CHAPTER 5

Assessment of Validity and Reliability of Instruments for Modified Data Architecture Metamodel of Open Government Data: A Comprehensive Content Validity Index Analysis

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5.1 INTRODUCTION

The evolution of metamodel development has sparked significant interest in academic and organisational circles alike to improve the efficiency and usefulness of data architectural frameworks. This pursuit of enhanced metamodels is especially relevant in the realm of Open Government Data (OGD), where the potential impact of a modified data architecture metamodel is amplified significantly. Incorporating OGD traits into a metamodel promises to harness these attributes to power prudent decision-making and improve public service delivery (Arzimi et al., 2021).

The justification for pursuing a modified data architecture metamodel arises as a prominent issue of discussion within the

complicated fabric of metamodel development. These metamodels serve as conceptual blueprints, providing detailed insights into the underlying structure and interrelationships that drive data systems (Khurshid et al., 2020; Müller et al., 2021; Mustapaet al., 2020; Osorio-Sanabria et al., 2020). This is especially important in the context of OGD. This specialised metamodel aims to combine the fundamental concepts of data architecture with the distinguishing features of OGD. By synergistically combining these features, the metamodel aims to build a framework that is not only aligned with broad data architecture goals but also particularly customised to harness the revolutionary potential of OGD sources.

OGD is a cornerstone of the movement for greater transparency, accountability, and participatory governance. OGD projects promote improved citizen engagement, informed decision-making, and the development of data-driven innovations by making government-generated data available to the public (Müller et al., 2021; Osorio-Sanabria et al., 2020; Ruijer et al., 2020). As a result, the redesigned data architecture metamodel geared towards OGD integration demands a keen grasp of the distinct characteristics that distinguish these datasets. Because of this understanding, the metamodel can accommodate the numerous features of OGD and provide a structured framework that maximises the value of OGD inside data architecture plans (Ruijer & Meijer, 2020).

Creating a modified data architecture metamodel entails the integration of two critical domains: data architecture and OGD. The basis for structuring and organising data assets for effective storage, retrieval, and analysis is laid by data architecture (Warraich et al., 2019; Xiao et al., 2020; Yoon & Copeland, 2020). OGD supplements this by providing information to people, researchers, and developers, opening up new avenues for

innovation. The convergence of these sectors provides an opportunity to create a metamodel that bridges the gap between data architecture principles and the vast potential of OGD sources.

This study emphasises the critical features of validity and reliability assessment, utilising the well-known Content Validity Index (CVI) as its guiding analytical framework (Polit et al., 2007). The CVI emerges as an appealing analytical paradigm in this endeavour. The CVI technique is aimed towards rigorous review, with procedures such as instrument selection, expert panel creation, and content validity assessment. Each instrument item is evaluated by experts based on its relevance, clarity, and comprehensiveness, providing a quantitative estimate of the content's validity. This methodical methodology ensures a careful review of the metamodel's instruments, which increases the credibility and reliability of the produced metamodel.

Analysing instruments inside the modified data architecture metamodel is a holistic endeavour combining data architecture, OGD, and analytical rigour. This study aims to illuminate the complicated interplay between these characteristics and contribute to the growing landscape of metamodel development by using the CVI as the foundation for evaluation. The chapters are organised by firstly presenting related work in Section 5.2. Section 5.3 describes the CVI methods, while Section 5.4 explains the findings and analysis of this study. Finally, Section 5.5 of this chapter provides the conclusion and recommendation drawn on the study.

5.2 LITERATURE REVIEW

The literature review illuminates the multifaceted landscape of integrated metamodel development, which stands at the