Continuance of Government-Led COVID-19 Digital Health Applications: A Systematic Literature Review

Zuhal Hussein*

Faculty of Business and Management, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kota Bharu Campus, Malaysia

***Corresponding Author**

ABSTRACT

Government-led digital health applications were rapidly deployed worldwide during the COVID-19 pandemic to support contact tracing, vaccination management, public health surveillance, and risk communication. Although these applications achieved unprecedented adoption under crisis conditions, sustaining continued use beyond emergency mandates remains theoretically underexplored. Existing information systems continuance models were largely developed for voluntary, market-driven technologies and provide limited explanatory power for government-led digital health systems characterised by institutional authority, privacy sensitivity, and crisis governance.

This study conducts a systematic literature review (SLR) to advance theoretical understanding of continuance behaviour in government-led COVID-19 digital health applications. Following PRISMA guidelines, peer-reviewed studies published between 2020 and 2024 were retrieved from Scopus, Web of Science, IEEE Xplore, ScienceDirect, and Google Scholar. Evidence from national applications—including MySejahtera (Malaysia), TraceTogether (Singapore), SwissCovid (Switzerland), and the NHS COVID-19 App (United Kingdom)—was synthesised using a theory-driven analytical approach.

The review identifies three interdependent layers shaping continuance behaviour: system value mechanisms (perceived usefulness, system and information quality), institutional mechanisms (trust in government, privacy protection, governance transparency), and contextual constraint mechanisms (mandates, perceived health risk, and crisis salience). While perceived usefulness and satisfaction remain necessary conditions for continued use, they are insufficient in isolation. Institutional trust and governance legitimacy emerge as central moderators that reshape post-adoption behaviour in public digital health systems. This study extends continuance theory by proposing a multi-layer framework tailored to crisis-driven, government-led digital platforms and provides implications for sustaining digital public health infrastructures beyond emergency contexts.

Keywords: Digital health; COVID-19 applications; continuance behaviour; government-led systems; institutional trust; systematic literature review

INTRODUCTION

The COVID-19 pandemic catalysed an unprecedented global deployment of government-led digital health applications. National platforms such as MySejahtera in Malaysia, TraceTogether in Singapore, SwissCovid in Switzerland, and the NHS COVID-19 App in the United Kingdom were rapidly introduced to support contact tracing, vaccination certification, health status monitoring, and population-level surveillance. These applications became deeply embedded in daily life, often supported by regulatory mandates that conditioned access to workplaces, public venues, and cross-border travel.

Unlike conventional consumer technologies, government-led COVID-19 digital health applications were implemented under emergency conditions characterised by heightened perceived risk, institutional authority, and limited user choice. Prior research demonstrates that digital health technologies can substantially enhance pandemic preparedness and response when integrated into coordinated public health strategies. However, as

emergency conditions subside, governments increasingly face declining user engagement and uncertainty regarding the long-term sustainability of these platforms.

From a theoretical perspective, most post-adoption and continuance research in information systems relies on models such as the Technology Acceptance Model (TAM), the Expectation–Confirmation Model (ECM), and the DeLone and McLean Information Systems Success Model. These frameworks assume voluntary usage contexts and prioritise individual cognitive evaluations such as perceived usefulness, ease of use, and satisfaction. Evidence from COVID-19 digital health systems suggests that these assumptions are only partially valid, as continued usage decisions are strongly shaped by institutional trust, privacy governance, and mandate-driven contexts.

Accordingly, this study conducts a systematic literature review to synthesise and extend theoretical understanding of continuance behaviour in government-led COVID-19 digital health applications. Rather than focusing on a single national system, the review adopts a comparative and theory-driven perspective, positioning MySejahtera as an illustrative case within a broader international evidence base.

Background and Theoretical Foundations

Continuance behaviour has traditionally been explained using models grounded in voluntary technology use. The Expectation–Confirmation Model conceptualises continuance intention as a function of perceived usefulness, confirmation of expectations, and satisfaction. Similarly, TAM and its extensions emphasise perceived usefulness and ease of use as primary determinants of post-adoption behaviour. The DeLone and McLean IS Success Model further incorporates system quality, information quality, and service quality as antecedents of user satisfaction and continued use.

While these models have been widely validated, their applicability to government-led digital health systems remains limited. COVID-19 applications were often adopted under mandate-driven conditions, where voluntariness was reduced and compliance pressures were high. In such contexts, institutional trust, privacy protection, and governance legitimacy play a more prominent role in shaping user behaviour.

Empirical studies on COVID-19 contact tracing and health applications consistently demonstrate that trust in government and health authorities, transparency regarding data use, and perceived privacy safeguards significantly influence both adoption and continuance. As emergency conditions subside, the explanatory power of mandates diminishes, and sustained engagement increasingly depends on users' confidence in institutional governance and perceived long-term value.

Based on these insights, this review seeks to answer the following research questions:

RQ1: What mechanisms explain continuance behaviour in government-led COVID-19 digital health applications?

RQ2: How do institutional trust, privacy, and governance reshape traditional information systems continuance models?

RQ3: How do mandate-driven and crisis-context factors interact with perceived usefulness and satisfaction in shaping post-adoption behaviour?

METHODS

Review design

A systematic literature review was conducted following PRISMA guidelines to ensure methodological rigour and transparency.

Search strategy

Searches were conducted across Scopus, Web of Science, IEEE Xplore, ScienceDirect, and Google Scholar. Search strings combined terms related to COVID-19, digital health applications, government platforms, contact tracing, vaccination apps, and continuance or post-adoption behaviour. The review was limited to peer-reviewed studies published between 2020 and 2024 in English.

Study selection

After duplicate removal, titles and abstracts were screened for relevance. Full-text screening applied predefined inclusion and exclusion criteria, retaining studies that examined adoption, continuance, trust, privacy, or governance of government-led COVID-19 digital health systems.

Quality assessment

A quality assessment checklist comprising seven criteria was applied. Studies scoring below the threshold were excluded or interpreted with caution.

Data extraction and synthesis

Data extraction captured bibliographic information, study context, theoretical frameworks, methodologies, key constructs, and findings. A theory-driven synthesis approach was applied to integrate findings across heterogeneous contexts.

RESULTS

Characteristics of included studies

The final sample comprised empirical and conceptual studies examining national COVID-19 digital health applications across Asia, Europe, and North America. Survey-based quantitative studies were predominant, with a smaller number of qualitative and mixed-methods investigations.

Factors influencing continuance behaviour

Five dominant factors influencing continuance behaviour emerged: perceived usefulness, system quality, trust and privacy, user satisfaction, and contextual constraints. While perceived usefulness and system quality were consistently significant, trust and governance factors exhibited stronger effects in government-led platforms.

DISCUSSION

Interpretation of findings

The findings demonstrate that traditional continuance constructs remain relevant but insufficient in explaining sustained use of government-led COVID-19 applications. Functional value is necessary but does not guarantee continued engagement once mandates are lifted.

Theoretical implications

This review extends continuance theory by integrating institutional trust and governance legitimacy as central explanatory mechanisms. It also introduces a temporal dimension, highlighting the declining influence of mandate-driven compliance over time.

Practical implications

For policymakers and system designers, sustaining engagement requires investments in transparency, data governance, and trust-building mechanisms alongside technical performance.

Comparison with prior studies

The proposed framework aligns with and extends prior digital health and public-sector information systems research by explicitly accounting for crisis-driven usage contexts.

Limitations

This review is limited by the relatively small number of longitudinal post-pandemic studies and the predominance of self-reported measures. Future research should employ longitudinal designs and objective usage data.

CONCLUSIONS

This systematic literature review advances theoretical understanding of continuance behaviour in government-led COVID-19 digital health applications. By proposing a multi-layer continuance framework integrating system value, institutional trust, and contextual constraints, the study extends established post-adoption theories and informs the design of sustainable digital public health infrastructures beyond emergency contexts.

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