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Research Article

A Study on Public Awareness and Ethical Concerns about the Use of Data Science in Organisations

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Abstract

The rapid expansion of data-driven technologies has significantly transformed how organisations operate, interact with customers, and make strategic decisions. However, this increasing reliance on data science has also raised critical concerns regarding public awareness, ethical considerations, and responsible data usage. This study examines the level of public understanding of data science applications, perceptions of organisational transparency, and concerns surrounding privacy and misuse of personal information. The findings reveal that while young and educated respondents demonstrate moderate awareness of how organisations use and collect data, they remain highly cautious about issues such as unauthorised data sharing, third-party sales, and tracking without consent. The study also highlights that most individuals support stricter regulations and believe that organisations prioritise profits over ethical practices, indicating a gap in trust and accountability. Furthermore, respondents strongly emphasise the need for customer consent and advocate for organisational responsibility to ensure ethical data usage. Based on the insights drawn, this study underscores the importance of strengthening digital literacy, enhancing organisational transparency, and establishing robust governance frameworks. The research contributes to the broader discussion on ethical data science by offering strategies to improve public trust and responsible data practices.

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KEYWORDS: Data Science, Ethical Data Use, Public Awareness, Data Privacy, Organisational Transparency, Data Governance, Consumer Perception.

1. INTRODUCTION

The rapid expansion of data-driven technologies has transformed the way organisations operate, make decisions, and interact with stakeholders. Data science, which integrates statistical methods, algorithms, and computational tools to analyse vast amounts of information, has become central to business intelligence, marketing strategies, public service delivery, and operational efficiency. As organisations increasingly rely on data science for predictive analytics, automation, and personalised services, public exposure to data-driven practices has also intensified. This growing reliance raises important questions about how well individuals understand these technologies and the extent to which they are aware of the implications of sharing their personal data.

Public awareness is a critical factor in shaping trust, acceptance, and responsible adoption of data science applications. Many users provide data to organisations through digital platforms without fully understanding how it is collected, stored, processed, or used for decision-making. Limited awareness may contribute to misconceptions, privacy concerns, and fear of surveillance. At the same time, organisations face ethical responsibilities to ensure transparency, fairness, and accountability in their data practices. Ethical concerns such as data misuse, algorithmic bias, unauthorised data sharing, and lack of consent have become central in discussions about digital governance.

In this context, evaluating public awareness and ethical concerns becomes essential for balancing technological advances with societal expectations. Understanding the public's level of knowledge and their perceptions of risk can help organisations design more transparent policies, strengthen data protection mechanisms, and improve communication strategies. This study examines how individuals perceive the use of data science by organisations and explores the ethical issues that influence their trust and acceptance. By assessing awareness levels and identifying key areas of concern, the research aims to contribute to responsible data science practices and support the development of ethical guidelines that protect both organisational interests and public rights.

2. REVIEW OF LITERATURE

To write this research paper, a few pieces of literature have been reviewed, which are as follows:

- **Saltz et al. (2019)** in their paper *"Data Science Ethical Considerations"* mapped major ethical themes identified through a systematic literature review. Their work highlights common ethical dilemmas faced in data science projects and the need for structured ethical reflection. The authors proposed a practical framework to integrate ethical considerations throughout the data science lifecycle. This framework aims to guide practitioners in making responsible decisions. The study contributes to ongoing discussions on strengthening ethical standards in data science.
- **Weaver (2022)** in *"Measuring the Ethical Awareness of Corporate Data Scientists"* pointed out that academic programs focus more on technical skills and less on ethics training. The study aimed to create and validate a scale that measures ethical awareness among corporate data scientists. Weaver emphasised the importance of integrating ethics into data science education and workplace practices. The research highlights a gap between technological advancement and ethical preparedness. It stresses the need for organisations to support ethical decision-making.
- **Harlow (2018)** in *"Ethical Concerns of Artificial Intelligence, Big Data and Data Analytics"* examined the rising ethical challenges associated with AI and Big Data. The paper reviewed global trends and regulatory developments addressing these issues. Harlow proposed an ethical knowledge management strategy to help organisations use data responsibly. The study stressed that ethical frameworks are essential to prevent misuse and maintain public trust. It also encouraged collaboration between researchers and industry to strengthen ethical governance.
- **Krijger et al. (2022)** in *"The AI Ethics Maturity Model"* discussed the growing progress in AI ethics and the need to move from principles to practical implementation. The study introduced a maturity model to help organisations operationalise ethical AI practices effectively. It emphasised that ethical improvement requires alignment across multiple organisational dimensions. The authors noted that successful governance demands coordinated technical, managerial, and cultural efforts. Their model provides a holistic pathway for advancing ethical data science within organisations.
- **Drew (2016),** in the paper *"Data Science Ethics in Government"*, observed that the term "data science" was still unfamiliar to many, yet showcasing practical examples can increase public support for governmental use of new data applications. The study emphasised that such support is highly context-dependent. People judge each case individually, weighing privacy concerns and potential unintended consequences. Their evaluation also depends on perceived policy goals and expected outcomes. Overall, public acceptance grows when benefits are clearly communicated and risks are transparently addressed.
- **Weinhardt (2021),** in the paper *"Big Data: Some Ethical Concerns for the Social Sciences"*, examined how the social sciences have remained cautious in adopting big data despite its long-standing presence. The article highlights the wide scope, diversity, and research potential that BD offers to fields like sociology. It notes that large datasets can reveal rare patterns and behaviours that traditional methods may overlook. However, the study also stresses that these opportunities come with significant ethical implications. Issues related to privacy, consent, and responsible data use must be carefully considered.
- **Garzcarek et al (2019)** in *"Approaching Ethical Guidelines for Data Scientists"* stated that the focus of contemporary societal development is data science. Data science will not be able to establish confidence in its interactions with society and its vital contributions if it does not develop into a profession with professional ethics.

- **Tractenberg et al. (2022)** in *"Ethical Practice of Statistics and Data Science"* examined how data professionals can be equipped to meet their ethical duties in statistical and data-driven roles. Their work focuses on strengthening ethical decision-making among beginners, as well as those who guide or supervise them. They compiled 47 case studies linked to major ethical standards- such as the Data Science Ethics Checklist, the Data Ethics Framework, ASA Guidelines, and the ACM Code of Ethics- to illustrate common challenges.
- **Yadav (2024)** discussed ethical, legal, and social issues in biotechnology, emphasising responsible innovation, data handling, and societal implications of emerging technologies. The study highlights the importance of ethical frameworks and regulatory oversight in ensuring that scientific advancements align with public interest and safety.

3. OBJECTIVES OF THE STUDY

- To assess public awareness of how organisations use data science.
- To examine public ethical concerns regarding the use of data science in organisational practices.
- To recommend strategies that can enhance public understanding and acceptance of ethical data science practices.

Hypothesis of the Study

- Ho (Null Hypothesis): There is no significant relationship between public awareness of data science in organisations and their ethical concerns regarding its use.
- Ha (Alternative Hypothesis): There is a significant relationship between public awareness of data science in organisations and their ethical concerns regarding its use.

4. RESEARCH METHODOLOGY

1. Research Design

Descriptive Research Design is used in the research paper.

2. Sources & Methods of data collection:

a. **Primary:** Primary data sources are collected through questionnaires and interviews

b. **Secondary:** Secondary data sources are collected through ROL and the Internet

3. Sampling Design

a. Sampling method - The Sampling method followed in this research study is

Convenience sampling, which comes under the non-probability sampling method.

b. **Sampling frame -** The population is 18 to 60 years old from Mumbai city.

c. **Sampling size -**The Sampling size of this research study is 134 respondents.

Data Interpretation

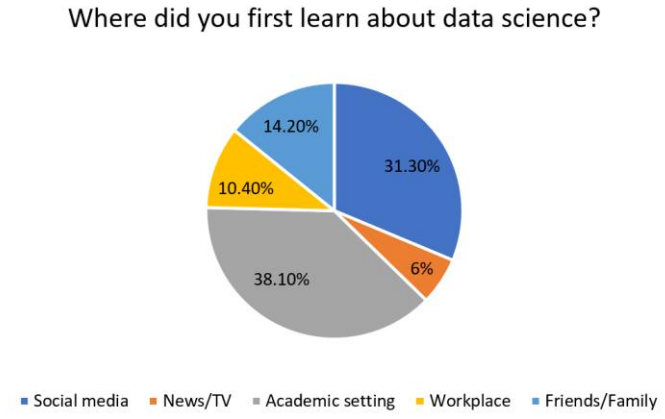
1. Where did you first learn about data science?

Table 1.1

Particulars	Frequency	Percentage
Social media	42	31.3%
News/TV	8	6%
Academic setting	51	38.1%
Workplace	14	10.4%
Friends/Family	19	14.2%
Total	**134**	**100%**

Source: Compiled from Primary Data

Figure 1.1



Source: Compiled from Primary Data

From the above Pie Chart, it can be interpreted that most respondents have learnt about data science through academic settings (38.10%), followed by social media (31.30%), friends/family (14.20%), Workplace (10.40%) and lastly, the least of all, News/TV (6%).

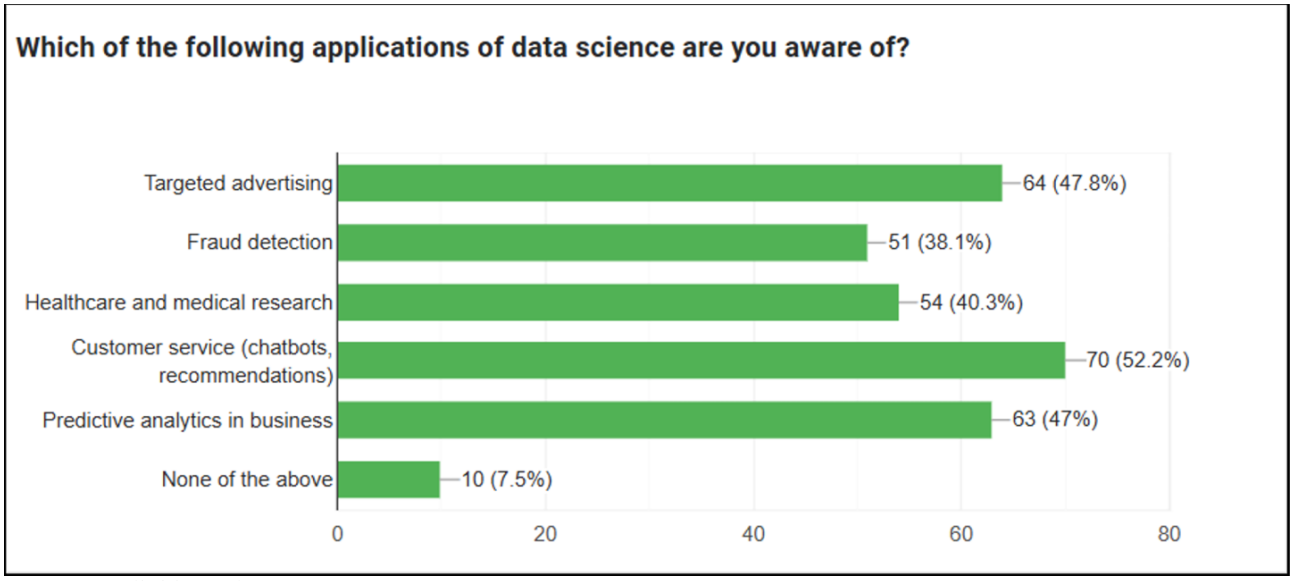
2. Which of the following applications of data science are you aware of?

Table 1.2

Particulars	Frequency	Percentage
Target Advertising	64	47.8%
Fraud Detection	51	38.1%
Health/Medical Research	54	40.3%
Customer Service	70	52.2%
Predictive Analysis in Business	63	47%
None of the Above	10	7.5%

Source: Compiled from Primary Data

Figure 1.2



Source: Compiled from Primary Data

From the above Horizontal Bar Chart, it can be interpreted that Customer Service has the highest responses. i.e 52.2%, closely followed by Target Advertising and Predictive Analysis in Business, both with an approximation of 47%.

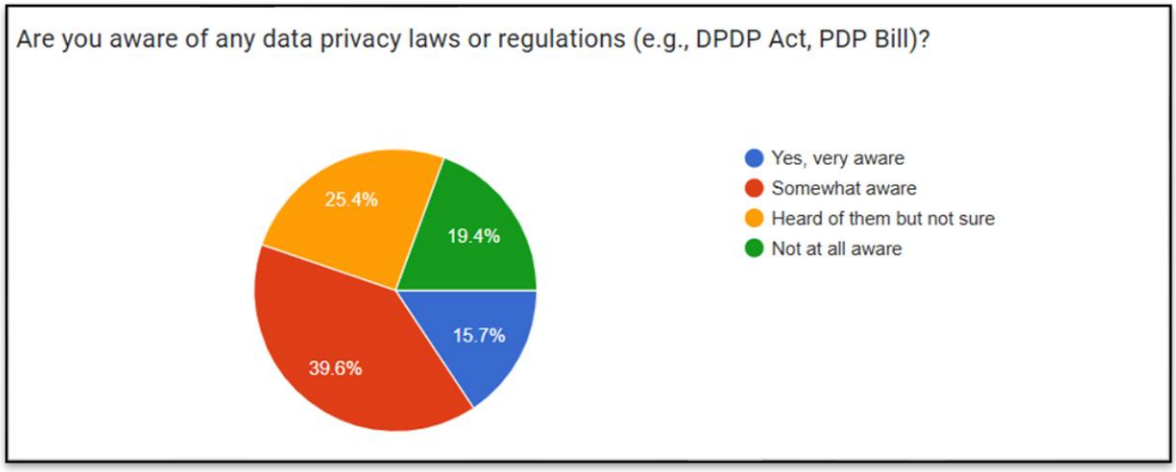
3. Are you aware of any data privacy laws or regulations (e.g., DPDP Act, PDP Bill)?

Table 1.3

Particulars	Frequency	Percentage
Yes, very aware	21	15.7%
Somewhat aware	53	39.6%
Heard of them, but not sure	34	25.4%
Not at all aware	26	19.4%
Total	**134**	**100%**

Source: Compiled from Primary Data

Figure 1.3



Source: Compiled from Primary Data

From the above Pie Chart, it can be interpreted that most respondents (39.6%) are somewhat aware of data privacy laws or regulations, whereas 15.7% are very aware of the same. It can be observed that 25.4% have heard about such laws but are not sure about them, and, lastly, 19.4% are not at all aware.

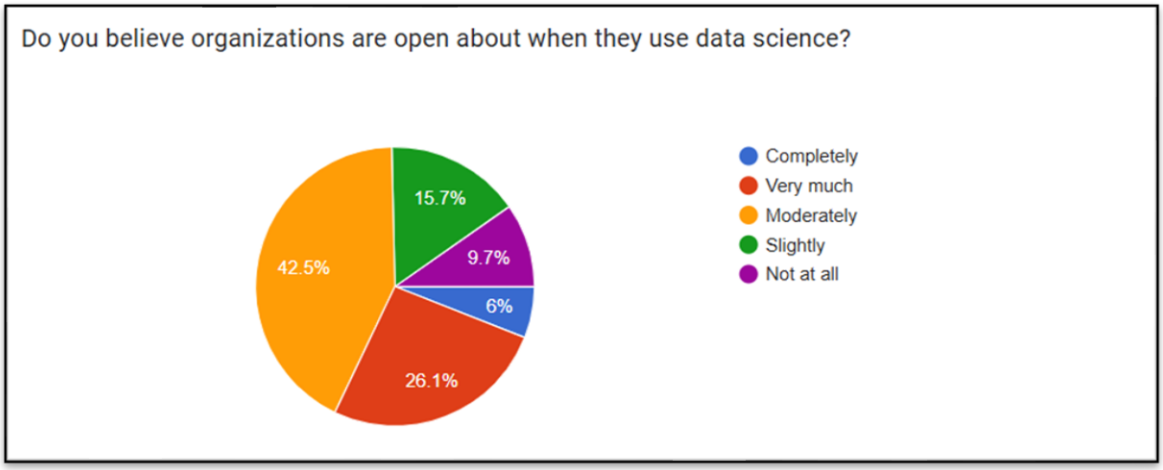
4. Do you believe organisations are open about when they use data science?

Table 1.4

Particulars	Frequency	Percentage
Completely	08	6%
Very Much	35	26.1%
Moderately	57	42.5%
Slightly	21	15.7%
Not at all	13	9.7%
Total	**134**	**100%**

Source: Compiled from Primary Data

Figure 1.4



Source: Compiled from Primary Data

From the above Pie Chart, it can be interpreted that most respondents (42.5%) moderately believe that organisations are open about their usage of data science, whereas 26.1% very much believe the same. It can be observed that 15.7% slightly believe so, followed by 9.7% who do not at all believe in the openness. Lastly, 6%, the lowest responses are for completely believing in the same.

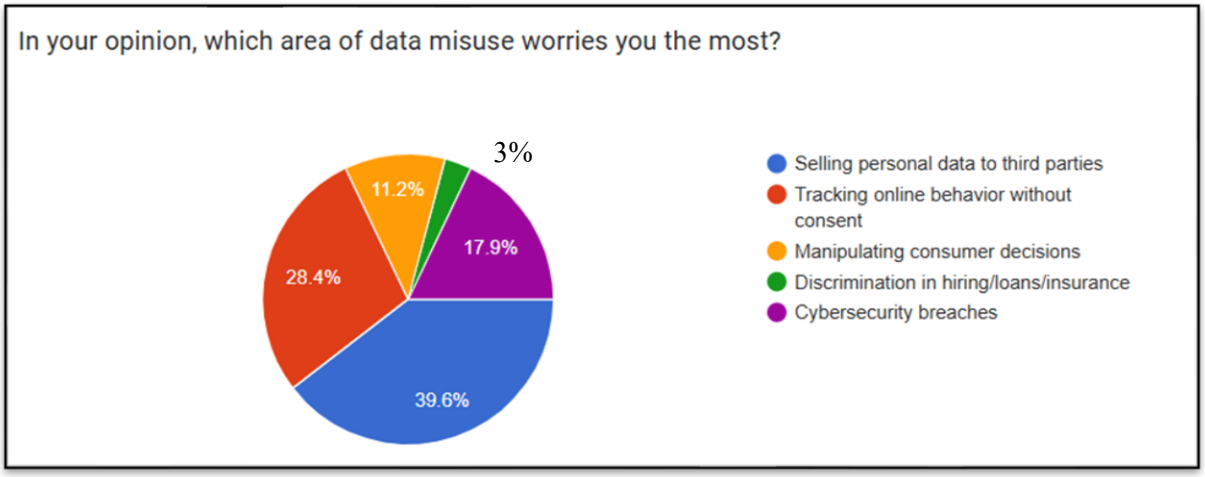
5. In your opinion, which area of data misuse worries you the most?

Table 1.5

Particulars	Frequency	Percentage
Selling personal data to third parties	53	39.6%
Tracking online behaviour without consent	38	28.4%
Manipulating consumer decisions	15	11.2%
Discrimination in hiring/loans/insurance	04	3%
Cybersecurity breaches	24	17.9%
Total	**134**	**100%**

Source: Compiled from Primary Data

Figure 1.5



Source: Compiled from Primary Data

From the above Pie Chart, it can be interpreted that most respondents (39.6%) think that selling personal data to third parties is the area of data misuse that worries them the most, followed by tracking online behaviour without consent (28.4%).

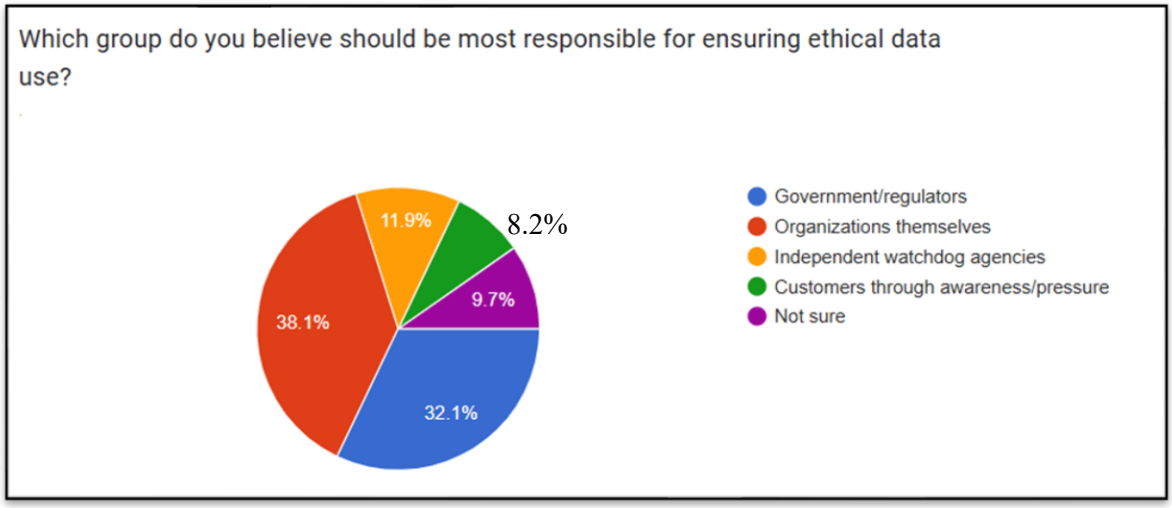
6. Which group do you believe should be most responsible for ensuring ethical data use?

Table 1.6

Particulars	Frequency	Percentage
Government/Regulators	43	32.1%
Organisations themselves	51	38.1%
Independent watchdog agencies	16	11.9%
Customers through awareness/pressure	11	8.2%
Not sure	13	9.7%
Total	**134**	**100%**

Source: Compiled from Primary Data

Figure 1.6



Source: Compiled from Primary Data

From the above Pie Chart, it can be interpreted that most respondents (38.1%) believe that organisations themselves can be considered most responsible for ensuring ethical data use, followed by 32.1% considering Government/regulators for the same.

Significance of the Study

- This study helps organisations understand the public's awareness and concerns, enabling them to adopt more transparent and ethical data science practices.
- It provides insights for policymakers and regulatory bodies to develop stronger frameworks that protect user privacy and promote responsible data use.
- The findings support educational initiatives aimed at improving public understanding of data science, thereby strengthening trust and acceptance of data-driven technologies.

Scope for Further Studies

The study leaves a vast scope for more investigation related to the evolving public understanding of data science and its ethical implications. Future research can explore additional factors such as digital literacy, trust levels, or experiences with data misuse to gain deeper insights. Continued studies can also examine how public perceptions change as data science practices and regulations advance.

Limitations of the Study

- The study relies on self-reported data, which may include bias in respondents' understanding or honesty.
- The sample was collected through convenience sampling, limiting the generalizability of the findings to a wider population.
- The study is geographically restricted to Mumbai, which may not represent perceptions in other cities or regions.

5. FINDINGS OF THE STUDY

- Most respondents fall under the age group of 18 – 27.
- Both genders as respondents can be considered at par based on responses.
- The highest level of education is observed to be post-graduation, followed closely by undergraduates.
- The highest number of respondents are either working professionals/students.
- Most respondents learnt about data science through academic settings, closely followed by social media.
- When asked about the awareness regarding applications of data science, Customer Service has received the highest responses, closely followed by Target Advertising and Predictive Analysis in Business.
- Respondents often come across information about data science in the media.
- When asked about their understanding of how organisations collect and use customer data, most respondents have a good and moderate understanding.

- Most respondents are somewhat aware of data privacy laws or regulations.
- Most respondents moderately believe that organisations are open about their usage of data science.
- When asked about if rganisations should ask for customer consent before using their personal data, most respondents agree.
- Most respondents are extremely concerned about the misuse of personal data by organisations.
- Most respondents think that selling personal data to third parties is the area of data misuse that worries them the most, followed by tracking online behaviour without consent.
- When questioned about how necessary do you think stricter regulations are for ensuring ethical use of data science, most of them agreed that it is very necessary.
- Most respondents believe that organisations often prioritise profit over ethics in their use of data science.
- Organisations are being moderately trusted by respondents to handle their data responsibly and ethically.
- Most respondents believe that organisations themselves can be considered most responsible for ensuring ethical data use, followed by the Government/regulators.

Suggestions

- Organisations should enhance transparency by clearly communicating how customer data is collected, used, and protected.
- Data literacy programs, workshops, or awareness initiatives should be introduced to help the public better understand data science and privacy rights.
- Stricter regulatory guidelines and internal ethical policies must be adopted to prevent data misuse and build greater public trust.

6. CONCLUSION

The study provides valuable insights into public awareness and ethical concerns related to the use of data science in organisations. The majority of respondents, primarily young adults and educated individuals, demonstrate a fair understanding of how data is collected and used, indicating growing awareness driven by academic exposure and digital media. Although respondents are knowledgeable about common applications of data science, they express strong concerns about data misuse, particularly regarding the selling of personal information and unauthorised tracking. While participants moderately trust organisations, they also believe that companies frequently prioritise profit over ethical considerations. The findings highlight a clear expectation for greater transparency, mandatory consent, and stricter regulatory oversight. Respondents strongly feel that organisations themselves should carry the main responsibility for ensuring ethical data practices. Overall, the study emphasises the need for stronger ethical frameworks, public education, and responsible data governance to build trust and safeguard user rights.

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