Evaluation of the Data Valuation Model Presented by Fleckenstein, Obaidi and Tryfona (2023)

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Introduction

In an increasingly digital economy, the valuation of data has become a critical challenge for both public and private sectors. Fleckenstein, Obaidi and Tryfona (2023) offer a comprehensive review of existing data valuation methods and introduce a dimensional data valuation model aimed at standardising and contextualising the practice. This paper evaluates the proposed model's strengths and weaknesses within the broader scope of data science, economics, and public policy.

Overview of the Valuation Framework

The authors categorise existing data valuation approaches into three principal models: market-based, economic, and dimensional. The market-based model evaluates data as a tradable commodity, focusing on income and transactional costs. The economic model assesses data in terms of public good and macroeconomic benefits. The dimensional model, which is the focal point of the paper, evaluates data based on inherent and contextual characteristics – such as quality, completeness, relevance, utility, and ownership.

Fleckenstein, Obaidi and Tryfona argue that no single model is universally applicable. Instead, the dimensional model provides a more adaptable framework, especially useful when comparing or integrating datasets within an organisation. It does not attempt to assign a direct monetary value but rather offers a scoring mechanism that reflects relative utility and suitability for specific use cases.

Advantages of the Data Valuation Model

1. Contextual Flexibility

One of the principal advantages of the dimensional model is its adaptability. Unlike the market-based and economic models, which rely heavily on external market forces or macroeconomic indicators, the dimensional model allows organisations to tailor valuation criteria based on operational requirements, stakeholder needs, and sector-specific constraints. This flexibility makes the model especially useful in academic institutions, healthcare systems, and governmental agencies, where data value may be subjective or policy-driven.

2. Multi-Stakeholder Relevance

The authors incorporate stakeholder variance in their model by acknowledging that different organisations weigh dimensions differently. For example, a hospital may prioritise data accuracy and privacy, whereas a logistics company may emphasise timeliness and integration potential. This inclusion of stakeholder-specific priorities enhances the model's

practical applicability and acknowledges the heterogeneous nature of data consumers (Hafner, Mira da Silva and Proper, 2025).

3. Systematic Comparison of Data Assets

The model is particularly effective when comparing datasets, either for selection or integration. Its dimensional scoring system provides a transparent and systematic method for evaluating data quality, volume, timeliness, and other features. This is especially beneficial in data governance and enterprise architecture planning, where choosing the most appropriate dataset can have significant operational implications.

4. Encouragement of Data Stewardship

By embedding metrics such as data maturity, cost of acquisition, and stewardship quality into the valuation process, the model encourages better data management practices. It prompts organisations to assess not only the usability of data but also the processes and policies that support its lifecycle (Mohan et al., 2025).

5. Ethical and Legal Considerations

The inclusion of dimensions such as ownership and privacy aligns the model with contemporary legal frameworks like the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA). This sensitivity to ethical and legal dimensions strengthens the model's robustness in jurisdictions where data sovereignty and personal rights are increasingly emphasised.

Disadvantages of the Data Valuation Model

1. Lack of Standardisation

Despite its strengths, the model suffers from the same problem it attempts to solve: the absence of standardisation. Although the authors provide a survey-based method for scoring, the model relies heavily on subjective interpretation of dimensions. What constitutes "high quality" or "adequate timeliness" can vary significantly between and within organisations. This lack of standardisation undermines reproducibility and comparability across contexts (Bendechache et al. 2023).

2. No Direct Monetary Valuation

A major criticism lies in the model's inability to translate scores into monetary terms. While relative valuation is useful, many corporate and governmental decisions require explicit financial metrics. This limits the model's utility in cost-benefit analyses, investment appraisals, and financial reporting. In markets where data is commoditised, such as advertising technology, the model may lack practical relevance.

3. Resource Intensive

Implementing the dimensional model demands considerable time, expertise, and organisational buy-in. The survey alone includes 30 questions, which may deter small or resource-constrained entities. Moreover, the scoring system may require customisation and

alignment with internal data policies, which could be technically complex or administratively burdensome.

4. Challenges in Weighting Dimensions

The model allows for differential weighting of dimensions based on stakeholder priorities, but it does not provide a robust framework for determining these weights. This opens the door to bias and inconsistency. For example, overemphasising certain dimensions due to organisational culture or managerial preferences could skew results and diminish the model's objectivity.

5. Limited Empirical Validation

While the authors build on previous literature and offer real-world examples, empirical evidence validating the model's efficacy remains limited. The two use cases, dataset comparison and integration, are well-chosen but not sufficient to demonstrate broad applicability. Further field testing across industries and geographies is needed to validate the model's scalability and reliability (Li et al., 2025).

Discussion

The dimensional data valuation model presented by the authors represents a significant step towards operationalising data value beyond purely financial terms. It aligns well with data governance principles, supports multi-stakeholder environments, and reinforces ethical considerations. However, its practical implementation is constrained by subjectivity, a lack of standardisation, and the absence of financial quantification.

One potential path forward could be the integration of the dimensional model with market-based methods. For instance, high-scoring datasets within the dimensional model could be assigned an estimated monetary value based on market proxies, such as licensing costs or third-party valuations. This hybrid approach could retain contextual sensitivity while meeting financial reporting needs.

Moreover, greater automation and tool support – such as embedding the model within data catalogues or using AI for score calibration – could mitigate implementation barriers. If accompanied by industry-specific guidelines and regulatory alignment, the model may mature into a widely accepted framework for data valuation.

Conclusion

Fleckenstein, Obaidi and Tryfona's contribution to the discourse on data valuation is both timely and relevant. The dimensional model offers a nuanced, stakeholder-aware framework that advances the discussion beyond simplistic cost-based calculations. Nevertheless, its adoption will depend on overcoming key limitations related to standardisation, resource intensity, and lack of financial translation. As the value of data continues to rise, especially in AI and analytics-driven environments, this model provides a foundational structure upon which more integrated and practical valuation tools may be built.

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