



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 3, March 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423



9940 572 462



6381 907 438



ijirset@gmail.com



www.ijirset.com

Designing a Framework for Effective B2B Data Sharing Ecosystem

Hanson Braganza

MBA Entrepreneurship, SVKM'S Narsee Monjee Institute of Management Studies, Mumbai, Maharashtra, India

ABSTRACT: A secure and efficient B2B data sharing framework is proposed to address current challenges hindering data exchange. Businesses struggle with high data sourcing costs, uncertainty about data quality, and post-sharing risks. Contract formulation difficulties, security concerns, and a lack of trust further complicate data exchanges. The framework considers various market segments, from active data sharers to sceptics, and proposes features to address their needs. Data quality verification, strong security measures, advanced analytics, seamless data integration, and negotiable contracts are crucial for a successful platform. By focusing on user engagement, education, and addressing trust, cost, risk, and value-based challenges, this framework can promote a thriving B2B data sharing ecosystem that unlocks the true potential of data for businesses.

KEYWORDS: B2B Data Sharing, Advanced Analytics, Negotiable Contracts, Data Quality.

I. INTRODUCTION

The ever-growing volume of data presents both challenges and opportunities for businesses. While data holds immense potential for driving innovation and growth, unlocking its true value often requires secure and efficient sharing across organizations. However, the current B2B data sharing landscape is fragmented, lacking a robust framework that addresses key concerns around security, trust, and value exchange.

This research paper aims to address this gap by proposing a novel framework for a B2B data sharing ecosystem. This framework is grounded in a comprehensive understanding of the current market landscape, informed by a two-pronged research approach.

Firstly, we conducted a thorough literature review to identify existing gaps and explore potential solutions, particularly focusing on leveraging blockchain and encryption technologies to enhance data security. Secondly, we implemented a primary survey data collection strategy. This survey was designed to understand user demographics, existing data sharing practices, and the challenges faced by both data buyers and sellers.

Our survey targeted two distinct segments: entities already engaged in B2B data transactions (buying or selling data) and those not currently participating. By analyzing their responses, we identified specific challenges faced by active participants and the key barriers preventing others from entering the market.

Furthermore, the survey served to identify the features that users believe are most crucial for improving the efficiency and user experience within a B2B data sharing platform. This data-driven approach provides valuable insights into user needs and preferences, ensuring that the proposed framework is tailored to address the specific needs of the B2B data sharing community.

II. RESEARCH OBJECTIVE

- To identify the optimum underlying technology for a safe and efficient B2B data sharing ecosystem
- To understand the pain-points and barriers to entry in a B2B data sharing ecosystem
- To identify the essential features that would drive users to a B2B data sharing platform
- To understand the market and the customers and prepare a scalable product framework of a B2B data sharing platform.

III. LITERATURE REVIEW

3.1 Understanding the B2B data sharing landscape

3.1.1 Business-to-Business Data Sharing: An Economic and Legal Analysis

This report discusses the European Commission's plans to propose an enabling legislative framework for common European data spaces. The report examines the obstacles that prevent businesses from sharing data with each other. It

explores the economic and legal reasons why businesses may not share data. The report also identifies potential solutions to overcome these market failures. Some of the solutions include private third-party data intermediaries and ex-ante regulation.

It mentions how the same dataset can be used for numerous purposes without any functional loss to the original data collector. There are two drivers of economic gains in data sharing or re-use: (a) non-rivalrous use of data and (b) data aggregation. This report implies that there is inherent market failure in exclusive private control of data and there is a need for a data governance platform to find a balance between sharing and exclusivity. Firms take data sharing decisions in function of the expected benefits and costs. Therefore, the B2B data sharing ecosystem needs to have transparency about the data and costs.

The report proposes a solution of third-party intermediaries like data platforms that can reduce transaction costs, facilitate data exchange, and set standardisation of data formats which can improve interoperability and ease data sharing.

3.1.2 The Data Sharing Economy: On the Emergence of New Intermediaries

This report discusses data sharing platforms as facilitators of B2B data exchange building a data-driven economy. It explores how businesses rely on access to data for product development and service improvement but companies are hesitant to share data due to privacy concerns and potential loss of control. Therefore, it proposes a platform that can connect data providers and seekers, lowering transaction costs. This platform can offer various functionalities like data standardization, security measures, and contract templates. The platform must follow FRAND-inspired principles i.e. data sharing platforms must operate with fairness, transparency, and non-discrimination.

A data sharing platform must have the following core features: (i) Matching: Connecting data providers and seekers to achieve critical mass, (ii) Trust Building: Ensuring data quality, security, and appropriate usage through mechanisms like screening, monitoring, and contractual agreements, (iii) Transaction Processing: Facilitating data transfer and potential financial exchanges, and (iv) Self-regulation with guidelines: Provide a flexible framework for platform development while mitigating concerns about dominance and lack of transparency. This report provides a few insights, they are as follows: (i) The market for data sharing platforms is still evolving, (ii) Network effects and trust are crucial for platform success, (iii) Consolidation is likely, potentially leading to market concentration, (iv) Integration of data-related services can create synergies and further market power, and (v) Technological standards for interoperability are essential for large-scale data sharing.

In conclusion, this report explains how data sharing platforms hold promise for fostering innovation and economic growth in the data-driven economy. Addressing trust concerns, establishing fair practices, and promoting interoperability are crucial steps towards realizing this potential.

3.1.3 ERT Expert Paper - B2B Data Sharing - ERT

This report talks about the potential of businesses where they unlock hidden value by sharing data securely and collaboratively. It comments on the future of B2B interaction, and how Europe is uniquely positioned to take the lead. There is a lot to learn from the European plan of building a data sharing ecosystem, but it still has not fully embraced its potential. It can be improved and applied to India and with scale we can make it easier for businesses to gather data and collaborate, and make India a leader in B2B data usage strengthening its economy by helping businesses develop practical use cases based on data sharing.

With data available the companies are developing innovative services, training AI with richer datasets, and personalizing the customer experience. The potential for growth is immense, driving productivity, economic expansion, and a wave of new business models.

This report mentions key challenges, they are as follows: First, trust is paramount. Businesses are understandably cautious about sharing sensitive information. Building trust requires robust legal frameworks, secure data environments, and a clear understanding of the commercial possibilities. Second, A strong foundation is needed. This includes a standardized data infrastructure, common data formats, and established governance rules. B2B data marketplaces can then flourish, facilitating secure data exchange and fostering collaboration. Finally, advanced analytics and AI tools are essential to extract the true value hidden within shared data. According to the report the recipe for a B2B data sharing environment is dependent on four pillars: standardized infrastructure, common data language, efficient marketplaces, and powerful data analysis tools. Success hinges on a collaborative effort – industry and policymakers working together to build the shared technological and legal framework that will fuel a vibrant data economy.

3.1.4 Toward a research framework to conceptualize data as a factor of production: The data marketplace perspective - ScienceDirect

The explosion of machine learning and AI has ignited a data arms race. Companies need vast datasets to fuel these powerful algorithms and drive digital transformation. Data marketplaces, acting as facilitators of secure B2B data exchange, are crucial for this process. However, existing marketplaces suffer from high transaction costs and underdeveloped infrastructures. This research proposes a novel framework, the Data Attributes-Affected Data Exchange (DADE) model, to understand the challenges and opportunities in building effective data marketplaces. This model focuses on two key dimensions: Data Lifecycle Maturity: This describes the stage of data within its lifecycle – raw, processed, or analysed. Raw data requires significant preparation before use, while analysed data is readily consumable and Data Asset Specificity: This refers to how specific the data is. Highly specific data caters to niche needs, while generic data has broader applicability.

The DADE model highlights a critical mismatch in data marketplaces: a glut of raw data on the supply side and a demand for highly specific, analysis-ready data. This mismatch creates obstacles to efficient data exchange.

Based on the DADE model, four approaches are proposed for developing data marketplaces: (i) Market Design Approach: This focuses on creating market rules and mechanisms that incentivize data providers to invest in processing raw data and cater to specific needs, (ii) Data Engineering Approach: This approach emphasizes developing tools and techniques to automate data processing and transformation, making raw data more usable, (iii) Data Science Approach: This utilizes data science techniques to curate and enrich data, increasing its specificity and value, and (iv) Hybrid Approach: This combines elements of all three approaches for a comprehensive solution, addressing data processing, market design, and data enrichment. The B2B data sharing ecosystem we are trying to build will be following the hybrid approach

This report emphasises that without a well-designed marketplace, data cannot function as a new factor of production. It lays the groundwork for a new era of data marketplaces. By leveraging the DADE model, we can build B2B data exchanges that overcome current limitations, unlock the true potential of data, and propel the data economy forward. By focusing on data processing, market design, and data enrichment, a platform can be created that bridges the gap between raw data and user needs, fostering a thriving ecosystem of data exchange and innovation.

3.1.5 Understanding the Price of Data in Commercial Data Marketplaces (imdea.org)

This research analyses the factors influencing data product pricing. The analysis reveals specific data categories command premium prices. Telecommunications, manufacturing, automotive, and gaming data consistently fetch top dollar. This likely reflects their high demand and potential for generating valuable insights. Beyond categories, the analysis delves deeper into specific features that influence pricing within each category. For financial data, update rate and historical data depth significantly impact price. Marketing data, on the other hand, sees price fluctuations based on volume and geographical scope. There are three ways in which prices are determined according to this report: (i) Fixed Price: The sellers fix the price for their data, (ii) Direct Negotiation: Prices might be determined through negotiation between buyers and sellers, bypassing the marketplace platform and (iii) Freemium Model: Many platforms might utilize free data to attract initial users and incentivize paid data listings later. By facilitating transparent pricing mechanisms and fostering trust between buyers and sellers, a competitive advantage can be established for a B2B data marketplace. This research lays the groundwork for a data product price recommendation tool. The key components are as follows: (i) Data Product Taxonomy: A standardized way to describe and categorize data products, (ii) Automated Data Collection: Tools that efficiently gather pricing and product information from major marketplaces, (iii) Data Product Comparison: Algorithms to compare offerings across different platforms, and (iv) Price Prediction Models: Techniques that identify key features driving data product pricing.

3.2 Optimum underlying technology for facilitating B2B data sharing

3.2.1 Data as a Public Good: Experimental Insights on the Optimal Design of B2b Data Sharing Platforms by Jan Kraemer, Nadine Stüdle, Oliver Zierke :: SSRN

A major hurdle exists in the data sharing ecosystem i.e. companies hesitate to share data, fearing it could be used against them. This research tackles this challenge, focusing on two crucial design elements for B2B data sharing platforms: control and transparency. Control empowers companies to decide who accesses their data and to what extent. Transparency provides insights into other participants' data sharing behaviour and the resulting benefits. Through an economic laboratory experiment, it was discovered that both control and transparency significantly increase a company's willingness to share data. However, the optimal level is nuanced.

The key findings are as follows: (i) Medium Control is Optimal: Surprisingly, offering medium control (allowing data sharing with specific firms, but also exclusion) leads to similar data sharing as high control (sharing with chosen firms only). However, low control (collective sharing with all participants) results in significantly less data sharing, (ii)

Transparency Matters: Platforms with full transparency, where companies can see others' data contributions, encourage significantly more data sharing compared to platforms with limited transparency and (iii) Control and Time: The impact of control evolves over time. In longer-term business relationships, both medium and high control settings lead to increased data sharing compared to short-term settings.

By implementing these principles, a B2B data sharing platform can address the root cause of data hesitancy – the fear of misuse. Empowering companies with control and fostering transparency will pave the way for a thriving ecosystem of secure and valuable B2B data exchange.

3.2.2 A blockchain-based IoT data marketplace | Cluster Computing (springer.com)

Data marketplaces connect data providers (sensor operators) and consumers (service providers) for secure data exchange. This report talks only about IoT data but we try to relate it with all forms of data. Centralised marketplaces suffer from limitations: (i) Single Point of Failure: A central infrastructure creates a vulnerability, (ii) Costly Infrastructure: Building and maintaining a centralized system is expensive, (iii) Trust Issues: Data security and privacy concerns can hinder participation, and (iv) Limited Transparency: A lack of clear visibility into transactions discourages data sharing.

The report proposes a solution of a blockchain-powered B2B data marketplace. Blockchain technology offers a secure, transparent, and decentralized alternative. The report proposes a structure for a B2B data marketplace: (i) Smart Contracts: These self-executing contracts enforce the rules of data exchange, automating processes and reducing reliance on a central authority, (ii) User-Friendly Interfaces: Graphical User Interfaces (GUIs) allow users to interact with the marketplace and manage their data products and profiles, (iii) Proxy Layer: Proxies act as intermediaries between devices and the smart contract platform, facilitating communication and authentication, (iv) Entity Management: User profiles and device registration are managed through smart contracts, ensuring data integrity and access control, (v) Data Discovery and Selection: Consumers can search for specific data products based on their needs, (vi) Negotiation and Bidding: Consumers can initiate negotiations with providers, submit bids, and agree on terms through secure bidding contracts, (vii) Routing and Transmission: Encrypted data is securely transferred between providers, brokers, and consumers, (viii) Conditional Escrow: Consumers pay before data transmission, but funds are only released to providers after successful data delivery – protecting both parties, and (ix) Reputation System: A rating system rewards honest participants and discourages bad behaviour.

This innovative B2B data marketplace built on blockchain technology would offer a secure, transparent, and efficient platform for data exchange.

By leveraging the power of blockchain, one can create a trusted B2B data sharing ecosystem where businesses can unlock the value of their data and collaborate to achieve new heights.

3.3 Summary

Sr no.	Topic	Publication year	Authors	Learnings
1	<u>Business-to-Business Data Sharing: An Economic and Legal Analysis</u>	31 st Aug 2020	Bertin Martens, Alexandre de Streel, Inge Graef, Thomas Tombal & Néstor Duch-Brown	Third party intermediaries can help: reduce data sourcing and post transaction risk costs, overcome coordination problems, act as commitment enforcement devices set interoperability standards.
2	<u>The Data Sharing Economy: On the Emergence of New Intermediaries</u>	20 th December 2018	Heiko Richter & Peter R. Slowinski	- Matching, trust building, Transaction Processing and Self-regulation with guidelines - Follow FRAND principles
3	<u>ERT Expert Paper - B2B Data Sharing - ERT</u>	9 th June 2021	European Round Table for Industry (ERT)	Four pillars: standardized infrastructure, common data language, efficient marketplaces, and powerful data analysis tools
4	<u>Toward a research framework to conceptualize data as a factor of production: The</u>	16 th August 2021	Lihua Huang, Yifan Dou, Yezheng Liu, Jinzhao Wang,	- DADE model- hybrid approach - A glut of raw data on the supply side and a demand for highly

	data marketplace perspective - ScienceDirect		Gang Chen, Xiaoyang Zhang & Runyin Wang	specific, analysis-ready data causing mismatch
5	Understanding the Price of Data in Commercial Data Marketplaces (imdea.org)	3 rd April 2023	Andres, Santiago, Iordanou, Costas, Laoutaris & Nikolaos	• Price determination: Fixed Price, Direct Negotiation and Freemium Model • Facilitating transparent pricing mechanisms
6	Data as a Public Good: Experimental Insights on the Optimal Design of B2b Data Sharing Platforms by Jan Kraemer, Nadine Stüdlein, Oliver Zierke :: SSRN	24 th Jan 2022	Jan Kraemer, Nadine & Oliver Zierke	• Medium Control is Optimal • Transparency Matters • More time more trust
7	A blockchain-based IoT data marketplace Cluster Computing (springer.com)	22 nd September 2022	Michael Sober, Giulia Scaffino, Stefan Schulte & Salil S. Kanhere	• Utilising blockchain and encryption for secure, transparent, tamper-proof, and efficient platform for data exchange

IV. RESEARCH METHODOLOGY

To gather data for this research on B2B data sharing, a mixed-methods approach was employed, combining both qualitative and quantitative data collection techniques. First, a thorough literature review was conducted. This involved examining existing academic journals, scholarly articles, and industry reports to gain a deeper understanding of the current landscape of B2B data sharing. Specifically, the review focused on identifying the existing challenges hindering data exchange, gaps in the market, current solutions and frameworks being used, and the evolving market trends and user needs within the B2B data sharing space.

Secondly, a structured questionnaire was designed to capture data from target demographics. This questionnaire aimed to gather insights on participants' perceptions regarding the benefits and challenges of B2B data sharing, along with their preferred features and functionalities for an ideal data sharing platform. Additionally, the questionnaire explored user-specific needs and concerns surrounding data sharing.

To distribute the questionnaire and maximize reach, a multi-pronged approach was adopted. First, the questionnaire was directly sent to known working professionals within relevant industries. Second, a snowball sampling technique was employed, where participants were encouraged to share the questionnaire with their professional networks, expanding the reach to further relevant individuals. Finally, the questionnaire was distributed through LinkedIn. This involved posting it on a group or page relevant to the research topic, and sending direct messages to relevant LinkedIn connections, inviting them to participate.

By combining these methods, the research aimed to gain a well-rounded perspective on B2B data sharing. The literature review provided a strong theoretical foundation, while the questionnaire offered valuable insights directly from industry professionals, allowing for a comprehensive understanding of the research topic.

V. RESEARCH QUESTIONNAIRE

5.1 Section 1

This section gives the demographics of the respondents and asks if they have engaged in data sharing activities or not, based on this answer the survey moves to section 2 (Answer: Yes) or section 3 (Answer: No).

Q1) In which industry does your company operate? *

- IT
- Finance
- Logistics
- Retail & E-commerce
- Healthcare



- f) Marketing & Advertisement
- g) Manufacturing and supply chain
- h) Other:

Q2) What is your role in the company? *

Your answer

Q3) What is the size of your company? *

- a) Micro-business (1-5 employees)
- b) Small Business (6-50 employees)
- c) Medium-sized Business (51-250 employees)
- d) Large Enterprise (251-1000 employees)
- e) Very Large Enterprise (1000+ employees)

Q4) Within your company, which teams or individuals are involved in the approval process for data sourcing and processing activities?

Your answer

Q5) Do you believe it is beneficial for businesses in your industry/sector to buy data from or sell data to other sources?

*

- a) Strongly Disagree (Buying or selling data is not beneficial for businesses in our industry)
- b) Disagree (There might be limited benefits to buying or selling data)
- c) Neutral (There are both potential benefits and drawbacks to consider)
- d) Agree (Buying or selling data can offer significant advantages for businesses in our industry)
- e) Strongly Agree (Data sharing is crucial for success in our industry)
- f) Q6) Have you ever felt that your company requires additional data from other sources?
- g) Strongly Disagree
- h) Disagree
- i) Neutral
- j) Agree
- k) Strongly Agree

Q7) Has your company ever engaged in any data transactions with other sources (businesses, platforms, marketplaces, etc)? This could include buying data, selling data, or participating in data sharing agreements. *

- a) Yes
- b) No

5.2 Section 2

This section opens if the respondent's company has engaged in any data sharing activity and aims to understand the challenges faced by them and also the features that they would want to make data transactions more efficient.

Q1) How frequently does your company buy/sell data from other sources in a year?*

- a) Rarely (less than once a month)
- b) Occasionally (1-2 times a month)
- c) Frequently (3-5 times a month)
- d) Very frequently (more than 5 times a month)

Q2) In your industry, what types of data are commonly exchanged between entities through purchase or sale? *

- a) Customer Data
- b) Financial Data
- c) Product Data
- d) Logistics Data
- e) Market Research Data
- f) Sensor Data (IoT)
- g) Sales Data
- h) Other:

Q3) In what format is the data purchased or sold? *

- a) Comma-Separated Values (CSV)
- b) XML (Extensible Markup Language)
- c) Electronic Data Interchange (EDI)
- d) JSON (JavaScript Object Notation)
- e) API-Driven Data Exchange



- f) Proprietary Data Formats
- g) Unstructured formats (Text, audio, video, images)
- h) Other:

Q4) When considering data sharing activities, how much of a challenge do you face with the following factors? Please rate each on a scale of 1 (Not a Challenge) to 5 (Very Big Challenge) *

- Security risks (data breaches, unauthorized access)
- Difficulty in negotiating clear data ownership and usage agreements
- Uncertainty about the value or ROI of data sharing
- Technical challenges in integrating data systems
- Uncertainty about data quality
- Competitive loss due to data sharing
- Contract formulation between parties
- High data sourcing cost
- Post data sharing risk cost
- Incompatibility of data formats between companies
- Lack of trust in potential data partners
- Concerns about compliance with data privacy regulations
- Lack of internal resources or expertise for data governance
- Security risks (data breaches, unauthorized access)
- Difficulty in negotiating clear data ownership and usage agreements
- Uncertainty about the value or ROI of data sharing
- Technical challenges in integrating data systems
- Uncertainty about data quality
- Competitive loss due to data sharing
- Contract formulation between parties
- High data sourcing cost
- Post data sharing risk cost
- Incompatibility of data formats between companies
- Lack of trust in potential data partners
- Concerns about compliance with data privacy regulations
- Lack of internal resources or expertise for data governance

Q5) To improve the effectiveness and efficiency of data sharing within your industry, how important would the following features be in a B2B data sharing platform? Please rate each on a scale of 1 (Not Important) to 5 (Very Important): *

- Full visibility into all B2B data transactions
- Clear and customizable data access controls and permissions
- Negotiation tools for data contract formulation
- Identification of no competitive disadvantage upon sharing data with a business
- Data quality verification
- Strong security measures (encryption, access controls)
- Data governance tools (data quality management, data lineage tracking)
- User-friendly interface for data exploration and analysis of your data
- Collaborative features for data sharing and communication
- Support for various data types and formats
- Seamless integration with existing systems and applications
- Automatic removal of personal identifiable information
- Advanced analytics capabilities for data insights and decision-making
- Full visibility into all B2B data transactions
- Clear and customizable data access controls and permissions
- Negotiation tools for data contract formulation
- Identification of no competitive disadvantage upon sharing data with a business
- Data quality verification
- Strong security measures (encryption, access controls)
- Data governance tools (data quality management, data lineage tracking)
- User-friendly interface for data exploration and analysis of your data

- Collaborative features for data sharing and communication
- Support for various data types and formats
- Seamless integration with existing systems and applications
- Automatic removal of personal identifiable information
- Advanced analytics capabilities for data insights and decision-making

Q6) How does your organization currently share(purchase, sell, exchange or open source) data, and what tools or platforms do you use to facilitate this process?

Your answer

Q7) What are the key benefits your company has realized from participating in B2B data sharing (buying or selling data) activities? (Please select all that apply)"*

- Increased revenue opportunities (identifying new customer segments, developing targeted marketing campaigns)
- Improved operational efficiency (streamlining supply chain management, optimizing resource allocation)
- Identification of new market opportunities
- Enhanced product/service development (gaining insights into customer needs, identifying market trends)
- Enhanced customer insights and targeting
- Improved decision-making through data-driven analysis
- Reduced costs (minimizing data redundancy, optimizing marketing spend)
- No benefits
- Waste of resources

Q8) In your experience, what is a typical range (estimate) of annual costs in INR associated with data sharing activities for companies in your industry?

Your answer

Q9) Can you share any additional thoughts or insights you have about B2B data sharing from your company's perspective?

Your answer

Q10) Have you ever encountered any legal or regulatory issues related to data sharing? If yes mention what

Your answer

5.3 Section 3

This section opens if the respondent's company has not engaged in any data sharing activity and aims to understand the barriers they face and the conditions under which they consider joining the platform.

Q1) What is your opinion on B2B data sharing? *

- a) Beneficial
- b) No value addition
- c) Waste
- d) Less awareness

Q2) To what extent do the following factors hinder your company's willingness to share data with other businesses?

Please rate each on a scale of 1 (Not a Barrier) to 5 (Major Barrier): *

- Security risks (data breaches, unauthorized access)
- Difficulty in negotiating clear data ownership and usage agreements
- Perceived lack of value
- Uncertainty about the value or ROI of data sharing
- Technical challenges in integrating data systems
- Uncertainty about data quality
- Lack of awareness
- Competitive loss due to data sharing
- Contract formulation between parties
- High data sourcing cost
- Post data sharing risk cost
- Incompatibility of data formats between companies
- Lack of trust in potential data partners
- Concerns about compliance with data privacy regulations

- Lack of internal resources or expertise for data governance
- Security risks (data breaches, unauthorized access)
- Difficulty in negotiating clear data ownership and usage agreements
- Perceived lack of value
- Uncertainty about the value or ROI of data sharing
- Technical challenges in integrating data systems
- Uncertainty about data quality
- Lack of awareness
- Competitive loss due to data sharing
- Contract formulation between parties
- High data sourcing cost
- Post data sharing risk cost
- Incompatibility of data formats between companies
- Lack of trust in potential data partners
- Concerns about compliance with data privacy regulations
- Lack of internal resources or expertise for data governance

Q3) Considering the potential benefits and challenges of data sharing, how likely would your company be to engage in buying or selling data with other businesses if the following conditions were met? Please rate your likelihood on a scale of 1 (Not Likely) to 5 (Very Likely): *

- Strong security measures and clear data governance practices are in place on the B2B data sharing platform.
- Data ownership and usage rights are clearly defined and legally enforceable in data sharing agreements.
- Ability to define and negotiate specific data access terms
- The platform offers robust data quality and consistency checks to ensure data reliability.
- Proven track record of successful data sharing outcomes
- Transparent data usage policies and compliance certifications
- Clear and customizable data access controls and permissions
- Identification of no competitive disadvantage upon sharing data with a business
- The platform allows for easy and secure data transfer with minimal technical complexity.
- The platform provides user-friendly tools for data discovery, analysis, and collaboration.
- There are clear and efficient mechanisms for resolving disputes and addressing data breaches.
- The platform complies with all relevant data privacy regulations (e.g., GDPR, CCPA).
- Your company has access to training and support resources to navigate the platform effectively.
- Strong security measures and clear data governance practices are in place on the B2B data sharing platform.
- Data ownership and usage rights are clearly defined and legally enforceable in data sharing agreements.
- Ability to define and negotiate specific data access terms
- The platform offers robust data quality and consistency checks to ensure data reliability.
- Proven track record of successful data sharing outcomes
- Transparent data usage policies and compliance certifications
- Clear and customizable data access controls and permissions
- Identification of no competitive disadvantage upon sharing data with a business
- The platform allows for easy and secure data transfer with minimal technical complexity.
- The platform provides user-friendly tools for data discovery, analysis, and collaboration.
- There are clear and efficient mechanisms for resolving disputes and addressing data breaches.
- The platform complies with all relevant data privacy regulations (e.g., GDPR, CCPA).
- Your company has access to training and support resources to navigate the platform effectively.

Q4) If a B2B data sharing platform emerged that addressed your concerns (e.g., strong security, clear data governance), would you be more open to exploring data sharing opportunities? *

- a) Yes
- b) No
- c) Maybe



Q5) Does your company currently collect any customer or operational data? If yes, what types of data do you collect and how do you use it internally?

Your answer

Q6) Can you share any additional thoughts or insights you have about B2B data sharing from your company's perspective?

Your answer

5.4 Final section

This section is for if the respondent wants to share any comments on the B2B data sharing ecosystem and if they would be open to participate as beta testers.

Q1) Would you be willing to participate in beta testing or provide feedback on a B2B data sharing platform in development? *

- a) Yes
- b) No
- c) Maybe

Q2) How do you foresee the future of data sharing in the B2B space evolving?

Your answer

Q3) Is there anything else you would like to share about your data sharing needs or preferences?

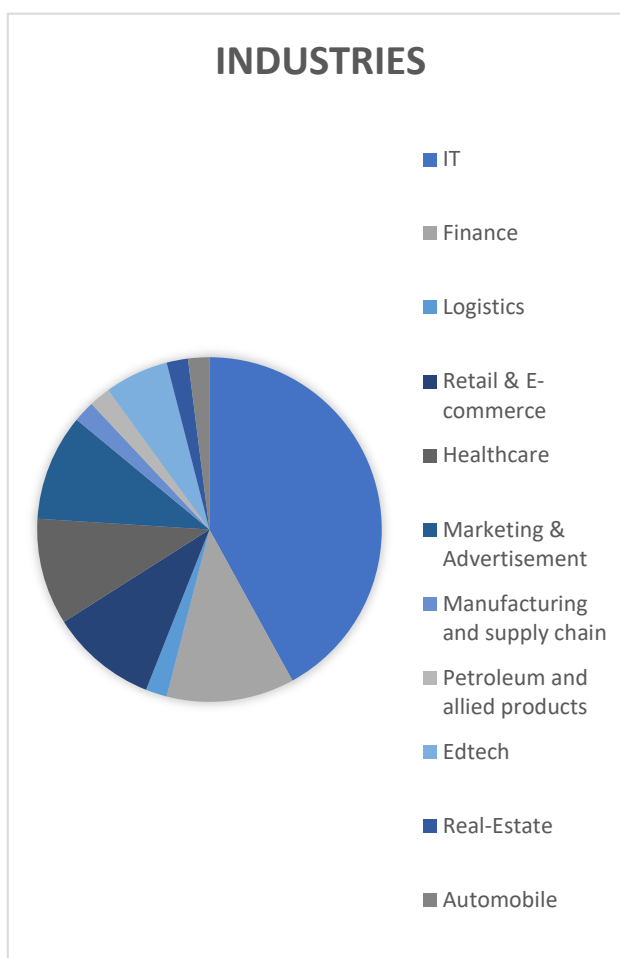
Your answer

VI. ANALYSIS

6.1 Demographics

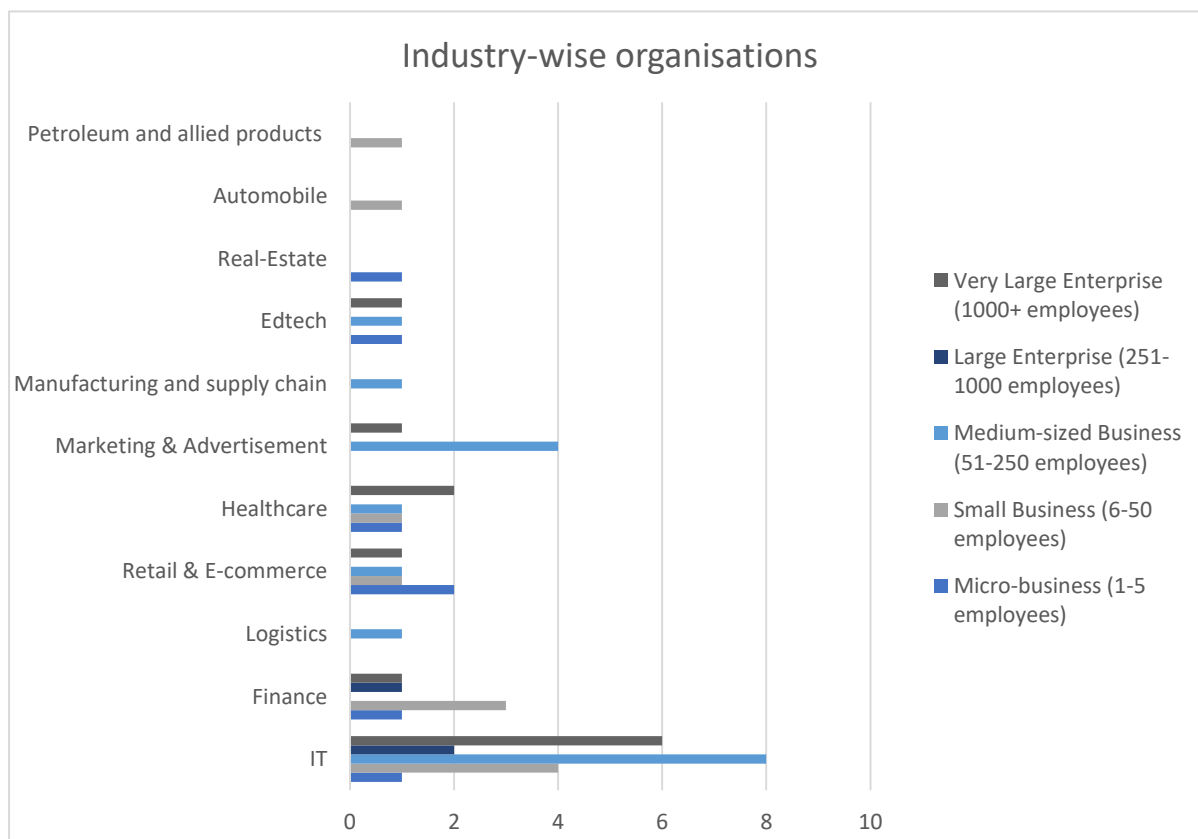
Industries:

Industry	Count	Relative Percentage
IT	21	42%
Finance	6	12%
Logistics	1	2%
Retail & E-commerce	5	10%
Healthcare	5	10%
Marketing & Advertisement	5	10%
Manufacturing and supply chain	1	2%
Petroleum and allied products	1	2%
Edtech	3	6%
Real-Estate	1	2%
Automobile	1	2%



Industry-wise organisations:

	Micro-business (1-5 employees)	Small Business (6-50 employees)	Medium-sized Business (51- 250 employees)	Large Enterprise (251-1000 employees)	Very Large Enterprise (1000+ employees)
IT	4	4	6	1	6
Finance	0	1	3	0	2
Logistics	0	0	1	0	0
Retail & E-commerce	1	3	0	0	1
Healthcare	0	0	3	2	0
Marketing & Advertisement	0	0	2	0	3
Manufacturing and supply chain	0	0	1	0	0
Edtech	0	1	1	1	0
Real-Estate	1	0	0	0	0
Automobile	0	1	0	0	0
Petroleum and allied products	0	1	0	0	0



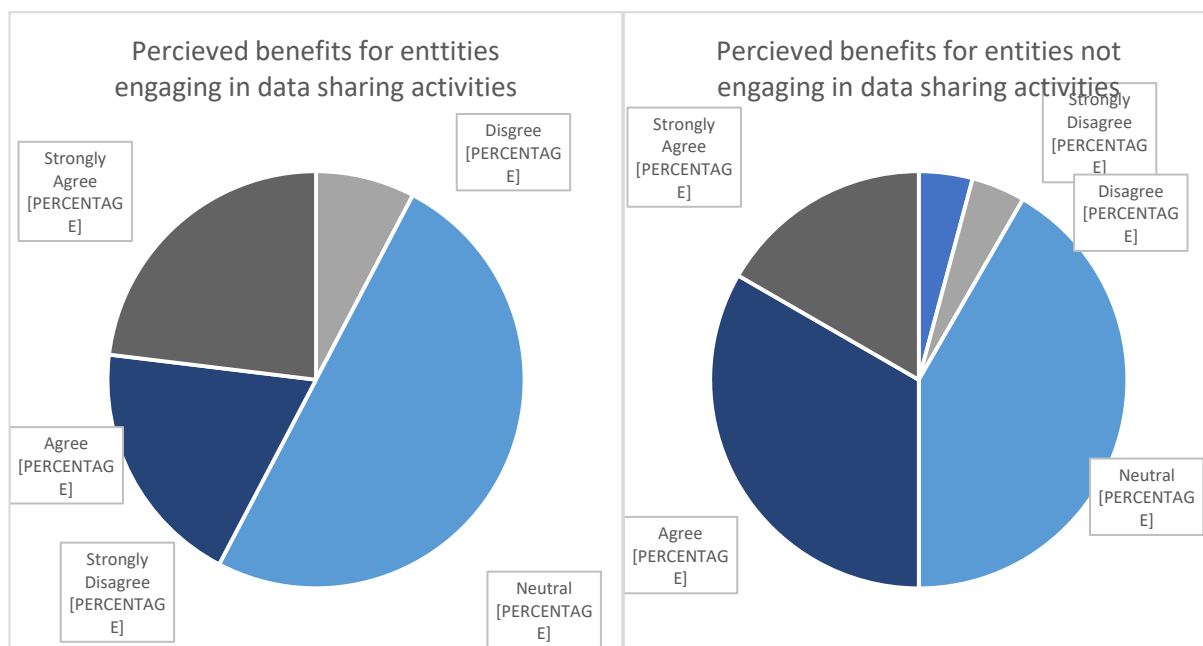
Roles of the respondents in their organisations:

The survey's participants came from a wide range of professional backgrounds, mostly in the marketing and customer relationship management (CRM) domains. The survey had a good representation of marketing professionals, including marketing managers, CRM specialists, and interns. There were individuals from marketing positions as well as those in the healthcare industry. Along with analysts from a variety of fields, including risk analysis, product management, and data science, the poll also featured comments from company leaders, including CEOs, founders, and heads of departments. In addition, the survey comprised responses from people working in sales and business development positions like channel managers, business development managers, and sales development representatives, as well as people in functional and operational roles like functional analysts, asset managers, and program leads. Customer experience specialists, account managers, alliance managers, researchers, HR specialists, software engineers, and service providers were among the other job roles included by the poll. All things considered, the survey yielded insightful responses from a wide spectrum of experts, each with their own distinct viewpoints and experiences.

Individuals or teams responsible for data sourcing and approvals:

The survey reveals a diverse landscape of individuals and teams responsible for data sourcing and approvals. Some companies have designated roles like Line Managers, Marketing, or Business Development teams handling these tasks. Others rely on broader groups like Operations, IT, or Management teams. Titles frequently mentioned include Data Analysts, Data Engineers, Supervisors, Team Leaders, and Managers. Notably, some companies involve high-level executives like CTOs, CSOs, and CEOs in the decision-making process. These are the people a B2B data sharing platform should target since they will create a demand for such a platform in the market.

6.2 Understanding the perception of the sample regarding a B2B data sharing ecosystem



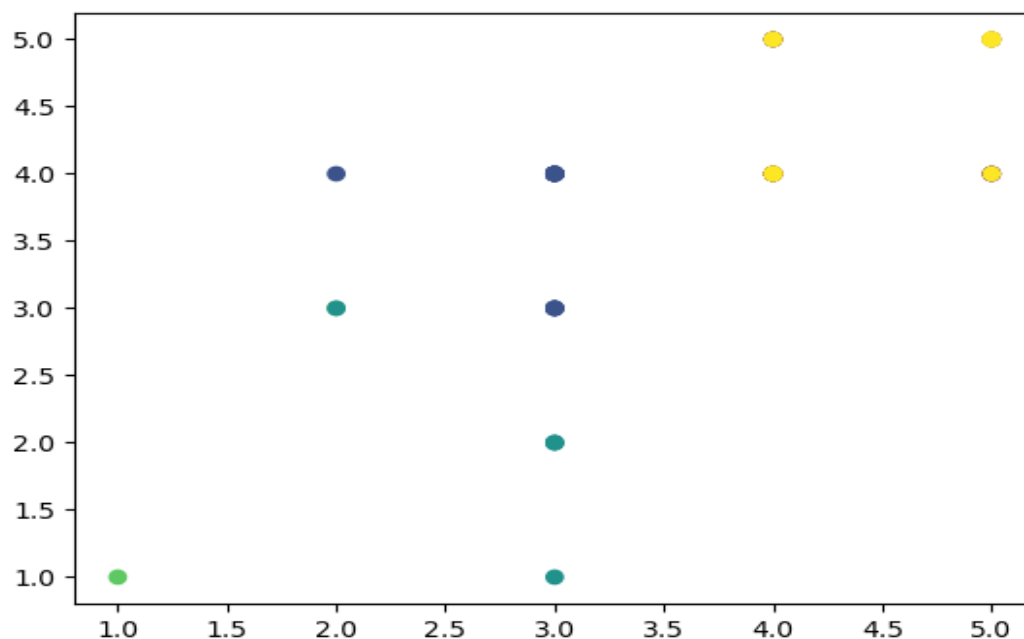
We asked our sample if they believed it is beneficial for businesses in their industry/sector to buy or sell data from other businesses and if they felt there was a need in their company for data produced by other businesses. Along with these we took into consideration if they have participated in any form of data exchange before and their frequency of transactions. We can understand from the pie chart that regardless of engaging in data transactions the sample believes that there is some benefit in data sharing with most having a neutral perception. If a B2B data sharing platform emerges that understands and eliminates the drawbacks, there is a huge addressable market.

We identify and cluster the companies based on their perceptions towards a data sharing ecosystem these companies. We perform Wade's clustering over these variables and cluster them into five segments. The underlying factors under these segments are studied and they are categorised based on these factors.

We cluster them into the following:

- Sceptics (Low Need): This segment includes users who Disagree with the statement that B2B data is beneficial for their industry and indicate their company has no need for B2B data.
- Believers (High Need): This segment consists of users who strongly agree that B2B data is beneficial and believe it's absolutely necessary for their company's operations.
- Unsure Believers (High Need): This segment includes users who are Neutral or Disagree with the general B2B data benefit statement but acknowledge its Importance or Absolute Necessity for their company's success.
- Open-minded Observers (Medium/Low Need): This segment comprises users who Agree with the B2B data benefit statement but see it as Important (not essential) or with No Need for their company currently. They might be open to future needs.
- Undecided (Neutral Need): This segment includes users who are Neutral about the overall benefit of B2B data and have a Neutral stance (Important/Not Needed) regarding their company's need. They require more information and specific use case examples.

Visualization of the clustering:



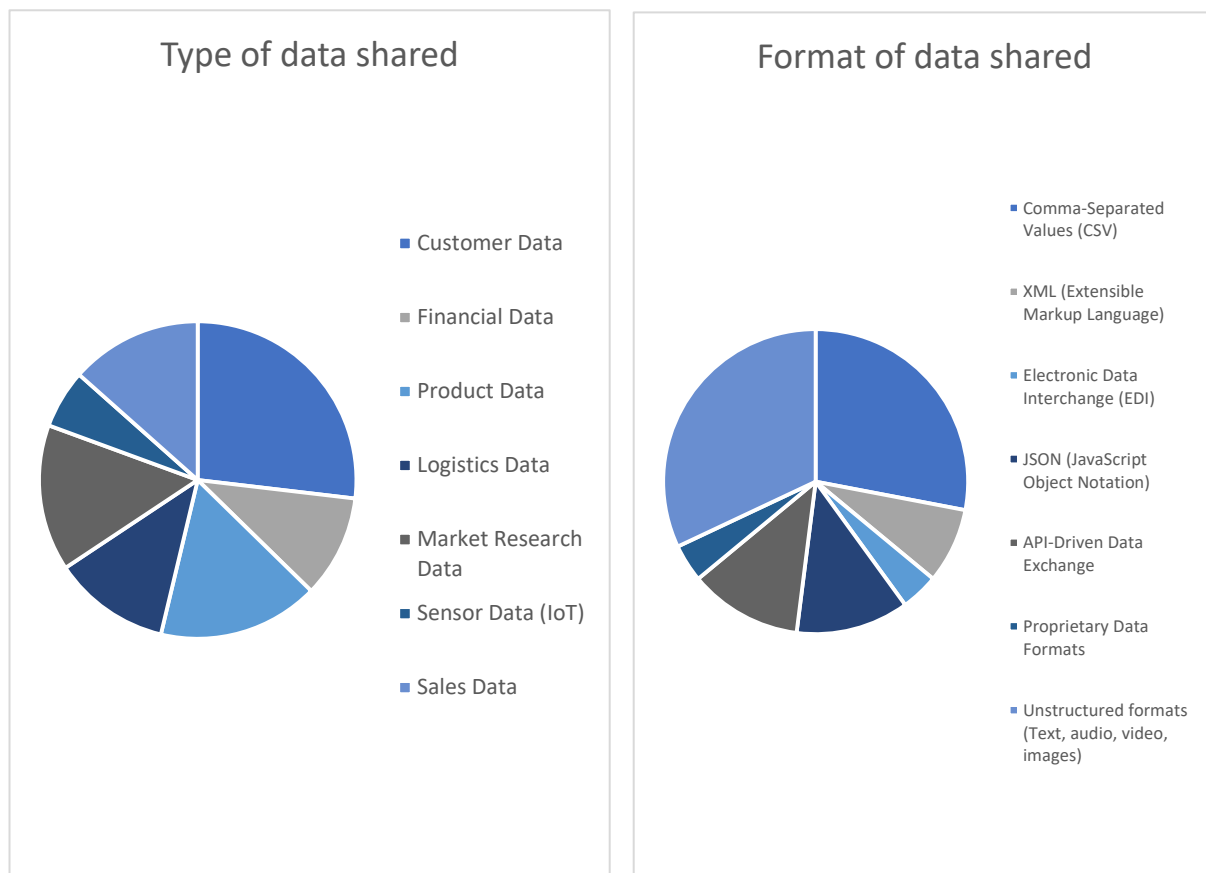
6.3 Understanding the challenges and needs entities.

Comparing perceptions with frequency of transactions:

- Believers (Most Frequent): A significant portion of users are believers who transact frequently (3-5 times/month) or occasionally (1-2 times/month). This segment sees value in data sharing and actively uses your platform.
- Undecided (Mixed Frequency): Another notable group consists of undecided users with varying transaction frequencies (frequently, occasionally, rarely, very frequently). This segment requires further engagement to solidify their understanding of the platform's benefits.
- Open-Minded Observers (Less Frequent): A smaller group classified as open-minded observers transact occasionally or rarely. They might be interested but haven't fully embraced data sharing.
- Actionable Insights:
- Focusing on Retention and Upsell for Believers: Since believers are your most active users, prioritize strategies to retain them and encourage increased engagement.
- Focusing on Retention and Upsell for Believers: Since believers are your most active users, prioritize strategies to retain them and encourage increased engagement.

- Nurturing the Undecided: This segment requires targeted efforts to convert them into believers.
- Engaging Open-Minded Observers: Attract these users by demonstrating the platform's potential benefits.

Before diving deep into their challenges and needs let's look at the data that is transacted:



The B2B data sharing ecosystem should be able to enable large scale data sharing. The future development of markets and dependencies between companies depends significantly on technical interoperability standards that enable such large-scale data sharing.[CITE] Therefore, we need to understand the types and formats in which data is bought or sold. Each entity has their own way of producing, organising, and maintaining their data. The format of data in majority of the transactions as per the sample are unstructured and CSV. Now for example, if an entity that holds large amounts of aggregated unstructured data and gets into a sale agreement with another entity that has the capability of ingesting only .CSV data. This would act as a barrier to the completion of the transaction. To solve this problem a data standardization or conversion system could be set up to make data interoperable. That's where artificial intelligence can be used to first identify the format of data and then map it into the other format without compromising on the data quality.

The responses indicate that the sample uses a variety of methods to transfer data, including basic methods like email and USB drives, as well as more advanced tools such as APIs, SharePoint, SFTP, EDI, and native applications. Some participants emphasized the importance of data security and confidentiality, mentioning measures such as encryption, NDA agreements, and secured mail. A few participants use data feed vendors for financial and market research data. Overall, the responses suggest a diverse range of data transfer methods and approaches. This diversity could also mean that there is no particular platform or method that is used by the majority indicating a white space or rather a gap to monetize on by building a data sharing ecosystem.

Challenges faced by entities engaging in data sharing activities

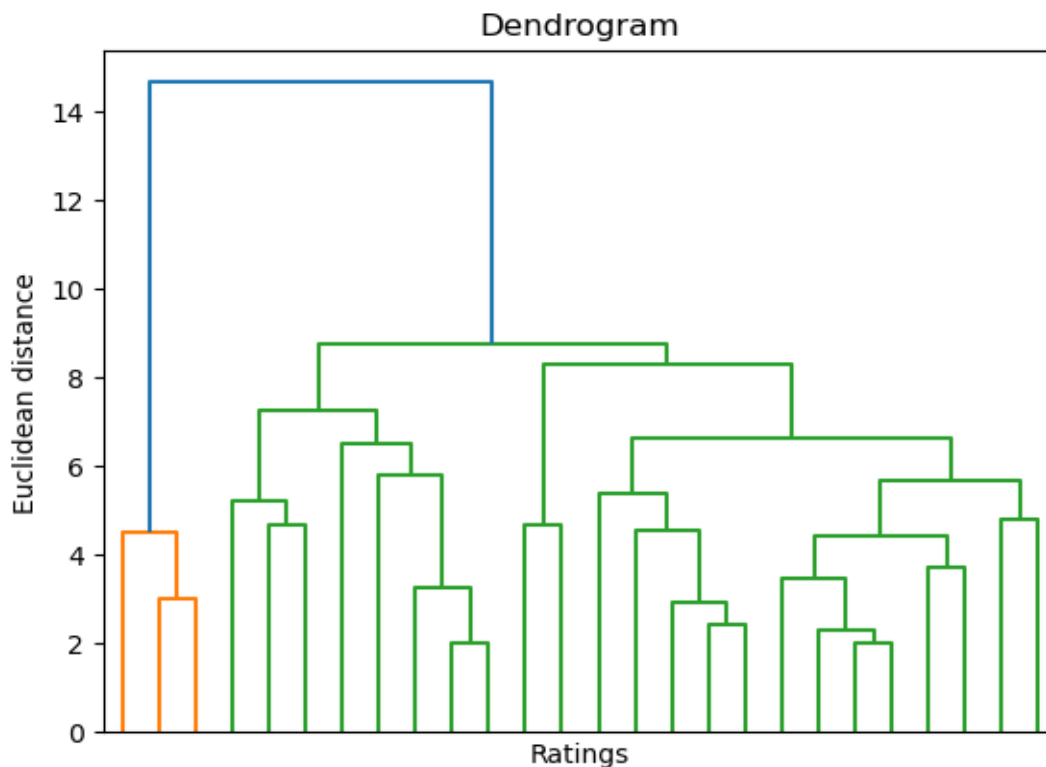
The sample were given an exhaustive list of challenges which they had to rate from 1 to 5, 1 indicating no challenge while 5 indicating a huge challenge faced while performing any form of data transaction. If we consider all ratings, the major challenges faced by entities that engage in data transactions come out to be as:

- High data sourcing cost
- Uncertainty about data quality
- Post data sharing risk cost
- Contract formulation between parties

Correlation between company size and average challenges rating.

	<i>Company size</i>	<i>Average challenges score</i>
Company size	1	
Average challenges score	0.042516345	1

Since there is no correlation, it is safe to assume that all entities face similar challenges regardless of their size. However, all entities from different fields of work are faced with challenges differently, therefore we use Ward's method (used silhouette score to verify the method and cluster size) to cluster these entities based on their ratings of challenges. We create five distinct clusters and name them based on their underlying features:



Dendrogram for the challenges_ratings data to be clustered

Cluster 1: Entities with trust-based challenges

- Moderate concerns no significant roadblock
- Security, compliance, and uncertainty about data quality are top worries.
- Difficulty in negotiating terms

Cluster 2: Entities with cost-based challenges

- Higher average ratings indicating significant challenges faced
- Data sourcing costs, post transaction risk costs, contract formulation and competitive loss are top worries
- Lack of internal resources or expertise in data management

Cluster 3: Entities with risk-based challenges

- Highest average ratings indicating significant challenges faced

- Security risks, post contract risks and compliance are top issues
- Lack of trust in data partners

Cluster 4: Entities requiring value added services

- This cluster has the least concerns about data buying/selling.
- Security, contracting, data quality, regulations, and technical aspects are all viewed as minor challenges.
- This cluster consists of a majority of 'Undecided' segment entities

Cluster 5: Entities with returns-based challenges

- Moderate concerns few significant roadblocks
- Uncertainty about the ROI, high data sourcing costs and security are top worries
- Contract formulation is a major challenge

Next, we checked how important would particular features be to improve the effectiveness and efficiency of B2B data sharing.

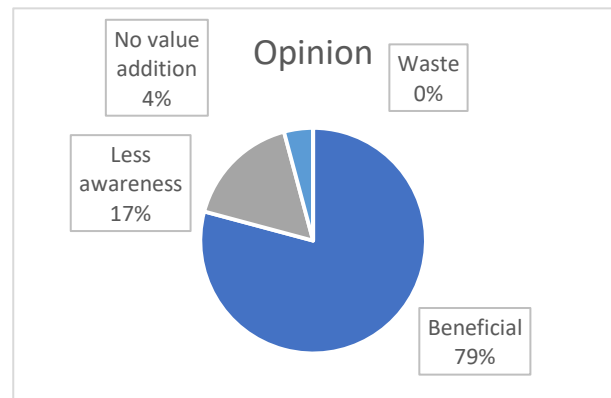
The scores are highest for these conditions which are important to boost the effectiveness and efficiency of a B2B data sharing platform:

- Data quality verification
- Strong security measures (encryption, access controls)
- Advanced analytics capabilities for data transformation, data insights and decision-making
- Seamless integration and support for various data types and format

Barriers to entry for entities not engaging in data sharing activities:

Our sample that has not yet engaged in any form of data transaction were asked to rate to what extent do the factors hinder their company's willingness to share data with other businesses and had to rate each on a scale of 1 (Not a Barrier) to 5 (Major Barrier). But before we analyse the ratings let us look at the opinion of the sample not engaging in data transaction. We asked this part of the sample what their opinion is on B2B data sharing.

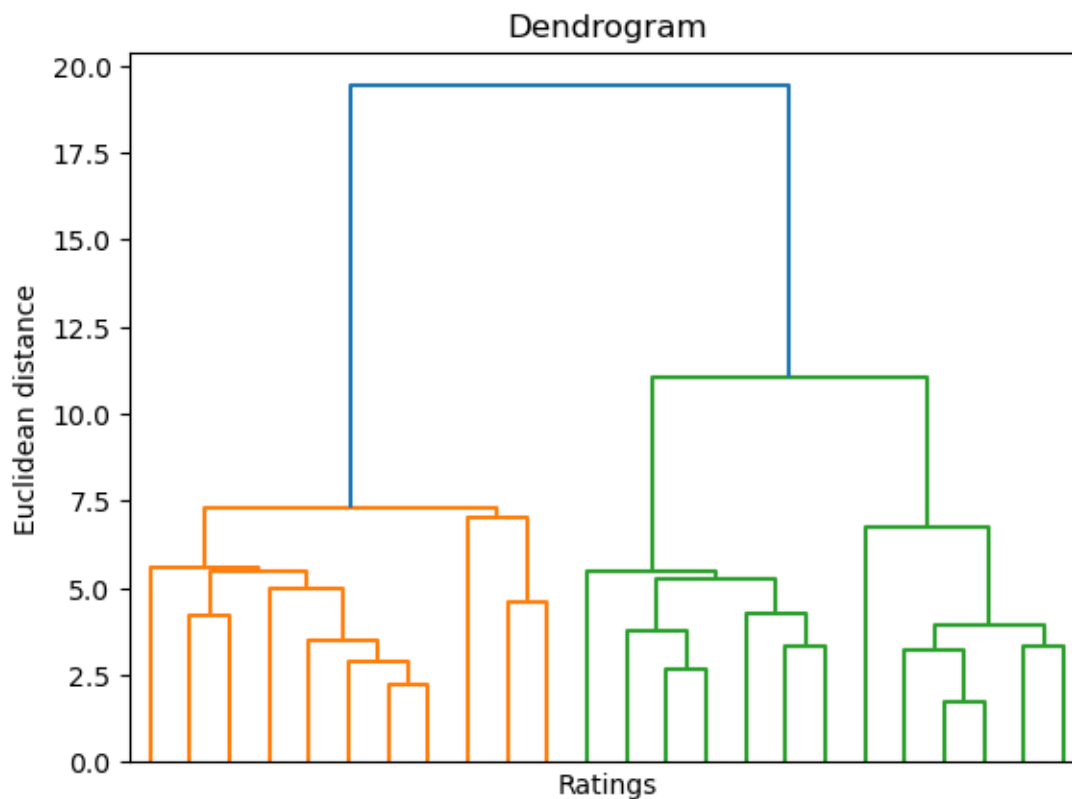
Beneficial	79%
Less awareness	17%
No value addition	4%
Waste	0%



Since majority of the sample feels that B2B data sharing is beneficial but are still not engaging in data transaction, there must be some barriers that they must be facing. If we consider all ratings together the major barriers are:

- Security concerns and concerns about compliances
- Lack of trust in data partners and post data sharing risk cost
- Difficulty in negotiating

However, all entities from different fields of face different barriers due to which they are not engaging in data driven activities, therefore we use Ward's method (used silhouette score to verify the method and cluster size) to cluster these entities based on their ratings of challenges. We create four distinct clusters and name them based on their underlying features:



Dendrogram of barriers_rating to be clustered

Cluster 1: Lack of understanding of value of data

- Higher average ratings indicating significant barriers to entry
- Major concern is the lack of value these company see in data sharing. They are uncertain about the ROI and lack trust in the data partners
- Difficulty in negotiating terms.

Cluster 2: Communication barrier

- This cluster has the least concerns about data buying/selling.
- These companies do not face any significant barriers but still choose to not engage in data transaction.
- Majority of entities in this cluster are bullish on data sharing

Cluster 3: Low awareness of data transactions.

- Moderate concerns no significant roadblock except security concern.
- Lack of awareness and difficulty in negotiating
- Low exposure to data sharing

Cluster 4: Cost barrier

- Highest average ratings indicating significant challenges faced
- High sourcing costs, risk costs and lack of resources are top worries
- Incompatibility between data formats is a major concern

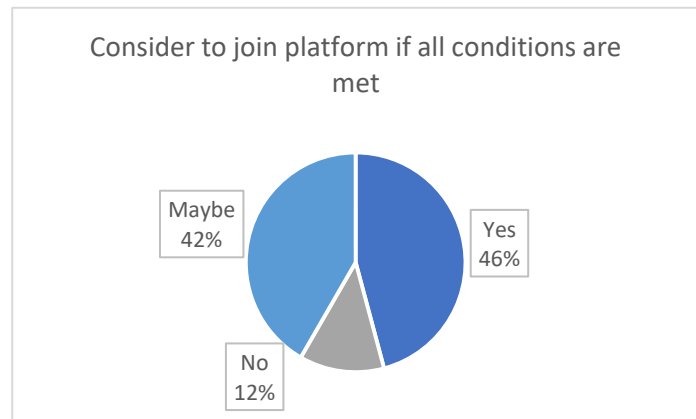
Next, we checked how likely would their company be to engage in buying or selling data with other businesses if a few conditions were met:

The scores are highest for these conditions which would boost the likeliness of these entities to engage in data transactions:

- Data ownership and usage rights are clearly defined and legally enforceable in data sharing agreements.
- Proven track record of successful data sharing outcomes.
- Identification of no competitive disadvantage upon sharing data with a business.
- The entity has access to training and support resources to navigate the platform effectively.

We asked this part of the sample if they would consider using a B2B data sharing platform if all their conditions were met, this was the response:

Yes	46%
No	12%
Maybe	42%



Some are not sure but majority would consider using such a platform, this is a positive sign and shows that under the right conditions companies would consider using such a platform.

VII. FRAMEWORK

Now that both, sample that engages in data transactions and the sample that does not, have been analysed we can build the framework for the B2B data sharing platform.

Two of the most repetitive challenges or barriers seen are difficulty in negotiation and contract formulation. These two challenges go hand in hand and therefore a B2B data sharing marketplace would need to have a functionality of negotiable contracts. Through to the literature review we have understood that a lot of data transactions take place after negotiation. Therefore, to solve this challenge for the customers a negotiable functionality must be added to the platform as a core feature. Security is another major concern. We have established in the literature review that with blockchain and encryption together we can create a secure, transparent, tamper-proof, and efficient platform for data exchange. For the clusters facing the cost barrier, a third-party intermediary that enables non-rivalrous use of data, data aggregation and sets interoperability standards can reduce data sourcing costs and risk costs. This can be possible by adding the functionality of creating data requests and data pools with a robust data governance system. For building trust in the systems, data partners and compliance the platform must offer high control and transparency. Following a DADE model-hybrid approach as discussed in the literature review will be optimal for maintaining data quality. For better experience of the customer the platform would need to have an AI system that can match needs to data for non-rivalrous use, understand the specs of the data and perform operations to transform and analyse data on its own.

Focusing on entities already engaging in data sharing activities:

For onboarding these customers, we would have to identify the cluster they are a part of and promote our value proposition for that particular cluster. Each cluster has a major challenge they are facing. For successfully onboarding companies from all clusters the platform needs to gain the users trust, reduce their costs and risks, provide value added services and provide clarity on the ROI.

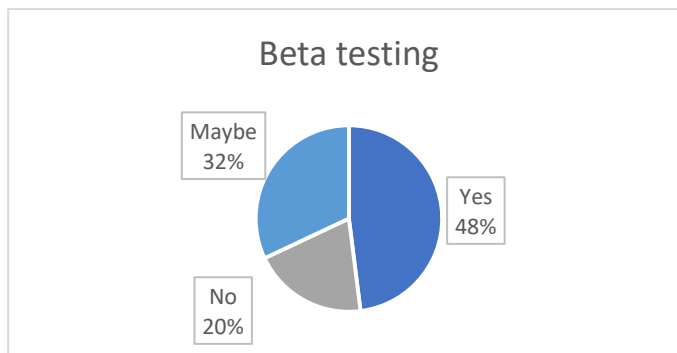
Focusing on entities that do not engage in data sharing activities yet:

There is a huge scope of onboarding these set of entities as 79% of them feel that data sharing is beneficial and this set of entities have a majority of 'unsure believers.' If the barriers to sharing data are addressed properly, we could see a huge conversion from this part of the sample. Each cluster has a major barrier. For successfully onboarding companies from all clusters the platform will have to educate the potential customers about how a particular type of data can affect their business, build awareness for the data, and show how the platform can reduce their costs and mitigate their risks. The platform must have an easy-to-use UI that can provide training and support resources to navigate the platform. Trust building for this part of the sample would take time as they need a proven track record of successful data sharing outcomes.



With this research we have also gained a few potential beta testers for the platform:

Yes	48%
No	20%
Maybe	16%



REFERENCES

1. Martens, Bertin and de Streel, Alexandre and Graef, Inge and Tombal, Thomas and Duch-Brown, Néstor, Business-to-Business Data Sharing: An Economic and Legal Analysis (July 22, 2020). EU Science Hub, 2020, Available at SSRN: <https://ssrn.com/abstract=3658100>
2. Sober, M., Scaffino, G., Schulte, S. et al. A blockchain-based IoT data marketplace. Cluster Comput 26, 3523–3545 (2023). <https://doi.org/10.1007/s10586-022-03745-6>
3. Kraemer, Jan and Stüdlein, Nadine and Zierke, Oliver, Data as a Public Good: Experimental Insights on the Optimal Design of B2b Data Sharing Platforms. Available at SSRN: <https://ssrn.com/abstract=3970821> or <http://dx.doi.org/10.2139/ssrn.3970821>
4. Huang, L. et al. (2021) ‘Toward a research framework to conceptualize data as a factor of production: The Data Marketplace Perspective’, Fundamental Research, 1(5), pp. 586–594. doi:10.1016/j.fmre.2021.08.006.
5. Richter, H., Slowinski, P.R. The Data Sharing Economy: On the Emergence of New Intermediaries. IIC 50, 4–29 (2019). <https://doi.org/10.1007/s40319-018-00777-7>
6. <https://ert.eu/documents/ert-expert-paper-b2b-data-sharing/>
7. Andres, S., Iordanou, C. and Laoutaris, N. (2023) Understanding the price of data in commercial data marketplaces, Handle Proxy. Available at: <https://hdl.handle.net/20.500.12761/1672> (Accessed: 15 March 2024).



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details