

EXTENDED DATA MONETIZATION FRAMEWORK FOR OPTIMAL STRATEGY SELECTION

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1 INTRODUCTION

In the contemporary digital economy, data has emerged as a crucial asset, surpassing its traditional role as a byproduct of business operations [1]. Like oil or gold, data can be collected, refined, processed, and traded to generate significant economic value. However, harnessing this potential requires not only technical infrastructure and analytical capabilities but also a well-defined strategic framework for monetization.. The authors propose an enhancement of the existing data monetization frameworks by incorporating external environmental attributes, offering a more comprehensive model to support organizations in choosing the optimal monetization strategy.

2 MATERIAL AND METHODS

The paper begins by contextualizing the value of data in modern business environments. With the rapid advancement of technologies and increasing digitization, organizations are generating unprecedented amounts of data. Yet, many businesses still struggle to extract meaningful value from it. Some enterprises have entirely reoriented their operations to prioritize data monetization, while others lag behind, failing to capitalize on existing data assets. The central question becomes: how can organizations [2] most effectively turn their data into revenue-generating assets?

To answer this, the authors draw upon the widely referenced definition by Gartner, which describes data monetization as “the process of using data to generate quantifiable [3] economic benefits.” This can manifest through internal (indirect) methods – such as performance optimization, decision support [7], or operational efficiencies – or through external (direct) means like selling data, exchanging it with partners, or embedding insights into products and services.

The growing importance of data monetization [4] is reinforced by several industry studies [5]. For instance, research from Gartner and McKinsey has demonstrated that high-performing companies increasingly rely on data to create value, with some reporting that up to 20% of their annual revenue stems from data-based services. These findings suggest that strategic data use is becoming a defining factor of competitiveness in numerous industries. Still, despite the potential, many companies remain unprepared to embrace the full scope of data monetization due to structural, organizational, or technological barriers. Include material and methods used in your paper and how you have achieved your goal.

3 RESULTS

The paper then reviews the existing academic and practical foundations of data monetization. It discusses early examples, such as Owens & Minor's WISDOM platform, which provided data analytics capabilities to customers and suppliers. Over time, these practical solutions gave rise to theoretical models, such as the "data value chain," encompassing data generation, collection, analysis, and exchange. More recently, researchers have started treating data monetization as the next step beyond traditional Business Intelligence [6] supported by technologies like big data analytics, cloud computing, and artificial intelligence.

Two key approaches to conceptualizing data monetization have emerged: one focuses on mapping out the process (step-by-step), and the other categorizes the relevant attributes that influence monetization outcomes. Among the most comprehensive frameworks is that of Wixom, Beath, and Owens, which the authors of this paper use as a starting point for their extended model. The Wixom framework includes three subcomponents:

1. **Capabilities:** These refer to the internal competencies of an organization – data science, data platforms, management, customer understanding, and ethical data use – evaluated across three maturity levels (foundational, intermediate, advanced).
2. **Initiatives:** The strategic paths an organization can take to monetize data, such as "Improving" internal processes, "Wrapping" data into value-added services, or "Selling" it directly.
3. **Connections:** The nature of collaboration between data experts and domain professionals, including multidisciplinary teams and embedded data experts.

While comprehensive, this framework focuses primarily on internal capabilities. The authors argue that external environmental factors are equally important in guiding strategic decisions. They propose an extension to the original model, adding a set of environmental attributes categorized into three groups: generic business factors, industry-specific factors, and technical attributes.

Generic business factors include aspects such as market competitiveness and available resources. In highly competitive markets, data sharing might be avoided due to the risk of empowering rivals, while monopolistic or niche sectors might pursue aggressive data monetization. Similarly, companies with ample resources are more likely to invest in complex strategies, whereas smaller firms may face constraints.

Industry-specific factors encompass attributes such as industry type, difficulty of data collection, difficulty of value creation and realization, and data uniqueness. For example, the healthcare and pharmaceutical sectors are heavily regulated, requiring anonymization and informed consent before any data can be sold or shared. The effort required to collect, process, and derive insights from data can also vary significantly depending on the domain.

Technical attributes play a major role in shaping strategy feasibility. These include timeliness, volume, quality, complexity, and processing level of the data. For instance, real-time data for financial trading demands highly responsive systems, while historical datasets for long-term product development require thorough processing and validation. Low-quality or fragmented data may undermine monetization efforts unless substantial investments are made in data cleaning and enrichment.

The paper illustrates the application of the extended framework using a real-world case study: the collaboration between genetic testing firm 23andMe and pharmaceutical giant GlaxoSmithKline (GSK). While framed as a partnership, this agreement effectively represented a large-scale data monetization event, with 23andMe granting GSK access to its genetic database in exchange for substantial compensation. The case is analyzed across all environmental and technical dimensions.

In terms of competitiveness, 23andMe operated in a moderately competitive landscape and had the freedom to share data without threatening its core business. From a resource standpoint, the company had sufficient funding and infrastructure to support such an initiative. The industry context – pharmaceuticals – was highly regulated, but the company adhered

to ethical and legal standards such as HIPAA, ensuring data was de-identified and consent was obtained. Technically, the dataset was massive (several petabytes), complex, and costly to manage, yet it had high value due to its uniqueness and long-standing market presence.

This case underscores the importance of evaluating not just internal readiness, but also the broader external context. By modeling each attribute as a discrete value and applying mathematical weightings, organizations can assess the success probability of different strategies and choose the most promising path forward. For example, a strategy score can be calculated as a function of environmental (E), capability (CA), initiative (I), and connection (CO) vectors, allowing optimization.

4 CONCLUSIONS

In conclusion, the extended framework presented in this paper offers a significant advancement in strategic planning for data monetization. By incorporating external and technical factors alongside organizational capabilities, the model enables a more nuanced and actionable understanding of how to extract value from data. It is particularly relevant in sectors where regulatory, infrastructural, or competitive constraints significantly shape business models.

The framework supports companies of all sizes and levels of maturity in assessing their readiness and selecting strategies that align with their environment. As data continues to drive innovation and economic growth, such models will be essential tools in shaping sustainable and profitable data-driven enterprises.

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