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# Overcoming Status Quo Bias: Nudging in a Government-Led Digital Transformation Initiative

*Short Paper*

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## Abstract

*While Singaporean citizens are keen on using e-payments in retail shops, they still prefer cash payments in hawker centers and coffee shops, i.e., traditional open-air complexes selling inexpensive cooked food. A government-led initiative seeks to tackle the situation, known as status quo bias. The key actors involved in this initiative are public agencies, the central bank, and a private Singaporean electronic payment service provider. Working with these partners, we investigate the process designed to nudge citizens to use e-payments for micropayments in hawker centers and coffee shops. We employ a design ethnography methodology and adapt an existing nudging framework. Early findings reveal contingency factors that shape the nudging approach. Through this study, we expect to contribute to the theoretical development of nudging theory to overcome status quo bias in government-led digital transformation initiatives.*

**Keywords:** digital transformation, status quo bias, design ethnography, nudging

## Introduction

*“In Singapore, we too have e-payments, but we have too many different schemes and systems that do not talk to one another. (...) And the result is, most of us still prefer cash and cheques – 6 in 10 transactions are cash and cheques. (...) We must simplify and integrate our systems. (...) So next time I am at a hawker center, I look forward to paying for my meal with PayNow. Then I will know it is fully working.”*

*Singaporean Prime Minister Lee Hsien Loong, August 2017*

During his National Day Rally in 2017, the Singaporean Prime Minister, Lee Hsien Loong, underlines the need to simplify e-payment solutions as part of the Smart Nation Initiative, which aims at transforming Singapore through digital innovations. The objective is to provide an open, accessible, and interoperable e-payment infrastructure, to facilitate simple, swift, seamless, and secure digital transactions, and to enhance the convenience and efficiency for citizens and businesses (Smart Nation and Digital Government Office 2019).

Following the speech, a government agency under the Ministry of Trade and Industry, Enterprise Singapore (ESG), led and coordinated a Call-For-Collaboration (CFC) for the provision of e-payment solutions for micropayments in food businesses, such as hawker centers and coffee shops. These places offer affordable, freshly cooked food for locals, where the cost of a dish averages S\$3.06 (US\$2.24) (Hao et al. 2018). Given the small value purchases, citizens and residents tended to use cash at these establishments. As such, the CFC deemed hawker centers and coffee shops as the last frontier for e-payment adoption in Singapore. ESG would collaborate with three other national agencies: National Environment Agency (NEA), the Housing & Development Board (HDB) and JTC Corporation (JTC), as they oversee hawker centers and coffee shops. Singapore's central bank, the Monetary Authority of Singapore (MAS) and the Info-communications Media Development Authority (IMDA) are also involved as the project impacts monetary and technological developments and policies.

The CFC launched in April 2018 invited private-sector players to submit proposals to provide a cost-effective, open and interoperable e-payment solution. In September 2018, the private e-payment service provider Network for Electronic Transfers (NETS) was appointed as the "master acquirer" to consolidate up to 20 e-payment solutions at hawker centers and coffee shops. In the same month, the MAS and IMDA launched the Singapore Quick Response Code (SGQR). SGQR is a single QR code that combines multiple e-payment solutions into one. Under a single QR label, all e-payment solutions accepted by a stall holder are listed. SGQR allows diners to scan the QR code using any of their preferred e-payment solutions. SGQR is the world's first unified payment QR code.

From a design perspective, the Singaporean Prime Minister's vision was achieved, and the CFC was a success. Yet, from a usage perspective, cash continued to be ubiquitous. Cash payment habits are strongly rooted and difficult to change (Chia 2017). The deeply ingrained behavioral patterns towards the status quo option is known as status quo bias (Samuelson and Zeckhauser 1988). Status quo bias and the preference for an incumbent technology can cause user resistance which is the "opposition of a user to change associated with a new IS implementation" (Kim and Kankanhalli 2009, p. 568). Since the status quo bias perspective is new to IS literature, its potential to hamper new IS use has not yet been fully examined (e.g. Kim and Kankanhalli 2009, Lee et al. 2017). One of the key success factors to this government-led digital transformation initiative will be to overcome citizens' status quo bias (Nam and Pardo 2011) to enable them to enjoy the convenience and efficiency of e-payments.

This study builds on the extant literature on status quo bias and seeks a strategy to overcome it. The study focuses on the post-implementation stage and the implementor's response to user resistance stemming from status quo bias in a nonwork setting. Thus, our research question is *How can a government-led digital transformation initiative overcome status quo bias?* We propose a process model to design interventions to overcome status quo bias. Overcoming status quo bias is important for two reasons. First, status quo bias can jeopardize the efforts by governments to digitally transform aspects of public life. It threatens to waste important state resources deployed for the development and implementation of a new IS and the government's credibility and perceived competence to conduct a nation-wide digital transformation. Second, status quo bias induces inertia and prevents people from switching to an IS that would improve their lives.

Complementing NETS' marketing campaigns to raise awareness on the use of e-payments, MAS has suggested "nudging" to overcome status quo bias. A nudge "alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives" (Thaler and Sunstein 2008, p. 6). Prior research on the implementor's response to status quo bias has overlooked nudging (e.g. Rivard and Lapointe 2012). We hypothesize that if the user resistance is due to an underlying status quo bias, diners would pay cash merely as a result of mindless choosing. Nudging might then help them to switch from cash to e-payments and increase the success probability of e-payments. Nudging might also alleviate suboptimal outcomes for certain subpopulations subject to a more deeply engrained status quo bias than other parts of the population.

We adopt a design ethnographic approach (Baskerville and Myers 2015). The method allows us to be actively immersed in a research setting where public and private stakeholders design interventions and introduce them into the social and cultural context of hawker centers and coffee shops. Our case is representative for government-led digital transformation initiatives in which the newly implemented IS is an alternative to the incumbent solution while the latter one continues to exist. Where the incumbent solution continues to be available, status quo bias is likely to threaten the success of the new technology. We expect our study to contribute to the extant literature on nudging theory, specifically on its effectiveness to overcome status quo bias. We also add to the nudging literature by providing insights from a case study that goes beyond the traditional experimental lab setting. While countries all over the globe engage in similar initiatives of launching universal QR codes to foster e-payments, the Singaporean context is unique. Its pioneering position will generate important learnings for the governments and monetary authorities of other countries. The South East Asian context in this study deviates from the dominant Western context in research on nudging (Hummel and Maedche 2019). To our knowledge, this study would be one of the first endeavor to adopt design ethnography, proposed by Baskerville and Myers (2015).

## Background

### *Status Quo Bias in IS*

The deeply ingrained behavioral pattern towards the incumbent technology stemming from status quo bias hampers the adoption of a new technology (Kim and Kankanhalli 2009, Polites and Karahanna 2012). The status quo bias manifests itself either as a habit meaning the “extent to which people tend to perform behaviors (use IS) automatically because of learning” (Limayem et al. 2007, p. 705) or as inertia meaning the “attachment to, and persistence of, existing behavioral patterns (some of which are habituated) even if there were better alternatives and incentives to change” (Polites and Karahanna 2012, p. 22). The status quo bias tends to be even stronger the more options are given in a choice set, where a system has been used for many years, and where the decision maker may not even recognize the potential for a choice (Lee and Joshi 2017, Samuelson and Zeckhauser 1988).

For a new technology to be adopted effectively, a critical mass of users is needed to use it continuously (Mokyr 1998). The achievement of a critical mass requires researchers to move from the individual to the institutional level of analysis (Limayem and Hirt 2003). The adoption of a new technology is often broached in public discourse, yet the tactics of persuasion remain largely undiscussed (Mokyr 1998). Hence, researchers, managers and policy makers need to contemplate how to overcome status quo bias by creating a habit-conducive environment (Limayem et al. 2007). We need to generate effective intervention tactics that enable managers and policy makers to disrupt citizens’ old habits to make space for the acquisition of new ones (Limayem et al. 2001). In social policies, nudging could be such an effective intervention tactic, as it exploits the status quo bias (Thaler and Sunstein 2008). The success of such intervention tactics, however, requires a close investigation of the social and cultural context as well as changes and patterns in the users’ environment over an extended period of time (Limayem et al. 2007).

### *Nudging*

A nudge “alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives” (Thaler and Sunstein 2008, p. 6). Nudge theory assumes that individuals are not entirely rational and therefore make decisions with suboptimal outcomes. Nudging underlies the policy of “libertarian paternalism” which preserves the freedom of choice, promotes well-being and prevents harm (Thaler and Sunstein 2008). The behavior-altering intervention is conducted by a responsible choice architect who controls the choices confronting the individual. For instance, the choice architect may opt to set the default option deemed optimal to the individuals’ well-being. We then expect individuals following the path of least resistance to choose the new default option. There are four different types of nudges (Van Deun et al. 2018): i) provision of information and feedback, ii) changes to the physical environment, iii) changes to the default policy, and iv) social norms and salience.

The research body on nudging is still young and largely relies on case studies, experiments, and conceptual work. The context is usually nestled within health and environmental policies, with most of interventions being tested in the U.K. and U.S. (Hummel and Maedche 2019). Most papers cover either the underlying psychological heuristics and biases, or analyze the design and implementation stage (Van Deun et al. 2018).

Using a design science approach, Mirsch et al. (2018) have proposed the Digital Nudge Design (DND) method consisting of the i) Context, ii) Ideation and Design, iii) Implementation, and iv) Evaluation stage, applying the methodology to understand an insurance company’s digital initiatives to promote healthy behaviors and increase customers’ loyalty. Research on nudges for the adoption of a new ubiquitous technology outside of the workplace is scarce. Most studies are experimental, and therefore provide an overly simplified image of the context analysis, design, and implementation phase. Case studies are largely based on retrospective accounts (e.g. Gregor and Lee-Archer 2016). In the following, we address these shortcomings in the extant literature by investigating in real-time a public-private sector collaboration, which aims at overcoming status quo bias through nudging.

## Method

We adopt a design ethnographic approach because it affords the researcher to be actively immersed and engaged in a setting where people are designing artefacts and introducing them into a social and cultural context (Baskerville and Myers 2015). In this study, the method allows to capture Singaporeans as social beings with articulated and recognized needs. It is these perceived needs which evoke a status quo bias towards cash payments (or against e-payments). The method allows us to get immersed in short interventions alongside the public and private stakeholders. Furthermore, the approach, when used, aims at increasing the likelihood of success of a new product or service (Baskerville and Myers 2015, Table 1).

Typically, design ethnography is reflective on how and why individuals create and implement artifacts within their physical environments and contexts. Therefore, our mode of theorizing is first descriptive and then prescriptive (Baskerville and Myers 2015). The unit of analysis is the project work taking place between public and private stakeholders. Three authors act as advisors and theorists-in-chief (“researchers”). Two authors and their team at MAS act as designers and nudgers-in-chief (“designers”).

Stage	Actions Taken and Toolkit Use
<b>Engaging Context and Moving In</b>	<ul style="list-style-type: none"> <li>Designers: pilot observations and interviews in situ</li> <li>Researchers: independent observations and interviews, advise designers on nudging literature</li> </ul>
<b>Data Gathering and Analyzing</b>	<ul style="list-style-type: none"> <li>Findings captured in photos, memos, and field notes</li> <li>Identification of patterns and insights in societal aspects</li> </ul>
<b>Frameworking</b>	<ul style="list-style-type: none"> <li>Researchers: incorporate designers’ attributes and the technical and social context of the design actions</li> <li>Designers: coordinate with other stakeholders to align nudge types with the initiative’s strategy</li> </ul>
<b>Generating Design Concepts</b>	<ul style="list-style-type: none"> <li>One coherent content design applied to the three nudge types</li> <li>Stakeholders: agreement that the nudges have to fulfil two purposes               <ol style="list-style-type: none"> <li>Appeal to the various ethnicities residing in Singapore</li> <li>Highlight that e-payments include card payments and QR codes</li> </ol> </li> </ul>
<b>Moving Along</b>	<ul style="list-style-type: none"> <li>All stakeholders involved in developing the prototypes</li> </ul>
<b>Prototyping and DE</b>	<ul style="list-style-type: none"> <li>Prototype presentation before the official launch</li> <li>Design expected to evolve in future iterations</li> </ul>
<b>Artefact</b>	<ul style="list-style-type: none"> <li>Artefacts become part of the government-led digital transformation initiative and a future source for data gathering and analysis</li> </ul>
<b>Moving out</b>	<ul style="list-style-type: none"> <li>After enough iterations and an evaluation of the artefacts: exit includes a write-up of the findings in reiteration with theory and explanation for future possibilities to apply the artefacts</li> </ul>


**Table 1. Design Ethnography Framework (adapted from Baskerville and Myers 2015)**

### **Access and Data Collection**

Singapore is a country undergoing a unique government-led digital transformation in the e-payment landscape. This context gives us the opportunity to examine the collaboration of private and public partners in the face of status quo bias. As part of a larger research project with the Behavioral Sciences Unit (BSU) of MAS and ESG, we have been given substantial access to the key stakeholders of the project. At this stage of the research project, we interact with the key stakeholders on a weekly basis. The data corpus for this study stems from three main sources (Table 2): 1) Interviews with key stakeholders, 2) field notes of formal

and informal meetings, and 3) archival data, such as press releases and newspaper articles. We were given permission to attend meetings between the key stakeholders and were copied into e-mail exchanges which included internal documents. The focus of the interviews and observations concerns the means and mode of collaboration among the stakeholders and the process of nudging.

We are currently collecting additional data as the project is progressing throughout 2019. Our objective is to identify patterns, changes, and events of the collaboration between public and private stakeholders (Langley 1999). First, we seek to identify patterns by tracking the events, activities, choices, and outcomes occurring over time. Particularly, we pay attention to the ordering and interactions between the different stakeholders. Through this, we hope to identify distinct phases and passage points that define the evolution of the collaboration. Second, we plan to consolidate common codes to identify theoretical concepts characteristic of the nudging taking place. Third, we will use our data to develop possible theoretical frameworks for the IS field in the context of digital usage policies. Given that the research collaboration was still ongoing at the time when this paper was written, we can analyze the collaborative mode only to date.

Data Type	Source	Scope	
<b>Interviews:</b> 10 interviews, on average: 1 hour	<ul style="list-style-type: none"> <li>Enterprise Singapore (ESG) project leaders</li> <li>Head of Payments and Platforms of a local bank</li> <li>Hawker stall holder</li> <li>Coffee shop operator</li> <li>Services consultant of e-payment service provider</li> <li>NEA</li> </ul>	<ul style="list-style-type: none"> <li>Position of key stakeholders</li> <li>Status quo of collaboration between the public agencies and the private partner</li> <li>Strategy and operations of food stalls</li> <li>Technology artifacts</li> </ul>	 <p>A field photo of a food stall in a hawker center and available e-payment solutions</p>
<b>Field notes:</b> 8 meetings, on average 1 hour 15 minutes	<ul style="list-style-type: none"> <li>Meetings between the team of researchers, MAS and ESG</li> <li>Observations of formal meetings between key stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Alignment of key stakeholders</li> <li>Launch campaign</li> <li>Resources and constraints</li> </ul>	
<b>Archival data:</b> 31 documents	<ul style="list-style-type: none"> <li>Media releases</li> <li>Informational material for food entrepreneurs</li> </ul>	<ul style="list-style-type: none"> <li>Retrospective account of collaboration</li> </ul>	

**Table 2. Data Collection**

## Case Description: Singaporean Hawker Centers & Coffee Shops

Hawker stalls and coffee shops sell a variety of affordable South East Asian cuisine and provide a unique combination of food, space, and community. They represent a microcosm of Singapore's multicultural society and foster social cohesion, diminish the cost of living, and contribute to a common national identity grounded in shared experiences and values. The origins of Hawker culture go back to the mid-1800s, when street-hawkers spread across the island. In the 1960s to 1980s, the government started licensing and resettling street-hawkers purposefully in centers with proper sanitation and amenities. Today, the hawker centers are owned by three government agencies, Housing Development Board (HDB), National Environment Agency (NEA) and JTC Corporation (JTC). More than 110 hawker centers are spread across the island with 13 more hawker centers to be developed by 2027. Coffee shops, or traditionally *kopitiam*s, are aggregates of different food stalls and are commonly found in the similar areas as hawker centers. Yet, coffee shops are centrally managed by private coffee shop operators. According to ESG, 40 % of dining occasions take place in the 12,000 food stalls in hawker centers, canteens, and coffee shops which therefore present a significant economic and social realm of the Singaporean society.

In recent years, hawker centers and coffee shops have undergone modernization in terms of furnishing and types of dishes to attract the younger generation of Singaporeans. Despite ongoing modernization, cash payments are still prevalent in hawker centers, where 9 out of 10 transactions are paid in cash (KPMG 2016). Reasons for the preference of cash payments are ingrained in the Hawker culture. Industry watchers indicate that hawkers who traditionally have poor bookkeeping fear tax authorities to scrutinize hawkers' earnings, building a barrier to merchant adoption (Lee 2018). On the consumer side, the preference for cash stems from a deeply rooted habit (Chia 2017, Polites and Karahanna 2012). Yet, the stakes are high: KPMG (2016) estimates potential annual savings of S\$ 150 million by fostering cashless payments at

hawker centers and in taxis. The introduction of e-payments solutions for micropayments in hawker centers and coffee shops required public and private actors to collaborate. While the public and private partners are fundamentally different and have divergent interests and roles in this endeavor (e.g. Kankanhalli and Kohli 2009), they work towards the shared goal of driving the usage of e-payment solutions (Table 3).

Stakeholders	Roles in the CFC	Interests	Shared Goal
Enterprise Singapore (ESG)	Leading and coordinating the project	Drive the transformation of the food services industry	Drive the usage of e-payment solutions in hawker centers
Behavioral Sciences Unit, Monetary Authority of Singapore (MAS-BSU)	Find ways to make diners to switch to e-payments	Reduce the use of cash	
Master acquirer Network for Electronic Transfers (NETS)	Make existing e-payment solutions interoperable	Maintain market share in the payment space	
Coffee shop operators & hawker stall holders	Promote the adoption of cashless payments	Improve efficiency and better serve diners	
National Environmental Agency (NEA) / Housing Development Board (HDB) / JTC Corporation (JTC)	Help the CFC to succeed by coordinating the efforts on the ground	Ensure that the needs of customers are met	

**Table 3 Stakeholders of the Initiative**

## Preliminary Findings and Discussion

We adapted the Digital Nudging Design (DND) framework by Mirsch et al. (2018). Given that our choice environment is the physical sphere of hawker centers and coffee shops, we adjust the DND framework accordingly to the offline-context. We also considered earlier frameworks by Datta and Mullainathan (2014), Gregor and Lee-Archer (2016), Ly et al. (2013), and Meske and Potthoff (2017). Yet, we found that the DND covers all components of earlier proposed frameworks and includes other relevant components. The framework considers nudging a collaboration between different business functions and takes into account the involvement of multiple stakeholders (Mirsch et al. 2018).

The selected framework consists of four main stages: Definition of the nudge context, nudge ideation and design, nudge implementation, and nudge evaluation. In the next section, we describe what we have gleaned from our data until to date in phase 1 and phase 2.

**Phase 1: Nudge Context.** The first phase defines the focus for the following process and was largely determined by the scope of the CFC. The sites, or channels, of nudging are hawker centers and coffee shops (sub-phase 1a). The stakeholders' shared goal is to drive the usage of e-payment solutions (sub-phase 1a). The analysis of user characteristics and their decision-making process was conducted through an ethnographic study in hawker centers and coffee shops by MAS-BSU (sub-phase 1b). The in-depth study revealed barriers on the technology side. For example, the heat of a nearby stove could significantly damage the payment terminal provided by NETS. Other identified barriers were classified into larger social factors, such as demographics and the socio-economic status, and situational factors. The latter concerns diners who indicated that they were skeptical about the benefits of the new technology and that they did not expect stallholders to accept e-payments, and therefore would not want to trouble stallholders. One stall holder was quoted saying "If customers ask for it, we will provide it." Hence, MAS-BSU decided to focus their nudges on diners. The key assumption being that as diners increasingly ask for e-payments, a tipping point would be achieved whereby stallholders' behavior will change in favor of diners' interest. Given this context, MAS-BSU decided to focus on the segment of diners who are already familiar with smartphones and who have already adopted e-payments in other contexts, such as retail shops (sub-phase 1c). The desired user behavior is the use of e-payment solutions instead of cash payments (sub-phase 1c). KPIs must show an increase of e-payment transactions (sub-phase 1c).

In the subsequent discussions, the government raised two concerns about the realization. First, they identified a potential conflict with NETS' marketing campaign which – when launched simultaneously to the nudges – would drive the e-payment use and distort the evaluation of the nudges. Second, MAS-BSU identified interdependencies between their nudging initiative and the NETS-team. To evaluate the nudges regarding the desired user behavior and KPIs, MAS-BSU requires the payment transaction data recorded

by NETS payment terminals. This requires a discussion on the necessary granularity of the data, as a lack of access to the payment transaction data would threaten the entire nudging project. These two concerns can be categorized into two dimensions: 1) conflicting actions of stakeholders, and 2) interdependencies with other stakeholders of the nudging environment. Once MAS-BSU and ESG were aware of these concerns, they involved the other two stakeholders, NETS and NEA, for discussions. The identified conflict and interdependencies between stakeholders had to be incorporated into the nudge ideation and design phase. The new stakeholders also provided additional insights which contributed to the next phase (Table 4).

**Phase 2: Nudge Ideation and Design.** The second phase requires a thorough understanding of the underlying heuristics and biases (Mirsch et al. 2018). Choice overload, the presence of too many choices for a decision, makes it difficult to decide (Ly et al. 2013) and induces a status quo bias (Samuelson and Zeckhauser 1988). While the consolidation of the e-payment market mitigated the choice overload, status quo bias continued to persist (sub-phase 2a). Based on the previous context analysis, subsequent brainstorming sessions, and input from stakeholders, the MAS-BSU team suggested three nudges along the diners' user experience journey in hawker centers and coffee shops (sub-phase 2b).

Nudge	Design	Idea
1	Human ambassadors to encourage diners to use e-payment, when the diner enters the hawker center or coffee shop	Hawkers and diners tend to be less well educated and less familiar with newer technologies. NETS previously employed human ambassadors to familiarize hawkers with the technology of e-payments and to provide ad-hoc technical support.
2	Table stickers on the tables, when the diner queues at the food stall	Table stickers are inspired by an earlier successful campaign at hawker centers which served to encourage diners to return their trays to dedicated tray return stations.
3	Sticker on the stall front, before the diner conducts the payment	Stickers on the stall front are meant to complement the QR code sticker which can be found at every participating food stall.

**Table 4. Nudges**

“How do we know whether a nudge works?” To answer this question, MAS-BSU decided to divide Singapore's hawker and coffee shop landscape into four major districts, the East, Center, North, and West. In each of these districts, each four hawker centers and coffee shops were chosen (sub-phase 2c). The underlying assumption is that diners' behavior across the four districts as well as hawker centers and coffee shops is different. One setting would serve as a control setting, in the remaining three settings the nudges would be implemented in the following combination: [#1 and #2], [#2 and #3], and [#1 and #3]. Thereby, the effectiveness of each individual nudge could be disentangled. Previous efforts by the Singaporean government to implement cashback and discount campaigns to foster the usage of e-payments among diners were deemed unsustainable. While a nudge should not provide a significant economic incentive to alter people's behavior, the campaign involves temporary promotions offered by some payment schemes under the unified QR code. The promotions are not visibly promoted in situ, but diners can learn about them on the initiative's website. Since the promotions are not visibly promoted and are not explicitly persuasive, we do not deem the promotions to be a major economic advantage or influence on the effectiveness of the nudges (Thaler and Sunstein 2008).

In the subsequent discussion, NETS raised two concerns regarding the prospective implementation of the nudges. First, the allocation of human ambassadors across 16 locations (in the four districts across two settings in each hawker centers and coffee shops) comes at significant costs. NETS therefore proposed to move ambassadors from one location to another and to use this nudge merely temporarily during the launch phase. Second, NETS had to balance between launching the solution at a stated time and testing out the nudges by then. Simultaneously, MAS-BSU had to align their timeline to control the nudging environment and to ensure valid results. A third concern emerged from the discussion with NEA which was initiated after the first phase: since the marketing campaign by NETS and the nudging by MAS-BSU involved the display of collaterals in public spaces, an approval by NEA and the payment of an unforeseen amount of money to town councils was required. Following, ESG engaged in discussions with HDB which oversees the hawker centers. The discussion was still ongoing, when this paper was written. These prospective concerns can be categorized into two dimensions: 1) resource constraints, 2) project timeline alignment.

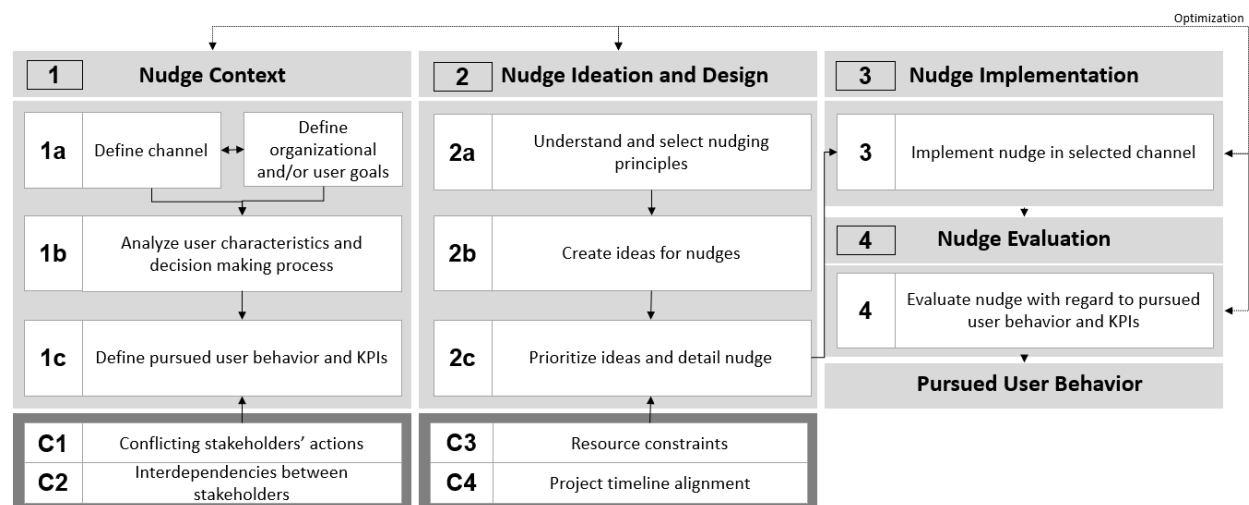


## Future Work

In line with Mirsch's et al. (2018) evaluation of the DND prototype, we find that the order of sub-phases can change according to the project context. In this project, the analysis of user characteristics and decision-making process was conducted first and subsequently informed the desired user behavior and KPIs selection. Based on our initial data and analytical findings, we suggest extending the proposed and adjusted DND framework by Mirsch et al. (2018) by the following contingency factors (see figure 1). In phase 1, Nudge Context, 1) Conflicting stakeholders' actions and 2) Interdependencies between stakeholders. In phase 2, Nudge Ideation and Design, 3) Resource constraints and 4) Project timeline alignment.

Our ongoing study adapts the DND framework proposed by Mirsch et al. (2018) to investigate the question *How can a government-led digital transformation initiative overcome status quo bias?* We have identified nudging theory and design ethnography method to be complementary, as both aim at increasing the success probability of a new product given its positive impact on society. Based on a natural interventional setting, we propose to include contingency factors of the public-private collaboration, such as resource constraints and interdependencies (Wang et al. 2017). We expect to evaluate the usefulness of the DND framework for an offline context as one of our contributions to nudging theory.

Moving forward, we will continue the real-time design ethnography towards phase 3 Nudge Implementation and phase 4 Nudge Evaluation. We hope that this approach will allow us to enhance the existing framework by adjusting the dimensions that emerge from this public-private collaboration. Simultaneously, we will reiterate with the extant literature on public-private partnership governance. We seek to validate our findings in the thick description of the social and cultural context of the interventional field study (Baskerville and Myers 2015). We hope the findings will help managers and policy makers to design more effective strategies to counteract status quo bias in government-led digital transformations.



**Figure 1. Adjusted Nudge Design Framework by Mirsch et al. (2018)**

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