International Journal of E-Adoption
Volume 16 • Issue 1

Infrastructuring of Digital Platforms:
A Configurational Analysis

Prashant Kumar Choudhary, Management Development Institute, India*
Sangeeta Shah Bhardwaj, Management Development Institute, India
https://orcid.org/0000-0001-7955-4660
Anjali Kaushik, Management Development Institute, India

ABSTRACT

Digital platforms expand into multiple adjoining business domains for revenue maximization purposes. Governments also use digital platforms for public welfare in multiple interrelated sectors. Such horizontal growth transforms digital platforms as digital infrastructure which consequently increases its e-adoption. This research determines combinations of platform attributes which drive the infrastructuring of digital platforms. Results of this research will enable platform mangers to, a priori, embed such attributes in platform architecture to achieve platform objectives. Fuzzy-set qualitative comparative analysis (fsQCA) research methodology followed by a descriptive cross-analysis has been used in this research. Five key result sets emerge, which, inter alia, indicate that criticality, ubiquity, and generativity are key attributes driving the infrastructuring of digital platforms, unlike earlier research results showing modularity and heterogeneity as key attributes. fsQCA research method with a set theory approach is more suitable for such configurational analysis compared to multivariate techniques.

KEYWORDS

Digital Infrastructure, Digital Platform, E-Adoption, Fuzzy State Qualitative Comparative Analysis

INTRODUCTION

During a widespread outage of some of the popular social media digital platforms like Facebook, Instagram, and WhatsApp on October 4, 2021, from 1600h GMT to 2200h GMT[1], approximately 3.5 billion users worldwide were cut off from their social media-based global connectivity. The outage resulted in an estimated financial loss of $7 billion[2] over the six-hour period. This incident serves as a symbolic reflection of the criticality and dependency of society on such digital platforms.

Digital platforms like Facebook, Google, and Android are important information technology artifacts of modern times. These platforms are defined as software-based entities consisting of an extensible codebase, allowing developers to create complementary modules using interfaces and boundary resources provided by the platform owner (Tiwana, 2015). Digital platforms are also known as multisided entities, facilitating interactions between platform owners, sellers, and buyers. Most

DOI: 10.4018/IJEA.340036 *Corresponding Author

digital platform business firms are global leaders in their respective business domains[3] like Facebook in social media and Android in mobile operating systems.

Similarly, infrastructures are another crucial element of modern society. Infrastructure is defined as "a substructure or underlying foundation; the basic installations, which are critical for continuance and growth of a community, state, or a corporate entity" (Dawson, 2013, p. 4). Examples of widely known physical infrastructures include roads, rail, power plants, transportation systems. Digital infrastructures, in contrast, encompass computing and network resources that allow multiple stakeholders to fulfill their service and information content needs in digital format. These infrastructures are critical for the survival and functioning of societies or corporations. Examples include the internet, Global Positioning Systems (GPS), and smartphones (Constantinides et al., 2018).

In the recent past, several leading authors in Information Systems (IS) research area, have highlighted the phenomenon of popular digital platforms transforming into digital infrastructure (Constantinides et al., 2018; De Reuver et al., 2018; Plantin & De Seta, 2019). This phenomenon holds immense importance for both business and society. In the business domain, the transition of digital platforms into infrastructure has the potential to significantly boost the revenue of the respective business entities. Moreover, in the societal domain, digital infrastructures play a crucial role in sustaining the economic growth of nations in the contemporary global order (Zhou, 2022).

In addition, the infrastructuring of digital platforms leads to increased adoption of such artifacts in society by removing adoption barriers (Hanseth & Lyytinen, 2016). This research seeks to address fundamental questions regarding the factors and attributes that drive the infrastructuring of digital platforms in the business domain. There are three key research needs for such analysis.

First, leading digital platforms, driven by a revenue maximization strategy, often expand into adjoining business domains (Constantinides et al., 2018). For instance, companies like Facebook and Google have expanded into fields like advertising, digital publishing, marketing, analytics, and entertainment. Due to horizontal expansion into adjoining domains, these digital platforms have transformed as digital infrastructures of modern society (De Reuver et al., 2018).

Taking Google as an example, Plantin et al. (2018) argued that both Google maps in the Geographical Information System (GIS) domain and Google Search in the information retrieval domain have achieved extraordinary global reach. This is further supplemented by digital platform-based innovations which are built upon these systems, resulting in a further increase in their widespread usage. Thus, transformed digital platforms like Google Search and Google Maps, possess infrastructure characteristics and acquire significant societal value in these respective domains. These platforms are now critical to society and serve as the global benchmark in their respective fields. Understanding this infrastructuring phenomenon of digital platforms is the first research need .

Second research need arises from a necessity to ascertain the drivers causing infrastructuring of digital platforms. This is important as infrastructures have a critical role in nation-building, akin to traditional physical infrastructure like rail, road, and power grid systems (Greenstein, 2021). Understanding the drivers of infrastructuring in advance can empower designers and business managers, pursuing revenue maximization goals, to embed such features into digital platforms from the outset, facilitating their eventual transformation into digital infrastructures.

The evolution of digital platforms into infrastructure signifies their transformation into digital infrastructure as a public good (De Reuver et al., 2018). This shift has led to the emergence of discourse surrounding Digital Public Infrastructures (DPIs) in different countries, highlighting the infrastructuring of digital platforms in social sector applications.

DPIs are shared infrastructures that provide equitable access to all members of society, enabling layered innovation and decentralized work to fuel economic growth of society (Raghavan et al., 2019). A prior knowledge of the factors that shape digital platforms into infrastructures can aid the creation of DPIs and contribute to a nation's economic growth. Public policymakers can leverage this understanding to encourage platform architects to design digital platforms with attributes that facilitate the creation of DPIs.