



# Usability and Accessibility of Open Government Data Portals of Countries Worldwide: An Application of TOPSIS and Entropy Weight Method


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## ABSTRACT

The open government data (OGD) portal is an initiative by governments worldwide to promote transparency and accountability and enhance citizen participation and public value creation. The ability of these portals to deliver the expected benefits depends on their usability and accessibility, besides their content. This study conducts an integrated assessment and comparison of the OGD portals of 75 countries based on their usability and accessibility. The usability of the portals is measured through several technical indicators, classified into performance metrics, browser timings, and optimisation using automated diagnostic tools. Accessibility is evaluated through portals' conformance to web content accessibility guidelines (WCAG). The 'technique for order of preference by similarity to ideal solution' (TOPSIS) and entropy weight method are used to rank the portals. The findings of this study could be helpful for policymakers and internal stakeholders of OGD initiatives to identify the focus area and make decisions on resource allocation.

## KEYWORDS

E-Government, Government Information, OGD, Open Data, Web Accessibility, Website Usability

## INTRODUCTION

Open data is publicly available data that can be freely accessed, modified, and shared by anyone for any purpose. Governments endeavour to transform their public sector through electronic government

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(e-government) for effective governance, transparency, accountability and citizen participation in democratic processes and policymaking. Open Government Data (OGD) is a part of e-government initiatives to make government data available to all, mainly in a machine-readable format, intending to promote transparency, accountability and value creation. An OGD portal is a web-based platform that is built specifically for the purpose of sharing open government data.

According to Arzberger et al. (2004, p. 138), “publicly funded research data should be openly available to the maximum extent possible.” Implementation of open data increases the potential to exploit the advantages of new developments and reinforce the existing structure (Arribas-Bel et al., 2021; Kraemer & King, 2006; E. Ruijter et al., 2017). The increased focus on open data by governments generates a new prospect for innovation that integrates diverse data without predetermined limitations to create new insights, and such progress creates an avenue for technical infrastructure, data quality and external pressure (Dwivedi et al., 2017). At present, open data initiatives are increasingly developed, but they are barely able to guide the publication and use of open data (Hossain et al., 2016). Still, the motivation for open government relies on the hope of promoting transparency (Wiencierz & Lünich, 2022), enhancing citizen participation in government (Hivon & Titah, 2017), ensuring the accountability of public officials (Attard et al., 2015; Lourenço et al., 2017), improving decision-making (Luthfi & Janssen, 2019), and adding social or economic value (Altayar, 2018; Cabitza et al., 2020; Nikiforova, 2021). As OGD can eliminate the traditional gap between the citizens and public organisations, it discloses the willingness of the government organisations to weigh the constructive and opposing views and give up governmental control to transform the public sector (M. Janssen et al., 2012). With the open data, the government tries to get aligned towards achieving the stage of smart government (Bertot & Choi, 2013). The availability of data through OGD may influence industries to develop innovative tools and techniques that could benefit the private sector, the public sector, and the economy (Graves, 2011, van Dijk et al., 2013). Thus, the benefits of OGD are vast in several dimensions (Hossain et al., 2016) such as political and social (M. Janssen et al., 2012; Meng et al., 2019), economic (Alderete, 2020; Nikiforova, 2021), innovative (Zuiderwijk et al., 2014) and operational and technical (Albano & Reinhard, 2014; M. Janssen et al., 2012; Parycek et al., 2014).

In addition to improving administrative efficiency, providing public access to information, facilitating citizen participation (Matheus & Janssen, 2020; E. Ruijter et al., 2020), and generating economic and social value, OGD has a wide range of potential benefits, including intangible and difficult-to-quantify benefits. However, due to their limited use, OGD initiatives may not be able to achieve their full potential (Martin, 2014; E. H. J. M. Ruijter & Martinius, 2017). Over the past few years, research into OGD implementation and usage has attained increased importance (Kassen, 2018). The literature gives critical discussions on the implementation and delivery of OGD. One of those is concerned with the quality of open data (Vetrò et al., 2016). Another concern is that most of the OGD portals cater to the technical users’ needs only and fail to consider the non-technical users, which leads to less user-friendliness (Welle Donker & van Loenen, 2017; Zuiderwijk et al., 2012) and low-user engagement and interactivity (Ojo et al., 2016; Osagie et al., 2017). The literature has various frameworks to evaluate the OGD portals (Attard et al., 2015), for example, Open Data Monitor (<https://opendatamonitor.eu/>), Open Data Barometer (<https://opendatabarometer.org/>), and Open Data Index (<https://index.okfn.org/>). Most of those do not focus specifically on the usability and accessibility of portals but take more holistic approaches to explore the components, such as the legal environment and quantity of data. However, the usability and accessibility of OGD portals are equitably essential for the users (Nikiforova & McBride, 2021).

Due to the necessity of ensuring that the OGD portals are usable and accessible, as well as the lack of an objective assessment framework, this study poses two major research questions. How can the usability of the OGD portals be assessed? What are the structural deficiencies in the OGD portals considering their accessibility? This study tries to answer these two questions by conducting a user-centred integrated assessment and comparing the OGD portals of various countries based on their usability and accessibility.

This study aims to design an integrated assessment framework for OGD portals that focuses on their usability and accessibility. Based on performance and optimisation metrics, the usability of OGD

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