding of the sector has informed every aspect of our business plan, from product development to marketing and distribution strategies.

In summary, our focus on academic research and educational technology, combined with our commitment to meeting researchers' needs through innovative solutions, forms the foundation of `Scholaria`. By prioritizing the customer and leveraging sector-specific insights gained from direct engagement with academics, we are well-positioned to empower researchers and transform the landscape of academic research.

### 1.4 Competitive advantages

The primary competitors for our application include Mendeley, which functions mainly as a citation library; Research Rabbit, a recommendation application; Zotero, an open-source paper library management system; and, in a more indirect way, ChatGPT and other chatbots, which leverage large language model (LLM) features to assist researchers. While each of these applications serves a valuable purpose, we recognized a gap in the market for a more comprehensive solution. `Scholaria` integrates the strengths of these platforms by offering advanced paper library management, personalized recommendations, and citation capabilities, all enhanced by the latest innovations in artificial intelligence. By centralizing these features in one platform, `Scholaria` eliminates the need to switch between applications, significantly optimizing the workflow for researchers. Figure 1 gives a graphical overview.

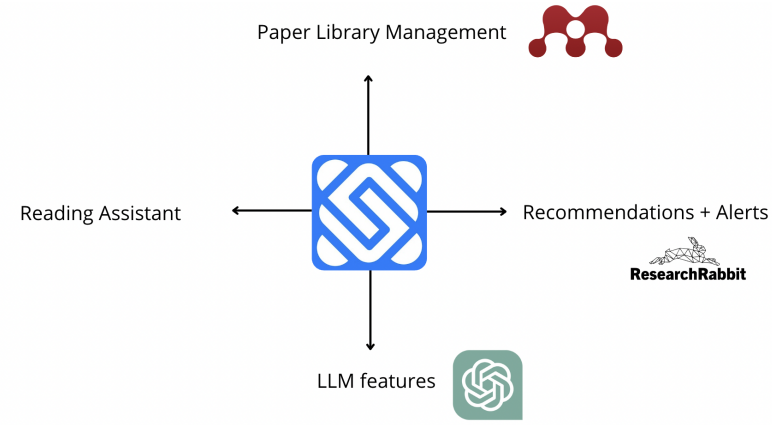


Figure 1: Comparison of Scholaria's features with competitors in the academic research and education technology sectors.

Additionally, our close proximity to our target audience, particularly master's students and professors, sets us apart. This intimate connection allows us to better understand the needs and pain points of our users, enabling us to tailor our solutions to meet their specific requirements.

Moreover, our commitment to innovation is a significant competitive advantage. Through extensive market research, we have identified shortcomings in existing re-

search assistance tools, with each competitor lacking at least one crucial feature. `Scholaria` fills this gap by offering a comprehensive AI-assisted research assistant that combines the essential features into one unified platform.

Furthermore, while competitors rely on manual selection for their recommendation systems, our algorithm-driven approach provides unparalleled flexibility and automation, ensuring a more streamlined and effective user experience.

However, we are aware that any innovation can be replicated and with correct management, our competitors can catch-up with us when it comes to stakeholder communication. In that regard, our biggest competitive advantage is utilizing the fact of being the first comprehensive research assistant in the industry and making researchers love using our product as fast as possible. With this, we are establishing a customer segment who does not have extra time to learn another tool and instead will always have a reliable and up-to-date service, `Scholaria`.

### 1.4.1 Viability conclusions

A viability study tries to find out if something can work or not. It is a detailed look at how profitable a business idea might be. The investigation also assesses the potential to transform the idea into a viable business [6].

Based on our qualitative and quantitative analysis, it is evident that there is a strong demand for our project within the academic research sector. Our market research has revealed a clear need for innovative solutions that streamline and enhance the research process, particularly in the areas of academic paper management, organization, and comprehension.

Additionally, our competitive advantages mentioned above set us apart from existing solutions in the market. These factors indicate a promising opportunity for `Scholaria` to establish itself as a leader in the academic research sector. Our viability study has confirmed that our business idea not only addresses a genuine market need but also possesses the potential for significant profitability. With a clear understanding of market demand, a differentiated value proposition, and a strong commitment to excellence, we are confident in the viability and success of `Scholaria` as a pioneering force in revolutionizing academic research.

## 1.5 SWOT Analysis

Table 1: SWOT Analysis

| **Strengths** | |
|---|---|
| Closely connected with our customers. | Improved collection of established academic tools. |
| Being a pioneer in this field as a research assistant. | |
| **Weaknesses** | |
| Lack of capital for 3rd party services. | Tech-savvy team (lack of diversity). |
| **Opportunities** | |
| Academic world is highly connected, word-of-mouth will be a good advertisement. | Universities are in competition in research. |
| **Threats** | |
| High possibility of new entries (AI tools are easily available). | Universities have a limited budget. |
| No equivalent product. Yet. | |

## 1.6 Porter model

### 1.6.1 Threat of New Entrants:

The threat of new entrants can be considered moderate. Firstly, the academic research sector requires expertise and resources to develop and maintain AI-driven solutions like `Scholaria`, which serves as a barrier to entry for new competitors. However, access to the AI tools are getting easier every day and hence, it is not impossible to achieve what our product provides.

### 1.6.2 Bargaining Power of Customers:

While buyers in the academic research sector have multiple options, `Scholaria`'s unique value proposition and close alignment with user needs give us a degree of bargaining power. Our focus on customer-centricity and continuous improvement ensures high customer satisfaction and loyalty, reducing the likelihood of buyers switching to competitors. However, considering the budget constraints of universities and individual researchers such as students, we might have to arrange our pricing lower than expected.

Our focus on B2B model has both advantages and disadvantages. Bad news is our customers in B2B model are concentrated. Good news is we will need less marketing cost beacuse of their concentration.

### 1.6.3 Bargaining Power of Suppliers:

The bargaining power of suppliers, such as technology providers or data sources, is relatively low. `Scholaria` relies on internal development and partnerships rather than external suppliers for its core functionality. Additionally, the abundance of technology providers and data sources in the market provides us with flexibility in choosing suppliers and negotiating favorable terms.

### 1.6.4 Threat of Substitutes:

While there are alternative research assistance tools available, such as Mendeley, Research Rabbit, and Zotero, `Scholaria`'s unique combination of features and AI-driven capabilities distinguishes it from substitutes. Our comprehensive research assistant platform, tailored to the specific needs of scholars, reduces the attractiveness of substitutes and enhances our competitive position.

Overall, `Scholaria` faces relatively low to moderate threats from new entrants, buyers, and substitutes, while enjoying a strong competitive position due to its innovative features, close customer relationships, and brand reputation. By continuing to leverage our competitive advantages and adapt to market dynamics, `Scholaria` is well-positioned to maintain its leadership in the academic research sector and drive sustained growth and profitability.

## 1.7 Business Model Canvas

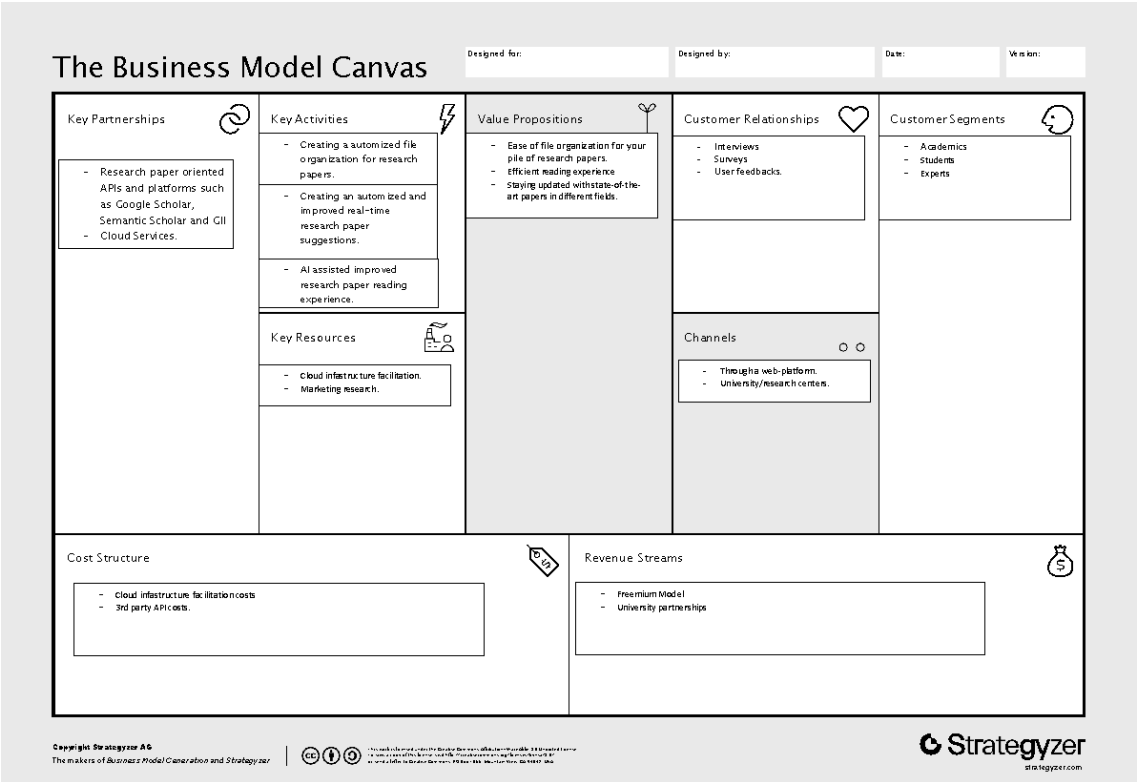


Figure 2: BMC

# 2 Market research and analysis

## 2.1 Potential customer segments and volume

In conducting our market research and analysis, we have identified several key customer segments within the academic research sector, each representing distinct needs and opportunities for Scholaria.

As a globally accessible web platform, our services transcend geographical boundaries, allowing us to cater to a vast and diverse customer base. Given the widespread adoption of the English language and the inherent similarity in research needs across academic disciplines, our product requires minimal adaptation, thus effectively serving a broad spectrum of users within the academic research community globally.

### 2.1.1 Professors in Universities:

This segment represents our largest target audience, comprising professors and faculty members in universities worldwide. Our qualitative marketing research indicates that professors are among the most active consumers of research papers, requiring efficient tools to manage and comprehend vast amounts of academic literature. According to U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), there are about 800,000 professors in U.S [11]. Hence, with an estimated volume of 4 million professors globally, this segment presents a significant market opportunity for Scholaria.

### 2.1.2 University Students (Master's and PhD Level:

Master's and PhD students are also highly engaged in research activities, albeit to a lesser extent than professors. However, their need for effective paper management tools is heightened by the demands of academic deadlines and study activities. In 2019, there were 408,228 master's students, 281,889 doctoral students, 66,247 postdoctoral researchers (postdocs), and 30,349 doctorate-holding nonfaculty researchers (NFRs) in science, engineering, and health (SEH) fields at U.S. academic institutions[1]. United States represents 25% of the researchers in the world[5]. Hence, with approximately 3 million university students at the master's and PhD levels globally, this segment represents a substantial portion of our potential customer base.

### 2.1.3 Industry Professionals:

This segment consists of professionals in various industries who engage in research activities as part of their job responsibilities. While smaller in volume compared to professors and university students, industry professionals value tools that enhance their research efficiency and contribute to their professional development. This segment presents a niche market opportunity for Scholaria to expand its reach beyond academia.

By targeting these distinct customer segments, each with its unique needs and preferences, Scholaria can maximize its market penetration and capture a significant share of the academic research sector. Our customer-centric approach, informed by

deep insights into the behaviors and preferences of each segment, ensures that our solutions are tailored to meet their specific requirements, driving customer satisfaction and loyalty.

## 2.2 Market size and tendencies ( Qualitative analysis)

Scholaria aims to serve a vast and diverse customer base of approximately 10 million individuals engaged in academic research. By targeting distinct customer segments with unique needs and preferences, Scholaria can enhance market penetration and secure a significant share of the academic research sector. Our customer-centric approach, driven by deep insights into user behaviors and preferences, ensures that our solutions are meticulously tailored to meet specific requirements, thereby fostering customer satisfaction and loyalty.

### 2.2.1 Market Size

As we focus on both B2B and B2C models, it is crucial to analyze and target potential institutions that can be approached through our advertisement and sales channels. According to the UniRank database (2023), there are currently 2,706 officially recognized higher-education institutions in Europe, with 79 of them located in Spain.[4]

For our initial B2B strategy, we will target the 79 universities in Spain. Following this, our efforts will expand to encompass the 2,706 universities across Europe. As our advertisement capabilities grow, we plan to extend our reach to universities globally, aiming to secure agreements and partnerships with institutions worldwide.

### 2.2.2 Market Tendencies

The academic research sector exhibits several key tendencies that align with Scholaria's offerings:

- Increased Use of Digital Tools: There is a growing reliance on digital tools for literature management and research organization among scholars. This trend highlights the demand for advanced, user-friendly platforms like Scholaria that can streamline research processes.
- Emphasis on AI and Automation: The integration of AI and automation in research tools is becoming increasingly important. Scholars are seeking intelligent solutions that can provide personalized recommendations and automate repetitive tasks, reducing their administrative burden and enhancing research efficiency.
- Global Collaboration: As research becomes more collaborative and global, there is a need for platforms that facilitate seamless communication and cooperation across borders. Scholaria's web-based platform, accessible globally, positions us well to meet this need.
- Personalization and Customization: Users are looking for tools that can be tailored to their specific research needs. Scholaria's customer-centric design, which incorporates user feedback into feature development, ensures that our platform remains relevant and valuable to our diverse user base.

By leveraging these market tendencies, Scholaria is well-positioned to capture a substantial share of the academic research sector. Detailed statistics and strategies regarding our marketing plan will be discussed in Section 7.

### 2.3 Quantitative analysis

In order to gain insights into the desired functionalities of our product, Scholaria, and to understand the diversity of our customer base, we conducted a comprehensive survey. We received a total of 24 responses, with 13 from graduate students and 6 from professors, indicating a representative sample from our target audience.

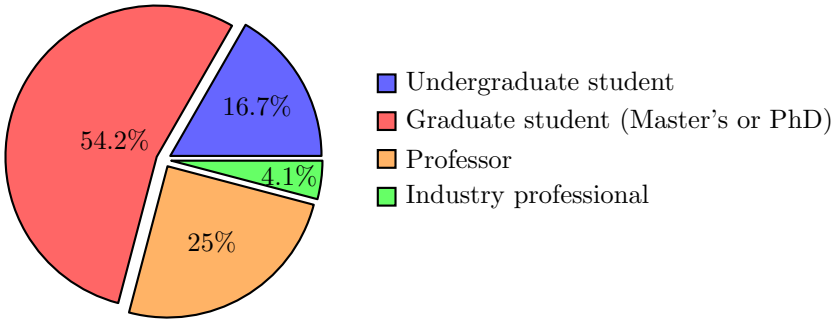


Figure 3: Profession percentages of responses

Additionally, responses were received from individuals affiliated with 10 different organizations, predominantly universities, highlighting the broad reach of our survey.

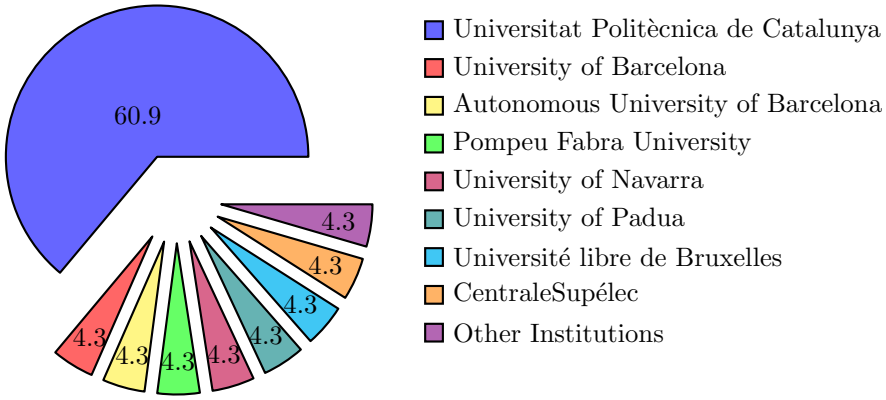


Figure 4: Organization distribution of responses

Our findings revealed that a significant majority, 70% of respondents, currently use software to organize their literature reviews.

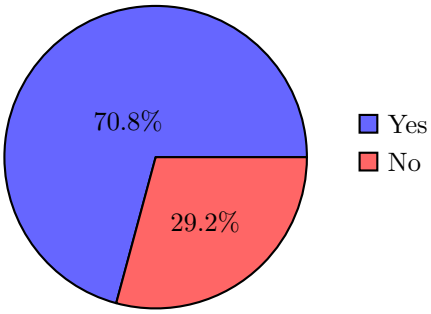


Figure 5: Software usage for Literature Review

Furthermore, respondents were asked to rate the importance of specific features on a scale from 0 to 5, with 0 indicating "not important at all" and 5 indicating "highly important." Based on their feedback, we have prioritized the implementation of our recommendation feature, recognizing its critical importance to our users. Additionally, we have begun development on the paper reading with note-taking feature, addressing another key need identified by our user base. The responses to specific features and needs are presented below:

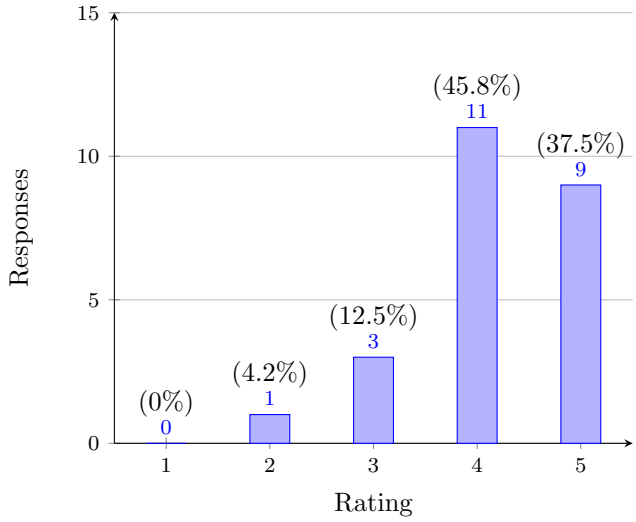


Figure 6: Survey responses to: How important is receiving academic paper recommendations specific to your research area?

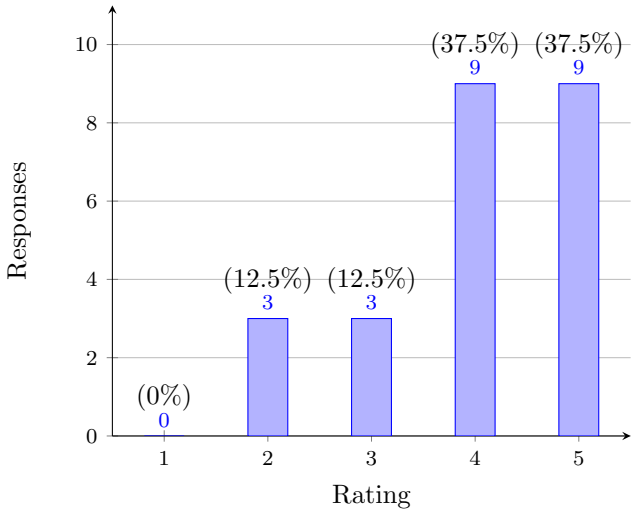


Figure 7: Survey responses to: How important is being notified about the most recent papers in your research area?

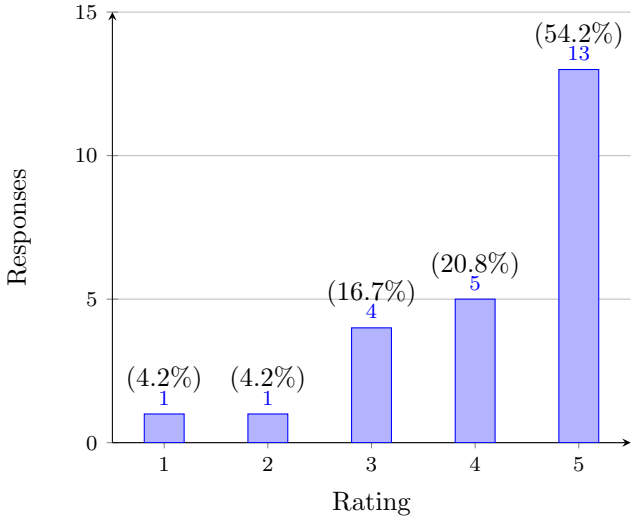


Figure 8: Survey responses to: How important is a user-friendly interface in the research management tools?

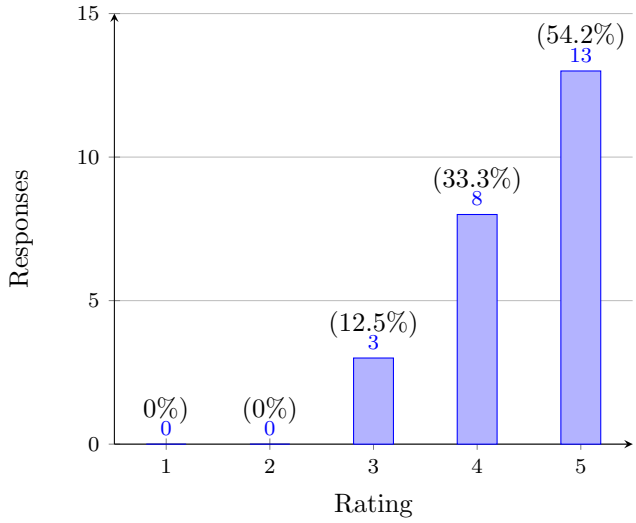


Figure 9: Survey responses to: How important is keeping academic papers organized to you? (according to years, research fields, etc.)

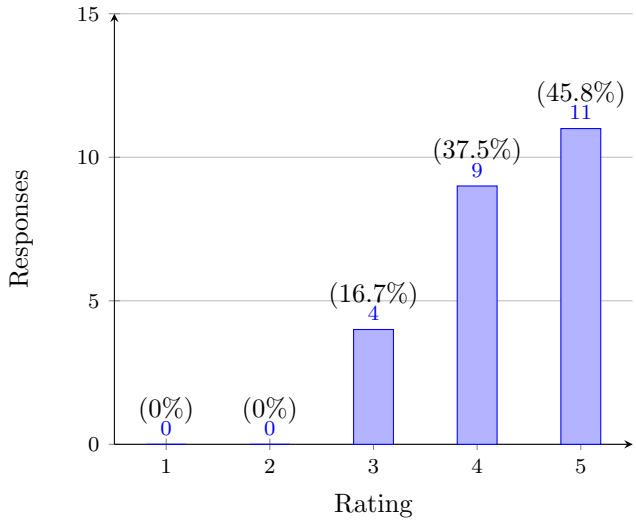


Figure 10: Survey responses to: How important is quick access to summaries of academic papers you read or are interested in?

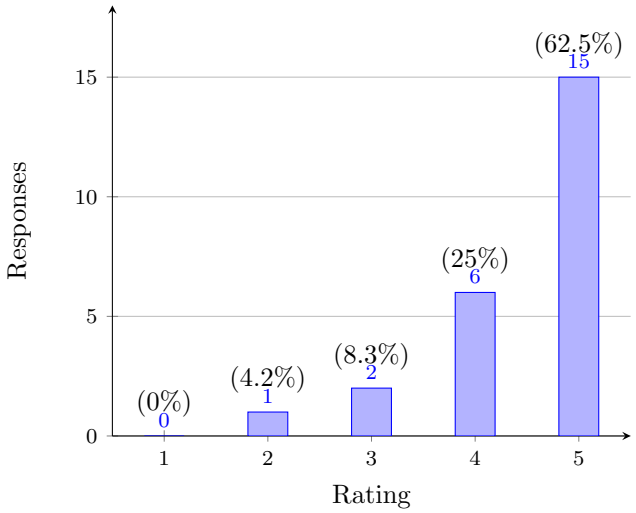


Figure 11: Survey responses to: How important is taking quick notes while you are reading an academic paper?

Overall, the quantitative analysis of our survey data has provided valuable insights into the preferences and requirements of our customers, informing our product development roadmap and ensuring that Scholaria meets the needs of our diverse user base effectively.

## 2.4 Existing competitors

Among the most commonly used tools are Mendeley and Google Scholar, followed by Zotero and Semantic Scholar, suggesting a familiarity with existing research assistance platforms within our user base.

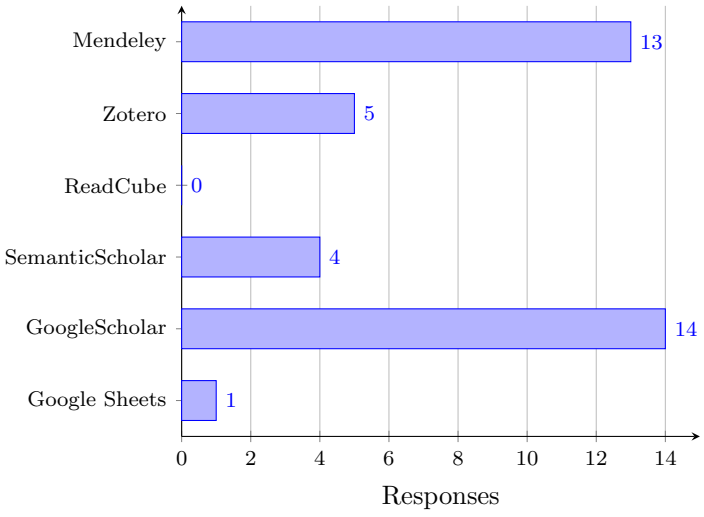


Figure 12: Competitor usage by our customers

## 2.5 Sales Prediction and Market Share

Scholaria is well-positioned to capture a significant share of the academic research sector by targeting the identified key customer segments: professors, university stu-

dents (Master's and PhD level), and industry professionals. Our comprehensive market research, both qualitative and quantitative, provides a strong foundation for our sales predictions and market share estimates.

We will provide an estimation result of 3 years, considering that our business reached out 20% of European universities.

#### 2.5.1 Market Share Estimates

**B2B arrangements with universities**

- **Segment Size:** With approximately 550 universities targeted in Europe, this model represents a significant opportunity for Scholaria.
- **Market Penetration:** Assuming a conservative market penetration rate of 10% within the first three years, Scholaria could arrange subscriptions with approximately 55 universities.

**B2C model, individual customers**

- **Segment Size:** Globally, there are approximately 3 million university students at the master's and PhD levels.
- **Market Penetration:** Asuming we can reach out to 10% of these individuals with our advertisements and with a similar conservative penetration rate of 5% over three years we could capture around 15,000 students.

Detailed marketing and sales strategies to achieve these goals will be outlined in Section 7.

# 3 Ethical analysis

As we strive to Scholaria goal, revolutionize research efficiency and empower scholars worldwide by offering a seamlessly organized, we will approach each development iteration with utmost care and will focus on evaluating the wide effects that both our company's vision and product may create. Hence, we are constantly evaluating and improving the ethical aspects that create the ultimate version of Scholaria. As a result, we can state the following core values for Scholaria: maximum environmental awareness, integrity via transparency and accountability, innovation via leveraging cutting-edge technologies, and high collaboration that leads to stakeholders' and employees' well-being.

In an age of heightened environmental awareness, the ecological footprint of Scholaria is of high importance. Since Scholaria highly leverages computationally and storage wise high intensive services, we need to consider our CO2 emissions that can lead to negative consequences for the environment. For example the training of AI and LLM models consumes vast amounts of energy and emits hundreds of tons of CO2 [7] . Because of this we incorporated special decisions into the sustainability and climate risk policies (SCR) of our product. Scholaria will not host any large computational operations directly but will instead leverage third-party services such as Google Cloud and OpenAI. After consideration, we have chosen Google Cloud to host our application due to its strong commitment to sustainability. Google Cloud has been carbon neutral since 2007 and is working towards operating on carbon-free energy 24/7 by 2030 [3]. As for the carbon footprint associated with using OpenAI services, it largely depends on the sustainability policies of the underlying cloud services OpenAI utilizes. Given that OpenAI often uses major cloud providers who are committed to reducing their environmental impact, the overall carbon footprint of our use of OpenAI services is substantially mitigated.

In addition, we will also collaborate with and support organizations focused on reversing the effects of climate change such as Carbon180 and Project Drawdown. Furthermore, we create ethical rules within our corporation that emphasize the importance of using resources only as needed. This is achieved by careful management of cloud resources that provide storage and computational power. Additionally, Scholaria's paper recommendation feature will not knowingly recommend papers that are associated with severe environmental or social damage.

Our commitment to social responsibility extends beyond mere compliance with regulations, it is ingrained in our company culture and values. We recognize that sustainable business practices not only benefit society and the environment but also contribute to our competitive advantage and financial success in the long run. Moreover, Scholaria actively engages with shareholders to understand their needs and concerns, incorporating their feedback into our strategic planning and product roadmap. By fostering open communication and collaboration, we strengthen relationships with customers, employees, partners, and the broader community, ultimately enhancing our ability to deliver value and drive sustainable growth. With

regards to intellectual property rights, we emphasize that it is the users' responsibility to ensure they hold the appropriate copyrights for any materials they upload. Our role is to safeguard the privacy of this data, ensuring that it is not shared with unauthorized parties. We are committed to upholding stringent data protection standards to prevent any unauthorized access or distribution.

Scholaria aspires to transcend its role as a mere research platform; it strives to emerge as an example of research, knowledge sharing and not only as its core business but also within its practices as a startup. We are convinced that progress does not happen individually, progress and evolution is an easier path within collaborative systems, therefore, Scholaria would like to actively disseminate its discoveries, challenges and triumphs related to decision making. We will initiate this path through open source documentation, active participation in industry conferences and academia. The varied perspectives of these conferences will ensure that our approach remains global and adaptable [8].

In conclusion, Scholaria seeks to integrate ethical practices in the realms of artificial intelligence and academic research, focusing on environmental sustainability, collaborative governance, and social responsibility. The platform strives to balance technological advancements with ecological awareness by leveraging partnerships that prioritize carbon neutrality. With a governance model rooted in democratic principles, Scholaria aims to maintain transparency and accountability as it grows. As the company navigates the complexities of expansion, the ongoing challenge will be to sustain these ethical commitments while adapting to new market demands.

# 4 Requirements for the artefact

## 4.1 Functional

- **User Authentication:** The system must allow users to create accounts, log in, and log out securely.
- **Papers Management:** The system should enable users to add, update, delete, and retrieve research papers records.
- **Search:** The system should enable the users to find research papers or authors through textual search
- **Paper Recommendations:** The system should provide users with recommended papers based on their activity.
- **Workspace Management:** The system should enable the users to create, delete, update different workspaces for different purposes.
- **Paper Viewing:** The system should enable the users to read papers, take notes, and track their reading progress.
- **Summaries and Insights:** The system should provide the users with insights, statistics, and summaries about their reading history and progress.

## 4.2 Non-functional

Non-functional requirements specify how the system performs a task, focusing on usability, reliability, performance, and security. Examples include:

- **Usability:** The user interface should be intuitive and easy to navigate for new users.
- **Performance:** The system should handle up to 1,000 concurrent users without performance degradation.
- **Scalability:** The system should be scalable to accommodate growth in data and user base.
- **Security:** The system must comply with industry-standard security protocols (e.g., SSL, encryption).

## 4.3 Use cases

#### 1. User Registration

**Title:** User Registration

**Actor:** New User

**Precondition:** User is on the registration page.

**Scenario:**

1. User navigates to the registration page.
2. User enters personal details including name, email, and password.
3. User agrees to the terms and conditions.

4. User submits the registration form.
5. System validates the input data.
6. System creates a new user account.
7. System sends a confirmation email to the user.
8. User clicks on the confirmation link in the email.
9. System verifies the email address and activates the account.

**Postcondition:** A new user account is created, and the user's email address is verified.

**Exceptions:**

- If the email is already in use, the system prompts the user to use a different email.
- If the password does not meet security requirements, the system prompts the user to enter a stronger password.
- If the email verification link is expired, the system allows the user to request a new one.

#### 2. Paper Search

**Title:** Paper Search

**Actor:** Registered User

**Precondition:** User is logged into the system.

**Scenario:**

1. User opens the search input.
2. User enters keywords or phrases related to the research paper.
3. User clicks the search button.
4. System searches the database for papers matching the keywords.
5. System displays a list of matching papers with brief descriptions.
6. User selects a paper from the list to view it.

**Postcondition:** User views the details of a selected research paper.

**Exceptions:**

- If no papers match the search criteria, the system displays a "no results found" message.
- If the system encounters a database error, it displays an error message and suggests retrying.

#### 3. Paper Upload

**Title:** Paper Upload

**Actor:** Registered User

**Precondition:** User is logged into the system and has access to the workspace.

**Scenario:**

1. User navigates to my library page.
2. User clicks the upload button.
3. User selects the file to be uploaded from their device.
4. System uploads the file to the server.
5. System updates the user's library with the new paper.
6. System sends a confirmation message to the user.

**Postcondition:** The user's paper is uploaded to their workspace and is available for viewing and further actions.

**Exceptions:**

- If the file format is not supported, the system prompts the user to upload a valid format.
- If the upload fails due to network issues, the system displays an error message and suggests retrying.

#### 4. Progress Tracking

**Title:** Progress Tracking

**Actor:** Registered User

**Precondition:** User is logged into the system and has papers in their reading list.

**Scenario:**

1. User hovers on a workspace paper.
2. System displays a list of papers the user is currently reading.
3. For each paper, the system shows the reading progress (e.g., percentage completed).
4. User can select a paper to view detailed progress (e.g., sections read, notes taken).
5. User can mark papers as completed or unread.
6. System updates the progress based on user's actions.

**Postcondition:** User can view their reading progress **Exceptions:**

- If the system fails to retrieve progress data, it displays an error message and suggests retrying.
- If no papers are found in the reading list, the system prompts the user to add papers to the list.

# 5 Technological alternatives

## 5.1 Database Solutions

**MongoDB Atlas:**

- **Type:** NoSQL Document Database
- **Features:** Scalability, Flexibility, JSON-like Documents, Automated Backups, Multi-Cloud Support
- **Pros:** High performance for read/write operations, flexible schema design, easy to scale horizontally.
- **Cons:** Potentially higher costs for large-scale deployments, no strongly typed schema.

**PostgreSQL:**

- **Type:** Relational Database
- **Features:** ACID Compliance, Advanced SQL Support, Extensible, Strong Data Integrity
- **Pros:** Robust support for complex queries, strong data integrity, open-source.
- **Cons:** Can be more complex to scale horizontally compared to NoSQL databases, potentially slower performance for large-scale read/write operations.

## 5.2 Backend Frameworks

**Express.js:**

- **Type:** Web Application Framework for Node.js
- **Features:** Lightweight, Minimalist, Middleware Support, REST API Design
- **Pros:** Easy to set up and use, strong community support, flexibility in choosing middleware.
- **Cons:** Minimalist approach can lead to boilerplate code, requires additional modules for advanced features.

**Django:**

- **Type:** Web Framework for Python
- **Features:** ORM, Authentication, Admin Interface
- **Pros:** Rapid development, built-in features for common tasks, strong community.
- **Cons:** Monolithic structure, potentially heavier for simple applications.

## 5.3 Frontend Frameworks

**Next.js:**

- **Type:** React Framework

- **Features:** Server-side Rendering, Static Site Generation, API Routes, Image Optimization
- **Pros:** Improved performance through server-side rendering, built-in routing, SEO-friendly, easy to deploy.
- **Cons:** More complex setup compared to plain React.

**React:**

- **Type:** JavaScript Library for Building User Interfaces
- **Features:** Component-Based, Virtual DOM, JSX, Strong Community
- **Pros:** High flexibility, vast ecosystem, reusable components, great community support.
- **Cons:** Requires additional libraries for routing and state management.

### 5.4 Comparison

This section provides a detailed comparison of the alternatives based on several criteria that are important for the project. This includes performance, scalability, ease of use, cost, community support, and compatibility with other planned technologies.

| **Criteria** | **MongoDB Atlas** | **PostgreSQL** |
|---|---|---|
| **Type** | NoSQL Document Database | Relational Database |
| **Features** | Scalability, Flexibility, JSON-like Documents | ACID Compliance, Advanced SQL Support |
| **Pros** | High performance, flexible schema, easy horizontal scaling | Robust complex queries, strong data integrity, open-source |
| **Cons** | Higher costs, learning curve for NoSQL | Complex horizontal scaling, slower large-scale performance |

Table 2: Comparison of Database Solutions

| **Criteria** | **Express.js** | **Django** |
|---|---|---|
| **Type** | Web Framework for Node.js | Web Framework for Python |
| **Features** | Lightweight, Middleware Support, REST API | ORM, Authentication |
| **Pros** | Easy setup, strong community, flexibility | Rapid development, built-in features, strong community |
| **Cons** | Boilerplate code, needs additional modules | Monolithic, heavier for simple apps |

Table 3: Comparison of Backend Frameworks

| Criteria | Next.js | React |
|---|---|---|
| **Type** | React Framework | JavaScript Library |
| **Features** | SSR, SSG,<br>API Routes,<br>Image Optimization | Component-Based,<br>Virtual DOM, JSX |
| **Pros** | Improved performance,<br>SEO-friendly, built-in routing | High flexibility,<br>vast ecosystem,<br>reusable components |
| **Cons** | More complex setup,<br>learning curve for SSR/SSG | Needs additional libraries,<br>less opinionated<br>architecture |

Table 4: Comparison of Frontend Frameworks

# 6 Functional architecture

## 6.1 Overall picture

The overall architecture of the Scholaria project consists of various modules and components that interact to provide the functionalities needed for data collection, storage, processing, and presentation. Below are two diagrams that give a visual representation of the architecture:

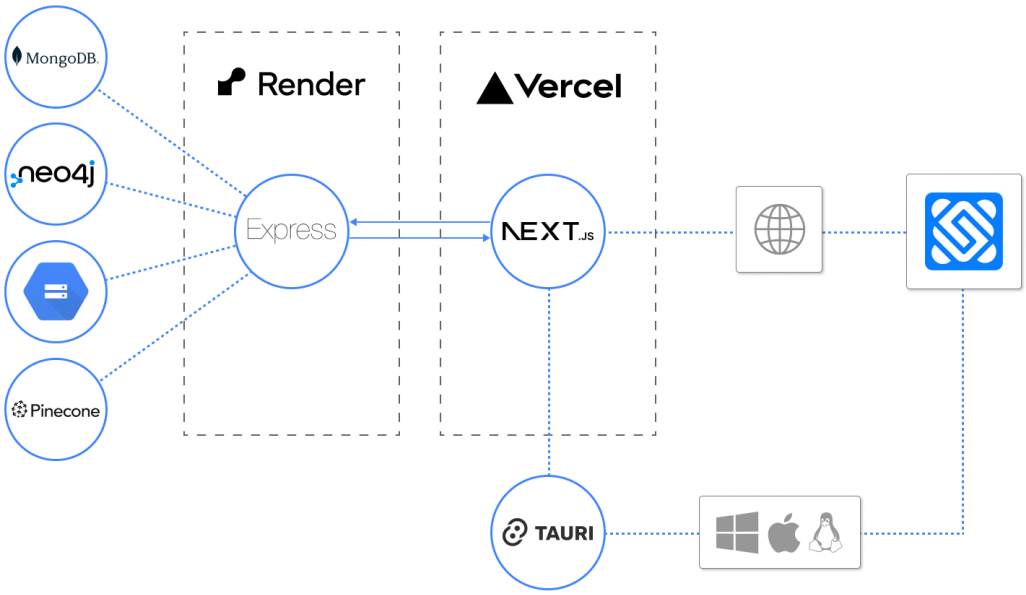


Figure 13: Scholaria Tech Stack General Overview

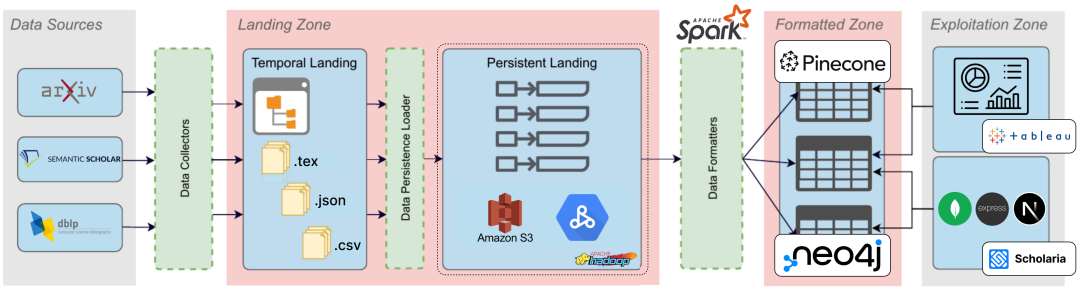


Figure 14: Big Data Management Pipeline for Scholaria

## 6.2 Modules description

- **MongoDB Atlas:** MongoDB is a source-available, cross-platform, document-oriented database program. Classified as a NoSQL database product, MongoDB utilizes JSON-like documents with optional schemas. MongoDB is developed by MongoDB Inc. and current versions are licensed under the Server Side Public License. MongoDB Atlas is a fully-managed cloud database that handles all the complexity of deploying, managing, and healing your deployments on the cloud service provider of your choice (AWS , Azure, and GCP). MongoDB Atlas is the best way to deploy, run, and scale MongoDB in the cloud.
- **Neo4j Aura DB:** Neo4j is a graph database management system developed by Neo4j, Inc. The data elements Neo4j stores are nodes, edges connecting them, and attributes of nodes and edges. Neo4j AuraDB is a graph database, purpose built to leverage relationships in data, enabling lightning-fast queries for real-time analytics and insights. AuraDB is reliable, secure and fully automated, allowing you to focus on building graph applications easily without worrying about database management.
- **Pinecone:** Pinecone, as a managed vector database platform, stands out as a powerful tool for data engineers and scientists, offering scalability, low-latency search capabilities, and real-time data ingestion.
- **Google Cloud Bucket:** Buckets are the basic containers that hold your data. Everything that you store in Cloud Storage must be contained in a bucket. You can use buckets to organize your data and control access to your data.
- **Express:** Express is a back end web application framework for building RESTful APIs with Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.
- **Render:** Render is a service provider that helps software teams ship products fast and at any scale. It hosts everything from hundred-line prototypes to applications with hundreds of services, all with a relentless commitment to reliability and uptime.
- **Next JS:** Next.js is an open-source web development framework created by the private company Vercel providing React-based web applications with server-side rendering and static website generation.

- **Vercel:** Vercel builds a frontend-as-a-service product. They make it easy for engineers to deploy and run the user facing parts of their applications.
- **Tauri:** Tauri is a toolkit that helps developers make applications for the major desktop platforms - using virtually any frontend framework.

### 6.3 Interfaces

**Internal Interfaces:**

- Express API: Interfaces between the frontend (Next JS) and backend services (MongoDB, Neo4j, Google Cloud Storage).
- Methods: GET, POST, PUT, DELETE for CRUD operations.
- Data Formats: JSON.
- Endpoints: /users, /workspace, /library, /search, etc.

**External Interfaces:**

- Vercel Deployment: Interfaces with Next JS for seamless deployment and hosting of frontend applications.
  - Methods: Automated build and deploy.
  - Integration: GitHub continuous deployment.
- Render Services: Hosts the back end and provides scalability for API services.
  - Methods: Automated build and deploy.
  - Integration: GitHub continuous deployment.
- Google Cloud Storage API: Manages data storage in Google Cloud Buckets.
  - Methods: Upload, download, delete operations.
  - Data Formats: Papers file type (.pdf).
- Neo4j Aura DB API: Manages graph database operations.
  - Methods: Cypher queries for data manipulation and retrieval.
  - Data Formats: Custom node and relationship structures.

### 6.4 Data exchange

**Data Flow:**

- Data Ingestion: Data from sources such as arXiv, Semantic Scholar, and DBLP is collected and stored in temporary formats (.tex, .json, .csv, .pdf).
- Data Persistence: Collected data is transferred to persistent storage (Amazon S3, Google DataProc Cluster) using data persistence loaders.
- Data Processing: Apache Spark processes and formats the data, preparing it for further use.
- Data Storage: Formatted data is stored in structured databases (MongoDB, Neo4j) for efficient querying and analysis.

- Data Access: The frontend (Next JS) interacts with the backend (Express) to retrieve and present data to users via APIs.

**Data Formats and Protocols:**

- JSON: Standard format for API communication between frontend and backend.
- JSON, PDF, CSV, TEX: Formats for raw data ingestion from various sources.
- Cypher Queries: Used for interacting with Neo4j graph database.
- REST API: HTTP methods (GET, POST, PUT, DELETE) for CRUD operations on data.

  This functional architecture outlines how different components and modules of the Scholaria project interact to achieve seamless data collection, storage, processing, and presentation.

# 7 Product Demo

In order to view the entire demo of the product, please follow this link.

# 8 Marketing Plan

## 8.1 General Marketing Strategy (segmentation and positioning)

The marketing strategy for Scholaria is designed to effectively target and engage key segments within the academic research sector. By leveraging detailed market research and insights, we aim to position Scholaria as the leading AI-driven research management tool that addresses the unique needs of our diverse customer base. Our strategy encompasses segmentation, positioning, and the implementation of a robust marketing mix to ensure comprehensive market penetration and sustained growth.

### 8.1.1 Segmentation

To maximize our market reach, we have identified three primary customer segments:

- University agreements: B2B model
- University Students (Master's and PhD Level) and Individuals: B2C model
- Industry Professionals

Detailed information about these segments are provided in Section 2.

### 8.1.2 Positioning

Scholaria is positioned as a cutting-edge, AI-driven research assistant that stands out in the academic research sector due to several unique attributes:

As a pioneer scholar assistant tool, our positioning is to be the first tool to come in mind of scholars when they need to make research. With its unique attributes, Scholaria distinguishes itself from market alternatives such as Mendeley, Research Rabbit, and Zotero.

Our platform's user-centric design, integrated features, AI-driven recommendations, global accessibility, commitment to customer feedback, competitive pricing, and focus on innovation collectively position Scholaria as the premier research assistant tool for academics and professionals alike.

Hence, our ultimate aim is to be the go-to choice when it comes to research assistance.

### 8.1.3 Marketing Mix

**Product:**

- Scholaria offers a comprehensive suite of tools for managing, comprehending, and exploring academic literature, supported by AI-driven recommendations and automated features to streamline research processes.

**Price:**

- **University Arrangements:** Monthly subscription range of €1000-€5000.
- **Individuals:** Discounted annual subscription ranging from €0-€100. Flexible pricing plans for institutions and bulk agreements with universities.

**Place:**

- Online Platform: Scholaria is accessible in the Spain, followed by EU and later globally via a web-based platform, ensuring easy access anywhere.
- Professional Access: Available through corporate packages for industry professionals, facilitating easy integration into their existing systems.
- University Partnerships: Direct integration into university systems for seamless access by students and faculty. (BDMA Partners: 5 Universities)

**Promotion:**

- Digital Marketing: Use online advertising to reach individual researchers and industry professionals. (major channel: Google Ads)
- Academic Partnerships: Collaborate with universities to integrate Scholaria into their academic resources, similar to services like other competitors.
- Conference Sponsorships: Sponsor and participate in academic conferences to showcase Scholaria directly to potential users.
- Social Proof and Testimonials: Leverage testimonials from early users and case studies to demonstrate effectiveness and gain trust.
- Promotional Offers: Initial free access period followed by discounted rates to convert trial users into paying customers.

By implementing this comprehensive marketing strategy, Scholaria aims to effectively penetrate the academic research sector, build a loyal customer base, and achieve sustainable growth. Detailed marketing tactics and timelines will be outlined in subsequent sections.

## 8.2 Price policy

Scholaria's pricing strategy is designed to offer maximum value to our diverse customer segments while ensuring affordability and accessibility. Our pricing model is both flexible and competitive, catering to individual users, academic institutions, and industry professionals. The key components of our pricing policy are as follows:

### 8.2.1 Tiered Pricing for Individuals

We offer tiered subscription plans to accommodate the varying needs and budgets of individual users. We use the Freemium pricing strategy.

- **Basic Plan:** Free access to essential features, including basic literature organization and limited recommendation functionality. This plan is ideal for casual users or those new to Scholaria.
- **Standard Plan:** A monthly subscription that provides full access to advanced features such as AI-driven recommendations, comprehensive note-taking, and progress tracking. This plan is tailored for active researchers and graduate students who require robust research management tools. This plan's cost will be €5. The bulk university aggreements give access to this plan with an average of €2 per person (ranging from €1000-€5000/month).

#### 8.2.2 Discounts and Promotions

To encourage widespread adoption and support our user community, Scholaria offers various discounts and promotions:

- **Educational Discounts:** Special rates for students, educators, and academic staff to make our platform more accessible to those in the educational sector.
- **Early Bird Discounts:** Reduced pricing for early adopters who subscribe within a certain period after the launch of new features or services.
- **Referral Programs:** Incentives for current users who refer new users to Scholaria, including subscription discounts and access to exclusive features.

#### 8.2.3 Value Proposition

Our pricing policy is designed to reflect the value that Scholaria brings to its users. By offering flexible, affordable, and comprehensive pricing options, we ensure that Scholaria remains accessible to a broad range of users while providing the necessary resources to sustain continuous innovation and development. Our commitment to delivering high-quality, user-centric solutions is at the core of our pricing strategy, ensuring that our users receive the best possible return on their investment.

### 8.3 Organization of sales and distribution

The organization of sales and distribution for Scholaria is designed to ensure efficient and effective delivery of our product to a wide range of customers. Our strategy incorporates both direct and indirect sales channels, leveraging digital platforms and strategic partnerships to maximize reach and impact.

#### 8.3.1 Direct Sales Channels

- **Website and Online Platform:** Our primary sales channel is the Scholaria website, where users can learn about our product, access a free trial, and subscribe to our various plans. The online platform is equipped with secure payment gateways and user-friendly interfaces to streamline the purchase process.
- **Sales Team:** A dedicated sales team is in place to manage relationships with key accounts, including universities, research institutions, and corporate clients. The team is responsible for conducting product demonstrations, negotiating contracts, and providing personalized support to ensure customer satisfaction.

#### 8.3.2 Indirect Sales Channels

- **Academic Conferences and Trade Shows:** Participation in academic conferences and industry trade shows is a key component of our indirect sales strategy. These events provide opportunities to showcase Scholaria to a concentrated audience of researchers, educators, and professionals, facilitating direct engagement and lead generation.

#### 8.3.3 Distribution Strategy

- **Digital Distribution:** Given the nature of our web-based platform, digital distribution is the primary method for delivering Scholaria to users. Upon subscription, customers receive immediate access to the platform via a secure login, ensuring a seamless and instant user experience.
- **Cloud-Based Infrastructure:** Scholaria is hosted on a robust, scalable cloud infrastructure that guarantees high availability, data security, and performance. This setup supports global access and allows for continuous updates and feature enhancements without disrupting user access.
- **Customer Support and Training:** To ensure successful adoption and ongoing satisfaction, we plan to offer comprehensive customer support and training resources. This includes an online help center, live chat support, and personalized training sessions for institutions and corporate clients.

#### 8.3.4 Monitoring and Evaluation

To optimize our sales and distribution efforts, we implement ongoing monitoring and evaluation processes:

- **Analytics and Reporting:** We use advanced analytics tools to track sales performance, customer engagement, and user feedback. These insights inform our strategic decisions and help us identify areas for improvement.
- **Customer Feedback Loops:** Regular feedback from customers is collected through surveys, user forums, and direct interactions. This feedback is critical for refining our product features, pricing models, and support services.
- **Performance Metrics:** Key performance indicators (KPIs) such as customer acquisition cost (CAC), lifetime value (LTV), and churn rate are monitored closely to ensure our sales and distribution strategies are effective and sustainable.

Overall, our organized approach to sales and distribution ensures that Scholaria is accessible to a wide and diverse customer base, providing them with the tools they need to excel in their academic and professional research endeavors.

### 8.4 Service and guarantees policies

#### 8.4.1 Service Level Agreements (SLAs)

- **Uptime Guarantee:** Scholaria is guaranteed a 99.9% uptime, ensuring that users have reliable and uninterrupted access to our services. This commitment is backed by our robust cloud infrastructure and proactive monitoring systems.

#### 8.4.2 Guarantees and Refund Policies

- **Satisfaction Guarantee:** We are confident in the value of our platform and offer a satisfaction guarantee to all users. If a user is not satisfied with Scholaria within the first 30 days, they can request a full refund, no questions asked.
- **Trial Period:** To allow potential customers to experience the benefits of Scholaria before committing, we offer a free trial period. During this trial, users have

access to all premium features and support services.

- **Refund Policy:** For subscription-based plans, users can cancel their subscriptions at any time. If cancellation occurs within the first 30 days of the billing cycle, a prorated refund will be provided based on the unused portion of the subscription.
- **Data Security and Privacy:** Scholaria is committed to protecting user data. We adhere to strict data security protocols and comply with relevant data protection regulations. Our privacy policy is transparent, outlining how user data is collected, used, and safeguarded.

## 8.5 Advertising and promotion

Effective advertising and promotion are crucial to Scholaria's strategy for reaching our target audience, building brand awareness, and driving user acquisition and retention. Our multifaceted approach leverages various channels and techniques to ensure broad visibility and engagement within the academic research community.

### 8.5.1 Digital Marketing Campaigns

- **Social Media Marketing:** We will leverage platforms such as LinkedIn, Twitter, and Facebook to engage with the academic community. Regular posts, sponsored content, and targeted ads will highlight Scholaria's features, user testimonials, and updates. Social media campaigns will also include interactive elements like polls, Q&A sessions, and live webinars to foster community engagement.
- **Search Engine Optimization (SEO):** Our website and content will be optimized for search engines to ensure high visibility in search results for relevant keywords. This strategy will drive organic traffic and increase the discoverability of Scholaria among potential users seeking research management solutions.
- **Academic Influencers:** We will collaborate with prominent academics and researchers who can endorse Scholaria to their networks. Influencers will create content, such as reviews and tutorials, to highlight the benefits and unique features of Scholaria.

# 9 Management Team and Staff Structure

## 9.1 Organization and People

Scholaria operates under the principles of shared leadership and meritocracy, fostering a collaborative environment where every team member is empowered to contribute. Our lean team structure prioritizes agility and innovation.

Since we are currently students in the Erasmus Mundus BDMA Master's Program at UPC, we are working collaboratively without formal titles. Our structure is flexible, allowing us to leverage each member's strengths and areas of expertise. Since now we are all working on the implementation of the program, everyone is working as software engineers and no one is really an expert in finance or marketing yet. But for the sake of completeness, we are adding provisional titles which may not reflect the reality yet.

**Profiles:**

- **Berat Furkan Koçak**: Specializes in AI development and has a strong background in software engineering.
- **Maria Camila Salazar**: Focuses on marketing strategies and user engagement, with experience in digital marketing.
- **Mohamed Louai Bouzaher**: Expert in operations management and logistics, ensuring efficient project workflow.
- **Rana İşlek**: Skilled in financial analysis and planning, managing the financial aspects of our project.
- **Simon Coessens**: Experienced in software development, contributing to the technical robustness of our platform.

## 9.2 Key Directors, Profiles, and Individual CV

Although we do not have formal director roles yet, each team member brings unique skills and expertise to the project. Everyone comes from mathematical-oriented and mostly engineering backgrounds which is very helpful for improving the project. We anticipate the following potential roles based on our current strengths:

- **Potential Future CEO (Berat Furkan Koçak)**: Leading the vision and AI development.
- **Potential Future CTO (Simon Coessens)**: Overseeing technical infrastructure and development.
- **Potential Future CMO (Maria Camila Salazar)**: Managing marketing strategies and campaigns.
- **Potential Future COO (Mohamed Louai Bouzaher)**: Handling daily operations and logistics.
- **Potential Future CFO (Rana İşlek)**: Managing financial planning and analysis.

### 9.3 Directors' Shares, Remuneration, and Contribution

Since we are in the early stages of our startup and still students, we have not formalized shares or remuneration. Contributions are based on effort and expertise. The allocation of shares will be determined in the future based on agreements and contributions. Currently, we are not drawing any salaries, but future remuneration will be aligned with industry standards. Each team member contributes according to their area of expertise: Berat Furkan Koçak is responsible for AI Development, Maria Camila Salazar handles Marketing, Mohamed Louai Bouzaher oversees Operations, Rana İşlek manages Financial Planning, and Simon Coessens is in charge of Technical Development.

### 9.4 Board of Directors

At this stage, we do not have a formal board of directors. The core team functions collaboratively to make decisions. In the future, we plan to establish a board that includes experienced advisors and industry experts.

### 9.5 Professional Support Services to Contract

As we progress, we plan to contract various professional support services to aid our operations. Legal services will be engaged for contract law, intellectual property, and compliance matters. We will hire accounting services for financial reporting and tax compliance. Consulting services will be contracted for market analysis and strategic planning. IT services will be sought for cybersecurity and cloud management, while HR services will be used for recruitment and employee welfare programs.

# 10 Business Project Beginning Calendar (Detailing the First 12 Months)

**Month 1-2:**

During the first two months, we will finalize company registration and legal setup, set up initial infrastructure such as office space and IT systems, and develop a detailed project plan and timelines.

**Month 3-4:**

In months three and four, we will initiate product development with a focus on core features, launch marketing campaigns to create initial buzz, and begin recruitment for additional staff as needed.

**Month 5-6:**

Months five and six will be dedicated to conducting beta testing with a selected group of users, collecting and analyzing feedback to refine the product, and expanding marketing efforts to increase user engagement.

**Month 7-8:**

During the seventh and eighth months, we will finalize the product based on beta testing feedback, prepare for the official launch including promotional activities, and establish partnerships with universities and research institutions.

**Month 9-10:**

In the ninth and tenth months, we will officially launch Scholaria, monitor user engagement and gather feedback, and start developing additional features based on user requests.

**Month 11-12:**

The final two months of the first year will involve evaluating performance against initial KPIs, adjusting strategies based on performance data, and planning for scaling operations and expanding market reach.

# 11 Risks and Critical Problems We Can Find When Implementing the Plan and Possible Solutions

All businesses commonly face the risk of competitors copying their innovations, which can reduce their market advantage. In our case the challenge is that competitors may quickly replicate our innovative features. To address this, our solution focuses on continuous innovation and constant improvement of our platform to stay ahead. Additionally, building strong relationships with our users through excellent customer service and feedback mechanisms will help us maintain a loyal user base. Furthermore, we will protect our intellectual property through patents and trademarks where applicable. While the risk of competitors copying is inherent to any business, the key to surviving and thriving lies in continuous innovation, a deep understanding of customer needs, and the protection of our unique developments.

Another significant risk involves ensuring compliance with data protection regulations and other legal requirements, which can be complex and resource-intensive. To manage this, we will engage legal experts to guide us in adhering to relevant regulations such as GDPR[1][9] and other data protection laws. Implementing strong data security measures and transparent privacy policies will further help us maintain compliance and build trust with our users.

In addition to these challenges, rapid growth poses scalability risks that could strain our infrastructure and resources, potentially leading to service disruptions. To mitigate this, we will design our platform with scalability in mind, using cloud-based solutions that can handle increased demand. Continuous monitoring and optimization of our infrastructure will help maintain high performance and reliability. Furthermore, we will plan for phased scaling to ensure that growth is manageable and sustainable. Concurrently, the implementation of AI-driven features may face unforeseen technical challenges, such as algorithmic errors or integration issues with existing systems. To address these technical risks, we will employ a rigorous testing protocol, including unit tests, integration tests, and user acceptance tests. Additionally, we will adopt an agile development methodology to ensure rapid identification and resolution of issues.

Market adoption is another critical area where risks are present. There is a risk that the market may not adopt `Scholaria` as quickly as anticipated, leading to lower-than-expected user engagement and revenue. To counter this, we will conduct thorough market research and user surveys to understand the needs and preferences of our target audience. This will inform our marketing strategies and product features, ensuring that `Scholaria` meets the demands of its users. We will also implement flexible pricing models and promotional offers to attract and retain users. Moreover, as a startup, securing sufficient funding to sustain operations and growth can be challenging. We will pursue a diverse range of funding sources, including venture capital, grants, and crowdfunding. Additionally, we will maintain a detailed financial plan and budget to manage expenses and optimize resource allocation. Regular financial reviews and audits will help us stay on track and adjust strategies as needed.

[1] General Data Protection Regulation

Another potential challenge for our application involves navigating copyright laws related to the content we use. To offer extensive content within the app, we may need to form partnerships with publishing companies like Elsevier, Springer, and others, allowing us to include copyrighted material, provided users have the appropriate access rights. Furthermore, we could integrate a feature that allows users to log in with their publishing company accounts. This approach not only ensures compliance with copyright laws but also enhances user engagement by providing seamless access to personalized content.

Finally, managing the operational complexities as we scale, such as team coordination and workflow management, may become increasingly difficult. To address these operational risks, we will implement robust project management tools and practices to ensure efficient communication and collaboration among team members. Regular meetings and progress reviews will help us stay aligned with our goals and timelines. Additionally, we will invest in professional development and training to enhance our team's skills and capabilities.

# 12 Financial Plan

Predicting financial outcomes and managing costs effectively are crucial for the success and sustainability of any startup. This chapter outlines our comprehensive financial projections and the strategies we will employ to maintain financial health and control costs in Scholaria. These predictions and plans are essential for informed decision-making and long-term strategic planning.

## 12.1 Income Statement Prediction

Our income statement predictions for the next years focus on our revenue generation strategies. We have identified multiple revenue streams, subscription services, and advertising. A thorough market analysis has been conducted to understand the target market size, expected growth rate, and our projected market share. Based on historical data and market trends, we have forecasted our sales, considering our marketing strategies and product launches that could impact revenue. Our pricing strategy aims to maximize revenue while remaining competitive. Additionally, we have outlined our revenue growth plan, which includes expanding into new markets, developing new products, and enhancing our current offerings.

### 12.1.1 Market Context and Competitive Analysis

Our startup operates in a competitive landscape alongside established players like Mendeley and SciSpace. Mendeley, launched in 2008, quickly gained traction by offering a robust reference management tool combined with a social network for researchers. Over the years, Mendeley has grown significantly, benefiting from its acquisition by Elsevier in 2013, which provided substantial resources for further development and market expansion. SciSpace (formerly known as Typeset), founded in 2016, offers an AI-powered research writing assistant and collaboration platform. It has experienced steady growth due to its innovative features and user-friendly interface, securing a strong foothold in the academic publishing market.

### 12.1.2 Revenue streams

As we mentioned in sub-chapter 8.2 we have designed a price to be competitive yet profitable, offering value to users at various levels, and our starting point are the agreements with the universities with the lowest price of the market, €2/monthly by license under university or academic center agreement.

### 12.1.3 Sales forecast

Given the competitive landscape, we expect to gain market traction gradually. Our sales forecast is based on the assumption that we will begin generating revenue from the sixth month onwards, following initial conversations and user trials.

In the first year, during the first six months we will focus on product development, sales conversations and offering trials to the universities with which we want to establish a commercial link. We believe we will start with the universities that are part of the BDMA consortium. After the trials, and continuous improvement of the initial product, we project to have a progressive increase of users from 4.000 to 24.000 users by month 12. If we think in terms of universities, for example, the

| Year/Month | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | €Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year 1 | - | - | - | - | - | - | 4K | 8K | 12K | 16K | 2K0 | 24K | €168K |
| Year 2 | 24K | 24K | 24K | 24K | 28K | 24K | 28K | 28K | 28K | 28K | 28K | 28K | €317K |
| | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | € 15K |

Table 5: Sales prediction in users licences and final income by year

UPC has more than 30.437 students and 3.629 researchers [10], so if we talk about the 5 current universities of the consortium, it is an achievable goal. At the end of the year, we will have sold 84.000 monthly licences that means €168.000.

For the second year, we want to maintain the average number of users of the first year, which is a little more than 14,000 monthly users coming from the agreements with the universities, plus 400 new monthly users coming from the previous agreements and 100 monthly users with non-university subscription for €5. It means that for the second year, the revenue will be €354.600 and it means a growth of 107%. The details and best explanation can be seen in table 5.

### 12.2 Treasury Prediction

The treasury prediction outlines the expected cash flow for the first 12 months of operations for Scholaria. This forecast is crucial for managing financial resources effectively, ensuring liquidity, and planning for future financial needs.

Table 7 shows the details of the expenses expected at the startup's zero point and in the first year for its proper operation. To emphasize I would like to mention that the only equipment we intend to buy will be 4 computers, we will not have a physical office and most of the operation will be managed remotely.

One of the expenses that stands out are the salaries with which we intend to pay a salary of 3500 to the 5 founders, which is equivalent to 210.000 euros per year and the remaining €90.000 will be to pay in freelance mode what is required, initially we consider that they will be developers, but later they may be a commercial team. Another important item, which in the year adds up to 20.000 euros is marketing, in which we plan to make an initial investment of 10.000 euros that will involve carrying out the marketing strategies set out in 8, and another 10.000 euros that will only enter into execution from the 3rd month and can be used for meetings, travel and other needs to serve customers and close business deals.

| **Shopping list** | **One-off investment** | **Anual expenses** |
|---|---|---|
| Four laptops | €4.000,00 | |
| Cloud service | | €5.000,00 |
| Notary, lawyers, deed of incorporation and other | €3.000,00 | |
| Initial branding and communication expenses | €5.000,00 | |
| marketing expenses | €10.000 | €10.000 |
| Salaries (including Social Security) | | €300.000,00 |
| **TOTAL** | **€22.000,00** | **€315.000,00** |

Table 6: Initial assumptions

## 12.3 Balance Sheet Prediction

According to the previous subchapter, we can establish the initial balance as shown in table 7. As founders we will each supply 10,000 euros for and we require a loan of 287,000 euros to cover all the initial expenses and the upcoming expenses in the first year.

| | | | |
|---|---|---|---|
| Fixed Assets | €4.000,00 | Equity | **€50.000,00** |
| Current Assets | €0 | LT Liabilities | €287.000,00 |
| Treasury | €333.000,00 | ST Liabilities | |
| **Total** | **€337.000,00** | | **€337.000,00** |

Table 7: Initial balance sheet

According to the above information, sales, expenses and loans, table 8 shows the P&L of Scholaria for the first year, to highlight the amortization of the portable equipment at 3 years and the loan at 2 years.

| | | |
|---|---|---|
| Sales | €168.000,00 | |
| Cost of Goods Sold | €0 | |
| **Gross Margin** | € 168.000,00 | |
| | | |
| Expenses | €315.000,00 | |
| Amortizations | €1.333,33 | |
| **Total** | €316.333,33 | |
| | | |
| **Operational Margin** | €- 148.333,33 | |
| Financial Expenses | €11.480,00 | |
| | | |
| **Profit Before Tax** | €- 159.813,33 | |
| Tax | €0 | |
| | | |
| **Net Profit** | €- 159.813,33 | |
| | | |
| ***Pro Memoria*** | | |
| Gross Cash Flow | €-158.480,00 | PBT+Amort |
| Net Cash Flow | €-158.480,00 | NP+Amort |
| EBITDA | €-147.000,00 | NP+Tax+FE+Amort |

Table 8: Profit & Loss first year

## 12.4 Break-Even Analysis

This analysis calculates the number of subscriptions required to cover the total fixed costs, marking the financial stability point where the business neither makes a profit nor a loss.

### 12.4.1 General Break-Even Formula

Considering negligible variable costs, the simplified formula is:

$$\text{Break-Even Quantity} = \frac{\text{Fixed Costs}}{\text{Average Selling Price per Subscription}}$$

#### 12.4.2 Calculation

**Year 1** With fixed costs at €315,000 and an average subscription price of €36 annually (calculated as an average between university and personal subscription rates):

$$\text{Break-Even Quantity} = \frac{315,000}{36} \approx 8,750 \text{ subscriptions}$$

**Year 2** With reduced fixed costs of €225,000:

$$\text{Break-Even Quantity} = \frac{225,000}{36} \approx 6,250 \text{ subscriptions}$$

**Conclusion:** These calculations indicate the subscription volume targets that Scholaria must meet to achieve break-even in its first two years.

### 12.5 How We Manage Cost Control

Effective **cost control** is essential for maintaining the financial health of our startup. At Scholaria, our approach is designed to ensure transparency, efficiency, and strategic allocation of resources. Below, we outline the key components of our cost management system.

**Budgeting and Monitoring** Our financial structure is streamlined around our primary expenditures: **salaries** for our five employees. Each month, we conduct a **financial review meeting** to examine expenditures and assess their alignment with our strategic goals. This routine ensures that non-salary expenses are scrutinized for their effectiveness and necessity.

**Cost Monitoring Techniques** We continuously monitor our **break-even point**—a critical metric that informs us about the sustainability of our business. This ongoing analysis helps us adjust our strategies in real-time, ensuring that we remain on track to achieve our financial objectives without compromising the quality of our service.

**Procurement Management** A significant part of our operational efficiency lies in **optimizing cloud services**. We regularly review and compare cloud service providers to secure the most cost-effective options, ensuring optimal performance of our services and helping in minimizing our operational costs.

# 13 Proposal for the Investors

## 13.1 Financial Needs Through Other Shareholders

We are seeking an investment of €150,000 in exchange for a 10% equity stake in Scholaria. This capital injection is targeted to support our initial operational and developmental needs, ensuring a robust launch and early growth phase. The investment will enable us to secure the necessary resources and technologies to build a competitive product and gain market traction effectively.

## 13.2 Final Composition of Shareholders

With the proposed investment, the final composition of shareholders will be adjusted to include our new investor(s) holding a 10% stake. The remaining 90% will continue to be held by the founding members and early investors. This structure is designed to balance the interests of all parties, ensuring that the founding team retains control over the company's strategic direction while benefiting from the expertise and resources of new shareholders.

# Bibliography


[1] Caren A. Arbeit and Michael Yamaner. Trends for graduate student enrollment and postdoctoral appointments in science, engineering, and health fields at u.s. academic institutions between 2017 and 2019. https://ncses.nsf.gov/pubs/nsf21317. Published: March 31, 2021.

[2] Malvika Bhagwat. These 5 key trends will shape the edtech market upto 2030. https://www.weforum.org/agenda/2024/02/these-are-the-4-key-trends-that-will-shape-the-edtech-market-into-2030/. Published: Feb 26, 2024.

[3] BBC News. Google claims carbon neutrality since 2007. *BBC News*, 2020. Accessed: insert today's date.

[4] none. Snapshot of higher education in europe. https://www.4icu.org/Europe/#:~:text=European%20Universities%20World%20Representation&text=According%20to%20the%20uniRank%20database,higher%2Deducation%20institutions%20in%20Europe. Accessed: June 5, 2024.

[5] RICHARD PRICE. The number of academics and graduate students in the world. https://richardprice.io/post/12855561694/the-number-of-academics-and-graduate-students-in. Published: Nov 15, 2011.

[6] QuestionProCollaborators. Home market research viability study: What is it, importance, ways to conduct. https://www.questionpro.com/blog/viability-study/. Accessed: June 5, 2024.

[7] MIT Press Reader. The staggering ecological impacts of computation and the cloud, 2020. Accessed: insert today's date.

[8] Linda K. Trevino et al. *Managing Business Ethics: Straightforward Answers to Tough Questions*. Pearson Prentice Hall, 2011. Accessed: 11 May 2024.

[9] European Union. Regulation (eu) 2016/679 of the european parliament and of the council of 27 april 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (general data protection regulation), 2016. Accessed: 2024-06-08.

[10] Universitat Politècnica de Catalunya. La Universitat Politècnica de Catalunya (UPC). https://www.upc.edu/ca/la-upc/la-institucio, 2024. Accedido: 2024-06-09.

[11] Integrated Postsecondary Education Data System U.S. Department of Education, National Center for Education Statistics. Full-time faculty in degree-granting postsecondary institutions, by race/ethnicity, sex, and academic rank: Fall 2018, fall 2019, and fall 2020. https://nces.ed.gov/programs/digest/d21/tables/dt21_315.20.asp. Published: Nov 2021.