



Delft University of Technology

The resurgence of business process re-engineering in public sector transformation efforts exploring the systemic challenges and unintended consequences

Weerakkody, Vishanth; Janssen, Marijn; El-Haddadeh, Ramzi

DOI

[10.1007/s10257-021-00527-2](https://doi.org/10.1007/s10257-021-00527-2)

Publication date

2021

Document Version

Final published version

Published in

Information Systems and e-Business Management

Citation (APA)

Weerakkody, V., Janssen, M., & El-Haddadeh, R. (2021). The resurgence of business process re-engineering in public sector transformation efforts: exploring the systemic challenges and unintended consequences. *Information Systems and e-Business Management*, 19(3), 993-1014.
<https://doi.org/10.1007/s10257-021-00527-2>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.



The resurgence of business process re-engineering in public sector transformation efforts: exploring the systemic challenges and unintended consequences

Vishanth Weerakkody¹ · Marijn Janssen² · Ramzi El-Haddadeh³ 

Received: 18 October 2020 / Revised: 7 February 2021 / Accepted: 15 March 2021
© The Author(s) 2021

Abstract

The realisation of citizen-centric services in the public sector requires breaking traditional silos and transforming existing institutional structures and processes. Recent transformation efforts undertaken in government institutions have embraced business process re-engineering (BPR) concepts championed by the private sector over decades ago to facilitate such change. While public opinion continues to differ about these transformation efforts' success, there is little evidence to explain the influence of BPR on their success or failure. This paper explores BPR led public sector transformation efforts in two local authorities in Europe to evaluate the outcomes realised for both government and citizens. Empirical evidence reveals that while transformation efforts contributed towards improving efficiency and integrating processes across functions in the public sector, the institutional structures evolved into a collection of reshaped and newly formed siloes, which were distinctly focused on delivering a citizen-centric service.

Keywords Public sector · Transformation · Silos · Business process re-engineering · BPR · Citizen centric

✉ Ramzi El-Haddadeh
rhaddadeh@qu.edu.qa

Vishanth Weerakkody
V.Weerakkody@bradford.ac.uk

Marijn Janssen
M.F.W.H.A.Janssen@tudelft.nl

¹ University of Bradford School of Management, Emm Lane, Bradford, West Yorkshire BD9 4JL, UK

² Faculty of Technology, Policy and Management, University of Delft, PO Box 5015, 2600 GA Delft, The Netherlands

³ College of Business and Economics, Qatar University, P.O. Box 2713, Doha, Qatar

1 Introduction

Recent transformation efforts in the public sector have yielded mixed results (Bannister and Connolly 2012; Foley and Alfonso 2009) and highlighted multiple challenges around policy, institutional and people issues (Massey and Pyper 2005; Pollitt 2000; Weerakkody et al. 2011). Many governments in Western Europe have embraced the concept of Business Process Reengineering (BPR) to guide their transformational efforts, a concept synonymous with private sector transformation efforts in the early 1990s (Carr and Johansson 1995; Grant 2002; Weerakkody and Dhillon 2008). In principle, BPR aims to achieve a radical process and structural changes (Hammer and Champy 1993). For the public sector, this is often interpreted as breaking down traditional organisational structures and eliminating functional silos to realise integrated services (Bannister and Connolly 2012; Foley and Alfonso 2009). However, recent evidence of the reluctance to change institutional structures in many public sector transformation projects suggests that most efforts have been focused on cosmetic changes to government institutions' existing structure and functions (Omar et al. 2017, 2020; Mahmood et al. 2019).

Because the term 'transformation' represents a fluid concept that is often used to signpost different outcomes by politicians and scholars, it warrants thoughtful consideration when used in a public sector context. Nograšek and Vintar (2014) analyse transformation by looking at the 'depth' and the 'nature' of changes. Digital transformation reflects the magnitude and the complexity of the disruptive impact of ICT on individuals, organizations and the society (Vial 2019). Matt et al. (2015) found that transformations involved a change in critical business operations and affected products, processes, and organizational Structures. Troshani et al. (2018) found that international influences and local factors shaped transformation in digital business-to-government reporting. According to Bannister and Connolly (2011), transformation in the public sector is a mixture of IT use in government, business process re-engineering, and business scope revaluation. In contrast, Janssen and Shu (2008) describe it as a government that is transparent, accountable, citizen-centric, efficient, and agile. During the last few years, public sector transformation efforts have become more imperative than ever, encouraging substantial investments in various digitally-led initiatives. Worldwide 1129 projects worth USD 292.7 billion in 135 countries were funded by the World Bank (World Bank, 2017). Unfortunately, not all these investments have come to fruition. Many of the initiatives have failed to realise their objectives (Mahmood et al. 2019; Omar et al. 2020). Besides wasting taxpayers' money, these failures also facilitate the decline of citizens' trust in government (Mahmood et al. 2019). This scenario demands further research and insights.

Prior research shows that governments often embrace BPR ideas to realise transformation under the digital (or e) government agenda (e.g. Bannister and Connolly 2015; Beynon-Davies and Martin 2004; Irani et al. 2008; Weerakkody et al. 2011); Omar et al. 2020). Yet, how BPR has been adapted in the public sector and BPR efforts' outcomes has not been investigated thoroughly. Indeed, the

concept of transformation in the context of government institutions is ill-defined in the literature (Bannister and Connolly 2011; Omar et al. 2020; Gong et al. 2020). This paper contributes to the limited body of evidence by investigating transformation efforts in the public sector within a local government context and comparing them with contemporary BPR literature. Gong et al. (2020) created a conceptual framework for understanding how flexibility and digital transformation are related. In systematic literature about transformation Reis et al. (2018) found that research has not identified all the opportunities and challenges for digital transformation, whereas Mergel, Edelmann and Haug (2019) found a lack of specific literature on digital transformation in the public sector. The authors posit that revisiting the BPR literature may offer appropriate guidance for addressing transformation, although BPR and transformation are different. While transformation usually involves changing the form or shape of an organisation through changes to its structure and strategic direction (Carr and Johansson, 1995), BPR is more focused on re-engineering processes and internal workflows to improve efficiency and reduce costs (Champy 1995). As such, the case studies examined in this research explore the following research questions:

- (a) What are the synergies between 1990s BPR efforts in the private sector and transformation efforts undertaken in government two decades later?
- (b) What are the systemic challenges that need to be overcome in public sector transformation efforts?
- (c) What are the outcomes of transformation efforts in the public sector for government and citizens?

To answer these research questions, the paper is structured as follows. The next section offers a review of the key research themes in BPR and public sector transformation efforts, offering a frame of reference for empirical investigation. An outline of the research approach adopted for the empirical investigations is presented next, followed by the empirical findings. This is followed by a discussion where comparisons are drawn between BPR and public sector transformation efforts. Finally, the paper concludes by highlighting the key research findings, identifying the limitations, and proposing future research areas.

2 Background: reflecting on the influence of bpr in public sector transformation efforts

BPR has had a significant impact on the private sector in the 1990s, where many large and multinational organisations undertook transformation efforts. However, a review of the 1990s BPR literature suggests several strategic and organisational, process-related, and social and technological factors that need careful consideration when implementing radical change (see Hutton 1995; Earl 1994; Hammer and Champy 1993; Higgins 1993). In this respect, the significance of multi-skilled cross-functional teams (see Caroli et al. 2001; Angus et al. 1996; Hinterhuber 1995) and

effective channels of communication are identified as important prerequisites, particularly when dealing with change in large organisations (Hutton 1995; Earl 1994; Champy 1995). Similarly, organisational culture and attitude towards change and the associated risks (Kotter 1996; Willcocks 1995), cultural differences among different business functions (Sahay and Walsham 1997; Weerakkody and Hinton 1999) as well as individual attitude and status quo (Champy 1995; Mumford 1994; Fiedler et al. 1995) were also highlighted in early BPR studies as potential impediments for change. In particular, the obstacles of cultural change are attributed by Hutton (1995) to continuity, predictability and fairness rather than change and innovation. In this respect, the need for training and appropriate reward systems to change employees' mindsets were frequently discussed as possible strategies (Weerakkody and Hinton 1999).

Recent trends in government show that public sector organisations are beginning to follow a similar pattern in transformational change to what was seen in the private sector during the peak of the BPR movement in the 1990s (Yildiz 2007; Currie and Guah 2007; Mahmood et al. 2019; Omar et al. 2020). Research also shows a significant number of challenges that could impede the implementation process (Iden and Eikebrokk 2015; Hood and Dixon 2015; Hood 2007; Bannister and Connolly 2015; Emery et al. 2014; Irani et al. 2005). Prior studies conducted by Bannister and Connolly (2013, 2015), Choi et al. (2011), Jun and Weare, (2010), Fan and Luo (2014), and Omar et al. (2020) suggest that when radical change is introduced on the established structure of public institutions, they are pressured to alter their policies and procedures as well as the culture and beliefs of their stakeholders. Therefore, central to achieving transformation through BPR is the need to break away from functional barriers and traditional work patterns (Teng and Kettinger 1995; Bannister 2001) to realise a process-oriented organisational structure.

Several studies including those by Omar et al. (2020), El-Haddadeh et al. (2013), Bannister and Connolly (2011), Irani et al. (2007) and Beynon-Davies and Martin (2004) have shown that transformation efforts in the public sector cover organisational and socio-technical dimensions which involve radically changing the structures, operations and most importantly, the culture of government agencies to realise citizen-centric services. Recent evidence of such transformation from the UK includes the UK DVLA transformation project¹ in central government and the Tell-Us-Once project² in local government. However, prior research (e.g. Wirtz and Daiser 2016; Norris and Moon 2006; Lee et al. 2005 and Kraemer and King 2005) also suggests that local government level transformation efforts have remained primarily incremental and focused on enabling information based services that require limited process re-engineering in the back office.

Hood (2007) and Waller and Weerakkody (2016) explain that transformation in government can only be achieved by designing policies that enable implementing ICT-led policy instruments. Examples that illustrate this in the UK include the digitisation of public transport using contactless travel, online application for passports,

¹ <https://www.gov.uk/government/organisations/driver-and-vehicle-licensing-agency>.

² <https://www.gov.uk/after-a-death/organisations-you-need-to-contact-and-tell-us-once>.

driving licence, and taxing motor vehicles. Policy instruments in these cases include the identity documents or authentication required for the service. By radically changing the way citizens use their identity documents, renew these, or authenticate themselves or their possessions, transformation is achieved in the relevant public institutions, in this case, department of Transport for London, home office and DVLA, respectively. Therefore, we posit that 'transformational efforts in the public sector' is best defined as the 'radical change to an established policy instrument – i.e. the tools that governments choose from to intervene in the economy, society and environment to make change, such as identity authentication, administering taxes, information campaigns and more tangible things like public services and infrastructure'. In this context, examples of transformation in local government may include the way authentication is carried out during the payment of taxes, fines and fees; application for planning permission for building construction work; rubbish collection and recycling; and social care, ...etc. While there is a clear central government policy change element in these examples, it is evident that the desired transformation to services is realised through re-engineering of back-office and front-end processes in local authorities.

3 Research methodology and approach

A qualitative case study approach is adopted to analyse and challenge the three research questions posed in the study in an English local authority in the UK (referred to hereafter as LA-ENG) and a Dutch municipality in the Netherlands (referred to hereafter as LA-DUT). The case study approach allowed researchers to explore how the concepts and thinking in BPR have influenced transformation efforts in the public sector. The cases were selected based on sound practical examples that used BPR concepts and methods to implement local governments' transformation in the UK and Netherlands. In this respect, the decision was to utilise a single case study in each country, with the intention that each case would provide needed richness and help generate a substantive frame of reference (Yin 2003), allow comparison (Benbasat et al. 1987; Kan et al. 2016) and maintain the required robustness through replication (Eisenhardt and Graebner 2007). Furthermore, both LA-ENG and LA-DUT had the practical experiences in which each has undergone the process of implementing transformational change programs at a similar timing during the last decade. Besides, both organisations considered successful and innovative local authorities. For LA-ENG, it has been recognised as a leader, and good practice implementer of electronic services ranked a three-star local authority in the southeast region and has an extensive list of electronic services that are offered directly to the public. Similarly, LA-DUT, has been innovative leader and was one of the first local authorities to transform its organization from a functional, internally focused into a customer-centric form. As such, LA-DUT website has been ranked in the top-10 best Dutch governmental websites over many years and is seen as a driver in knowledge and ICT in its region.

Table 1 List of interviewees across the two local authorities

List of Interviewees (key officials involved in the TC programme)	
LA-ENG	LA-DUT
Chief information officer (CIO)	Transformation programme manager (TPM)
Director of information and customer services (DICS)	Head of customer services (HCS)
Head of IT (HIT)	Head of the ICT department service officer (ICTO)
Electronic services officer (ESO)	ICT and administrative staff (ICTA)
Corporate services manager (CSM)	

Nine semi-structured interviews were conducted in the two local government authorities (five in the UK and four in the Netherlands) over five months period. Each interview lasted between one and a half and two hours, and the interviewees' details are outlined in Table 1. Some interviews were audio-recorded with participants' consent, allowing them to be quoted when writing the research results (Yin 2003). Subsequently, email exchanges and telephone calls were used more than once to clarify any ambiguity in the information obtained (Walsham 1995; Yin 2003). Finally, transcripts were sent back to the respondents and followed up with brief telephone and email exchanges to ensure the validity of the responses, and they were an accurate account of the interviews. Observation of the organisational environment during interview visits and reviews of official documentation and publicly available secondary information allowed the interview findings to be verified through data triangulation (Mingers 2001; Saunders et al. 2002) and eliminating bias (Flyvbjerg 2011; Yin 2003).

The analysis of the transcribed scripts was conducted through adopting a rigorous manual thematic analysis process (Boyatzis 1998) involving the following steps: (a) ensuring all interviews and engagements with the identified stakeholders were transcribed appropriately; (b) examining the transcribed scripts thoroughly to verify key items of topics emerging from the data; (c) capturing the items of interest in order to start the coding process and eliminate unnecessary contexts; (d) grouping the resulted codes and organising into several broad conclusive themes. Figure 1 identifies the main steps that were utilised for this analytical stage of the research.

4 Findings: evidence of BPR-led transformation from the UK and Netherlands

The two case studies selected, LA-ENG and LA-DUT, were both in the process of implementing BPR led transformation efforts to improve their service delivery, thus allowing the authors to explore the research questions set out.

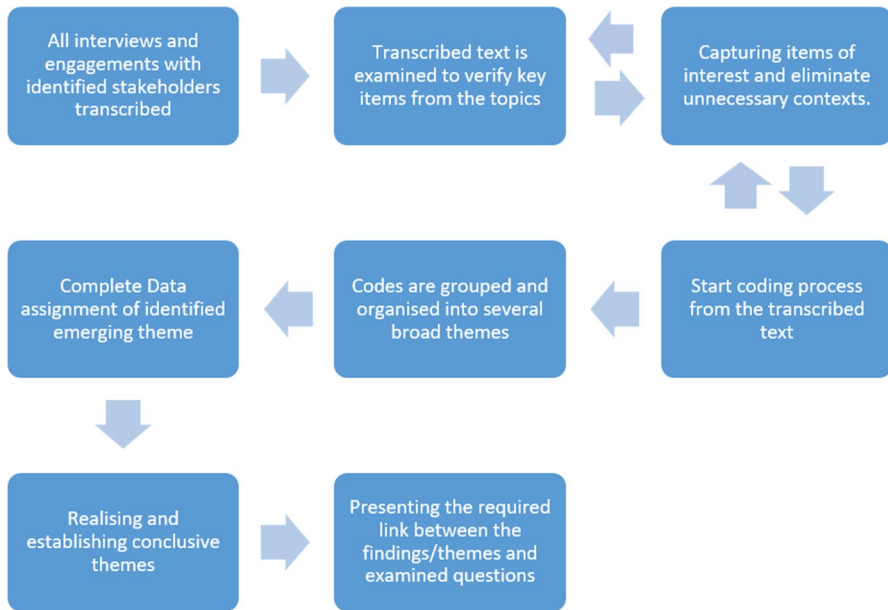


Fig. 1 Thematic analysis process adopted for this study

4.1 Case study 1: LA-ENG

LA-ENG is in London, UK and introduced their transformation efforts to create a joined-up service centre bringing together back-office operations of each directorate in a single outlet. The aim was to transform service delivery and the approach selected to realise BPR principles influenced this aim; the ESO stated, “...colleagues were encouraged to start thinking about the overall service we provided to citizens and how their individual role contributed to this.... they were encouraged to think of the activities that needed to be performed from the time of a service request from the citizen to fulfilment of that request...”.

Although having strong senior management commitment, adequate financial resources and guidance for implementing transformation, LA-ENG had to deal with various challenges and questions. Among these, return on investment, the value and benefits of transformation, and sustainability of newly introduced IT systems were foremost. DICS emphasised that established organisational culture and structure was one of the main challenges to transformation. Pointing out LA-ENG’s strategy for tackling this challenge, CSM stated, “we have started a programme of workshops to discuss our transformation efforts and to educate our staff, including upskilling staff on new ICTs that were being implemented”. CIO suggested that some senior managers were uncomfortable with the changes introduced. These changes were perceived as a threat to their position in the organisation. He continued, “...some managers were in favour of ‘quick-fix’ solutions to avoid any substantial change”. These conflicts resulted in a mix-up of priorities and resistance that prevented the radical change to established policy instruments in LA-ENG.

However, there was clear evidence of process change at LA-ENG, which was primarily enabled through IT, where existing systems were integrated to improve service delivery. However, the ESO suggested, “...*our transformational change agenda is more technology-driven rather than business-driven.*” As a result, “...*the level of desired structural changes to break down barriers between siloed back-office processes and front office, was not achieved*” (HIT). The CIO pointed out the importance of promoting a participatory approach to change and empowering staff through facilitating the transfer of knowledge and competencies from teams in back to the front office. This was important as the staff who had intimate knowledge of back-office operations were mobilised and empowered to play a critical customer-facing role. However, HIT suggested that local authorities wanting to reach a joined-up and information sharing culture were confronted with barriers, such as trust, communication, increased risk, political pressure, differing quality levels and expectations.

Interviewees concurred on the need for cultural change throughout the organisation and across the public sector at large if transformation efforts are to succeed. DICS emphasised, “...*to achieve transformation in local government; employees need to change their attitudes and be willing to drive success for the organisation and its service users*”. To accomplish this, staff in different departments needed to work together, although trust issues between departments impacted collaboration and information sharing.

4.2 Case study 2: LA-DUT

LA-DUT is one of the first local authorities in the Netherlands to transform its organisational processes with a user-centric focus. LA-DUT is considered as having implemented good practices in citizen-centric services, and representatives from other municipalities from around the country are encouraged to visit the municipality to learn from its transformation efforts.

At the institutional level, LA-DUT's senior management was confident that their transformation efforts would improve services by providing integrated services to its citizens. LA-DUT appeared to have spent a considerable amount of time planning the changes required and used a participative approach to do so involving staff at all levels of the institution. However, some interviewees raised concerns about weak leadership and failure to take ownership of various changes implemented to existing processes. The TPM stated that “...*shifting team knowledge from back-office to the front-office was identified as a critical issue in LA-DUT's effort to support the citizen-centric provision of services*”. This created some challenges for the institution as back-office staff felt more important than their front-office colleagues who were often less ‘academically qualified’ and were at lower grades in the institution. As such, a significant focus of LA-DUT's organisational transformation effort was on changing staff attitudes and creating an environment around participation, collaboration and working together. The HCS pointed out how LA-DUT was “*ready for transformation*” despite not having the necessary ICT at the beginning of the project. An essential first step was to change the departments to make them more citizen-focused. As HCS explained,

“we changed our department structure from being functionally arranged towards citizens arranged... nevertheless, we still have siloed departments, and they need to collaborate to provide one-stop-shop services”. There was a consensus among all interviewees that some senior managers felt uncomfortable with the changes introduced as these were challenging established norms and positions.

Although many of the back-office activities were re-engineered in LA-DUT to make them more efficient and citizen-centric, the separate departments' structure remained. As ICTA explained, the main difference was in the *“institution logic, which put the citizen first”*; this promoted better collaboration and information exchange between back and front office. ICTO stated, *“at the heart of this is the ability to share information and convincing the departments to do so and to trust the information of others”*. The transformation effort allowed LA-DUT to speed up their online service delivery by processing service requests and transactions faster and allowing their tracking and tracing, while still maintaining face-to-face encounters at the front office for those who had complex service needs and preferred to meet an official.

It was clear that perceived expectations from the transformation efforts seem to differ among most middle managers and that operational level staff were reluctant to break down existing functional barriers and change the established work practices. This reluctance to break down of functional barriers stemmed from the need to have specialised knowledge on aspects like local history, environment and social care needs for the community. These were compounded by requirements in legislation such as the need to separate service provisioning and inspection and the need for multiple authorisations from different officials when accessing particular services. Besides, it was clear that information sharing was not easy to accomplish as it was often fragmented across departments where people worked in silos.

Like in LA-ENG, institutional culture at LA-DUT seem to impede the sharing of knowledge between the back and front-office employees. The fragmentation of knowledge resulted in a situation in which departments and employees had no trust in others' information. As the ICTO pointed out, referring to their back-office staff, *“as the use of their data caused several mistakes in the past, we started to create and maintain our own data”*. However, he acknowledged that this resulted in substantial duplication of effort and in focussing on their own silo and reduced collaboration. To overcome this, staff were asked to suggest improvements to the 'way of working'. HCS explained, *“group sessions were held in which all staff could participate and make suggestions for improvement. Their participation resulted in acceptance and trust to share their experiences and knowledge with each other”*. This resulted in many suggestions. Not surprisingly, most suggestions for improvement revolved around the transfer of knowledge from the back to the front office. As the TPM explained, *“the knowledge transfer required a change in culture and in the level of education and training that the organisation provides its employees on change”*. Front office employees need to better understand the broader organisational activities and the range of services that the organisation offers instead of the limited helpdesk related activities they perform. In this way, the front office staff will help citizens better and answer their questions and fulfil their service requests accurately.

5 Discussion and research synthesis

The empirical findings from the two cases corroborate prior findings in the literature and identify further challenges affecting public sector transformation efforts. At an organisational level, management commitment, transformation understanding and expectations, training and skills, planning, bureaucratic organisational structure, embracing change, breaking organisational silos, leadership, change management, funding, prioritising, economic value, political support and process ownership are pivotal for deriving transformation efforts. On the other hand, extensive technology focus, realistic appreciation from transformational change, change in existing work patterns, clarity in existing processes, information fragmentation, change, transparency and trust in sharing information, understanding of transformational change scope and hierarchically clustered in expectations appears to be the key drivers at the process level.

Overall, the empirical findings above suggest several similarities and differences in implementing transformation efforts in the UK and Netherlands. The focus on transforming public sector services in both countries is driven by the desire to reduce costs. In both cases, the transformation is confronted with organisational and process change challenges. While the normative literature provided a comprehensive overview of the existing issues under each of these broad challenges, the empirical findings provided the contextual background to explore how these issues influenced transformation efforts. Moreover, the empirical findings unfolded some further issues from a practitioner perspective influencing public sector change that was not explicitly acknowledged in the literature.

5.1 The influence of BPR on local government transformation efforts

BPR efforts seen in the private sector during the 1990s and transformation efforts seen in recent times in the public sector share a common purpose. Although transformation usually involves changing the form or shape of an organisation through changes to its structure and strategic directions, and BPR is more focused on re-engineering processes and internal workflows to improve efficiency and reduce costs (Hammer and Champy 1993; Davenport 1993; Harrington 1991), recent improvement or change efforts in government have been often referred to as transformation (Mahmood et al. 2019; Omar et al. 2020). Vital elements of change in both scenarios are drivers, components, process determinants (communication), and outcomes (Král and Králová 2016). However, many characteristic differences and implementation focus between BPR efforts are seen in the private sector and transformation efforts in the public sector, as outlined in Table 2.

The empirical findings from the two cases corroborate prior findings in the literature and identify similarities in the challenges faced between private sector BPR efforts and public sector transformation efforts. Table 3 offers a synthesis of these similarities and examples of the challenges evidenced in the two local authorities' transformation efforts in the UK and Netherlands. The influence of BPR on

Table 2 Characterising the difference in BPR and public sector transformation efforts

Characteristics	BPR	Transformation
Primary goals and drivers	Significant breakthroughs in the way products/services are delivered; cost reduction; improving competitiveness	Implementing citizen-centric services; improving transparency and traceability of workflow; citizen satisfaction
Components	Business processes and organisational structure	Business process, organisational structure and culture
Process determinants (change management approach)	Top-down to create fundamental changes to the existing strategy, structure and processes	Participative resulting in a combination of radical and incremental changes to existing processes and information systems
Evidence of outcomes	Mixed outcomes of success and failure with existing silos continuing to be part of the new transformed service	Mixed outcomes; Silos transformed and re-established as new silos

Table 3 Comparing the challenges evidenced in BPR against transformation efforts in the public sector

Key challenges to implementing BPR	Challenges faced in transformation Efforts in the public sector	
	LA-ENG	LA-DUT
Organisational challenges		
Lack of management commitment	High level of Senior management commitment and support was evident for transformation services	Senior management have demonstrated an adequate commitment and support for transformation of services
Misunderstanding transformation	Employees were aware that transformation was imperative to realise improved services	Employees were aware that transformation was imperative to realise improved services
Unrealistic expectations	Senior management had a set of realistic expectations from the planned transformation efforts	Senior management had managed to set its own targets and expectations from the planned transformation efforts
Insufficient training and skills	Employees were preparing for the transformation effort using internal and external resources	Employees were provided training to ensure that they were able to contribute to the transformation effort effectively
Lack of strategic planning	Strategic plans were put in place to accommodate the process, and IT changes required to facilitate the transformation effort with clear objectives and outcomes	Some high-level planning was evident with a focus on managing changes to processes and IT systems, although the overall objectives of transformation could have been clearer
Bureaucratic organisational structure	Most senior managers were uncomfortable with the idea of transformation as it challenged their authority and position	Most senior managers were uncomfortable with the idea of transformation as it challenged their authority and position
Reluctance to embrace change	Senior management was ensuring employee buy-in for the transformation effort through training and incentives	Although senior management commitment towards the transformation effort was high, cooperation among lower-level employees was low
Inability to break organisational silos	While existing silos were broken down from its original form, new silos were created, either through old ones evolving into new forms or new ones emerging	While existing silos were broken down from its original form, new silos were created, either through old ones evolving into new forms or new ones emerging
The lack of leadership in change efforts	Strong leadership and commitment to the transformation effort was evident	Leadership was evident although failing to set the required precedent for the transformation effort
Change management	A clear change management strategy was present	A clear change management strategy was present
Funding	Strong financial support from central government was enabling the transformation effort	Strong financial support from central government was enabling the transformation effort
Conflicting priorities	Senior management seems to mix up their priorities with regards to the transformation effort on ongoing service delivery commitments	Senior management was struggling to prioritise the different work streams in the transformation effort concerning service priorities and potential impact

Table 3 (continued)

Key challenges to implementing BPR	Challenges faced in transformation Efforts in the public sector	
	LA-ENG	LA-DUT
Value for money concerns	There was some concern regarding the return on investment that the transformation effort can bring to the local authority	Senior management was confident that their transformation effort would help reduce operational costs and improve services in their local authority
Political support	Political support from central government towards the transformation effort was evident through central government mandate	Political support from central government towards the transformation effort was evident through central government mandate
Process ownership	Senior managers involved took responsibility for owning and implementing the process re-engineering efforts	Not all managers involved took responsibility for owning the implementation of changes required for the transformation effort
Process change challenges	A balanced approach to ICT was evident whereby new technology was deemed to be necessary while maintaining some legacy systems for certain operations Senior management had realistic appreciation from the transformation effort	High reliance on ICT was evident in the transformation effort where it was seen to be the main catalyst for service improvement Senior management had realistic appreciation from the transformation effort
Lack of change in existing work patterns	The management team responsible for the transformation effort were using a participatory/team working approach to ensure that required changes were implemented in existing work practices. However, this resulted in forming new siloed teams	Middle management and operational level staff were reluctant to change established work practices. This resulted in forming new siloed teams in order to support the different work streams in the transformation effort
Lack of clarity in existing processes	Lack of process orientation in delivering existing services was hindering the local authority from re-engineering services	Some degree of process orientation was helping the local authority to implement the transformation effort
Information fragmentation	Information was fragmented and difficult to share due to the siloed, rigid, and hierarchical departmental structure	Information was fragmented and difficult to share due to the siloed, rigid, and hierarchical departmental structure
Incremental and modest change	The focus of the transformation effort was that of implementing incremental rather than radical change	The focus of the transformation effort was that of implementing incremental rather than radical change
Transparency and Trust in sharing information	The strengthening of existing silos and creation of new ones resulted in a new level of confidence and stability among employees to encourage the share information both internally within departments and between departments	The strengthening of existing silos and creation of new ones resulted in a new level of confidence and stability among employees to encourage the share information both internally within departments and between departments

Table 3 (continued)

Key challenges to implementing BPR	Challenges faced in transformation Efforts in the public sector	
	L/A-ENG	L/A-DUT
Poor understanding of Transformational change	The transformation effort was seen as an ICT driven rather than a business-driven initiative	The transformation effort was seen as an ICT driven rather than a business-driven initiative
Differing expectations	The perceived expectations from the transformation effort differed significantly between senior and middle management	The perceived expectations from the transformation effort differed significantly between senior and middle management

transformation efforts in the public sector becomes clear from the table together with their differences. The most striking difference is the incremental and participative approach taken by the two local authorities (as suggested by Davenport 1993; Harrington 1991; Carr and Johansson 1995) compared to the more radical approach promoted BPR by Hammer and Champy (1993). Furthermore, the focus on culture change in both case studies was an element not often found in BPR approaches, although it is commonly recognised in change management (e.g. Kotter 1996) and transformation (e.g., Mergel et al. 2019) approaches.

The empirical evidence also showed that while incremental improvements can be made to catch up or maintain best practices, transformation requires approaches that are primarily focused on changing the functional hierarchy and structures in public sector organisations. The findings from both case studies revealed that IT-driven change was used in both cases helping to implement the necessary improvements. IT shifted the concentration of back-office processes from being contained within specific functions (or departments) into a one-site blending of front office services with several citizen-oriented outlets. From the empirical evidence, we can posit that, although technology supporting the 1990s BPR movement in the private sector was different, the organisational, process and socio-cultural aspects of transformation efforts in the private and public sectors are comparable. In the absence of literature or prior studies to characterise transformation efforts in the public sector, the evidence in this exploratory study suggests that BPR concepts have inspired recent transformational efforts in the public sector. Although many scholars have failed to recognise this, the empirical findings indicate that practitioners in the public sector have embraced the concept through their transformation efforts.

The evidence in this study also confirms prior research which posits that ultimately transformation will only be achieved by establishing a collaborative environment among participating government agencies, streamlining their business processes and sharing knowledge (Andersen and Henriksen 2006; Kim et al. 2007). Further, in the context of government agencies, both vertical and horizontal integration of business processes need to be taken into consideration as suggested previously by researchers such as Layne and Lee (2001), Weerakkody et al. (2011), Janssen and van den Hoven (2015) and Siau and Long (2005) to enable fully integrated 'digital government' service environment.

Nonetheless, the literature also documented that many BPR projects attempted in the private sector failed to achieve their objectives (see Willcocks and Smith 1995; Kotter 1996; O'Neill and Sohal 1999). Recent evidence of transformation projects in the public sector also mirrors such evidence (House of Commons 2017; Omar et al. 2020). Hence, the question remains as to why transformation efforts in the two case studies were deemed successful. O'Neill and Sohal (1999) argue that the simultaneous achievement of streamlining and control over current processes often prepares the organisation for transformation. As the empirical findings in both cases revealed, BPR can help achieve the desired transformational changes by obtaining the needed organisational support without causing any disruption to the core values and competencies, and values of continuous improvement. While the transformation achieved in both cases may not be classified as 'radical' in BPR terms (as per Hammer and Champy 1993), our evidence suggests that public sector managers are

taking a more measured approach to recognise the complexities and managing the multiplicity of challenges that come with BPR and placing citizens' experience first, before other benefits such as cost savings; this was often the opposite in private sector BPR efforts.

5.2 The unintended consequences: dismantling or reshaping silos?

Change can result in both planned and unplanned outcomes (Král and Králová 2016). Evidence from the two case studies suggests that both local authorities, being realistic of the challenges of using BPR concepts to drive change, customised it to suit their local transformation needs; these were mostly focused on ensuring the delivery of improved, more citizen-centric services. In this context, the two case studies have indicated that transformation efforts in the public sector require:

- (a) *A single access point has clear responsibility (a case or process manager) responsible for ensuring proposed changes on time.* This case/process manager needs to have a clear overview of the workflow in the various re-engineered processes and the ability to liaise with the specialists who handle various activities in the process.
- (b) *The organisational structure to facilitate customer-centric processes.* Although existing silos were broken down from its original form, new silos were created, either through old ones evolving into new forms or new ones emerging, to ensure that the necessary controls were in place, to ensure different public values and concerns are balanced, to strengthen collaboration, avoid duplication and make information available when needed.
- (c) *Creating a culture for collaboration and sharing knowledge across functional boundaries.* The need to focus on 'processes' and 'citizens needs' rather than the functional responsibilities to ensure effective service delivery.
- (d) *Harmonisation of business processes and integration of supporting ICTs across functional/departmental boundaries.* To realise one-stop, integrated services delivery, reusing information and avoiding duplication of activities was critical.

Similar to Nograšek and Vintar (2014) findings, both local authorities focused on educating and training staff on the process and the outcomes of transformation—with a strong focus on facilitating a culture change and established norms of public sector work. For example, interviewees in both local authorities explained that it was important for staff to appreciate how their own role and activities performed within a function influenced citizens' overall service outcomes. In this context, a key observation that can be made from the case studies is the organisational functions or departments and the siloed way of working remained through the transformation process and after the main transformation efforts had ended, although the silos changed from being closed-functional to more open and citizen-centric. Siloes are needed due to the government's very organization; different departments take care of public concerns that might be conflicting in some cases. One such conflict is if individual privacy or social contributions dominates when announcing permits.

By having different silos taking care of different concerns, they are considered in decision-making and avoid groupthink. The silos are connected by improved sharing of information, having clear agreements about who should do what, by lowering collaboration threshold and fostering a culture of knowledge sharing. Despite these alterations in the functional hierarchy, the case studies confirmed that most public sector organisations are siloed, echoing the need for specialisation in the backend and clear separation of responsibilities like policymaking, execution and enforcement.

6 Conclusion and lessons learned

Since the decline of the BPR movement in the late 1990s, interest in the concept has waned, and few authors have discussed it. This can be attributed to the fact that BPR is considered neither a management theory nor a 'conceptual' framework to attract scholarly debate. This paper has examined the BPR concept through prior research and attempted to draw comparisons to recent transformational change efforts in the public sector. Doing so has characterised the changes aspired in public sector transformation efforts concerning BPR. Theories and approaches to change management are often contradictory and supported by unchallenged hypotheses. This paper explored the synergies between 1990s BPR efforts in the private sector and recent digital transformation efforts undertaken in the public sector and these efforts' outcome. Two case studies in Europe showed that recent 'citizen-centric' focus in the public sector mirrors the 'customer-centric' ideas championed in the BPR movement. Both case studies show that if transformational efforts are to be realised in the public sector, a long-term strategy should be outlined and supported by a bottom-up, incremental implementation plan. Through this study's results, it can be concluded that the character of BPR led transformation in the public sector is primarily influenced by the need to deliver integrated, one-stop services to citizens that are designed around their needs. In this respect, ICT had become a dominant driver of the transformation efforts. Simultaneously, the empirical evidence also suggests that this ICT led change can only be realized through a participative vision for change that needs to be led and owned by change or project champions at senior levels of local government. This vision can be realised through the support of and the development of staff capabilities and willingness of staff to transform the organisation culture, established routines, and processes. In particular, knowledge held in the back office needs to be transferred to the front office to facilitate the concept of one-stop-service. As such. This study found that the main synergies between BPR and transformation efforts in the public sector were around three areas:

- (a) The fundamental shift to the way work activities are performed in the organisation where the collective focus is on fulfilling the customer or citizen's service outcomes;

- (b) The re-alignment of organisational structures to facilitate 'process orientation' where new or re-engineered information systems enabled the flow of information across departmental or functional boundaries; and
- (c) Acceptance that institutional transformation projects most often start with radical change ambitions and mould into a collection of incremental changes around the restructure of people, process and policy.

However, it is essential to distinguish the difference between BPR in the private sector and transformational efforts in the public sector. The former usually involves changing the organisation's form or shape through changes to its strategic direction to reduce costs and increase profits. In contrast, the latter focuses on reducing waste and improving citizens' service outcomes and experience by re-engineering processes and internal workflows. Instead of being overly optimistic, as in the BPR era, the public sector should take a more measured approach to transformation, as evidenced in our cases, by outlining a clear vision and ensuring high employee participation in the change effort. Although public sector transformation efforts are BPR-influenced, our findings confirm that they are implemented in a complex environment where factors such as responsibility and accountability and policy and legislative implications cannot be ignored.

We also found that in contrast to the common belief that silos should be dismantled in a BRP led transformation setting to achieve end-to-end process orientation (Davenport 1993; Carr and Johansson 1995), existing silos were strengthened and/or changed in public sector transformation efforts to make services more citizen-centric. Having silos reflect the institutional need to have different departments take care of different concerns, which might be opposing or even conflicting. This warrants the necessary checks and controls needed to balance the power between governments and citizens. Furthermore, re-engineering existing processes to integrate disparate systems and enable a seamless flow of information between departments resulted in creating new or reshaped silos. In this respect, we conclude that BPR led transformation does not dismantle silos as suggested by early proponents such as Hammer and Champy (1993) and Harrington (1991) but tend to strengthen existing ones or create new ones that are motivated by service outcomes in the public sector.

Based on this study findings, we posit that public sector transformation requires creating a less complex organisational and policy landscape, developed for simplicity in which routine operations are automated, similar activities are bundled and/or shared to ensure agility and responsiveness in service delivery. It is also clear that this can only be realised if employees are willing to accept the institution's structural changes and their individual roles and 'ways of working'. In this respect, changing established norms and culture was a key factor for public sector institutions, as evidenced in both local authorities examined in our study. Our findings confirm Nograšek and Vintar (2014) that, any transformation agenda in the public sector needs to be supported by a well thought out education and training programme to involve and empower employees at all levels of the organisation. This ensures buy-in and ownership of new and re-engineered processes and a better understanding and appreciation of how individual roles and responsibilities contribute to fulfilling citizens' service needs who engage with public institutions.

As with other research, this study has some limitations, which should be considered when interpreting the empirical results. Firstly, the empirical data was collected from only two local authorities experienced in implementing transformation efforts; this may have resulted in similar issues being identified. Secondly, all interviewees were closely involved in the transformation efforts, and the study did not consider the views of broader staff in the two local authorities, particularly those whose jobs were affected by change. Thirdly, we did not consult the service users or citizens who were affected or benefitted by the transformation efforts. Therefore, we suggest that more research is needed to conceptualise the influence of BPR in the public sector by comparing transformation efforts in different public institutions of different sizes and with different needs and focus. New research should also evaluate the impact that transformation efforts have on public services users by capturing citizens' perspective through qualitative or quantitative research. To this end, we propose to expand our research to investigate the citizens' perspective of the transformed services in the two local authorities while engaging with senior management to follow their post-transformational institutional journey.

Funding Open access funding provided by the Qatar National Library.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Andersen KV, Henriksen HZ (2006) E-government maturity models: extension of the Layne and Lee model. *Gov Inf Q* 23(2):236–248
- Angus FR, Goodman AL, Pfund P, Wassn R (1996) Re-engineering for revenue growth. *Res Technol Manag* 39(2):26–31
- Bannister F (2001) Dismantling the silos: extracting new value from IT investments in public administration. *Inf Syst J* 11(1):65–84
- Bannister F, Connolly R (2011) Trust and transformational government: a proposed framework for research. *Gov Inf Q* 28(2):137–147
- Bannister F, Connolly R (2012) Forward to the Past: lessons for the future of e-government from the story so far. *Inform Polity* 17(3 4):211–226
- Bannister F, Connolly R (2015) The great theory hunt: does e-government really have a problem? *Gov Inf Q* 32(1):1–11
- Benbasat I, Goldstein DK, Mead M (1987) The case research strategy in studies of information systems. *MIS Q* 11(3):369–386
- Beynon-Davies P, Martin S (2004) Electronic local government and the modernisation agenda: progress and prospects for public service improvement. *Local Gov Stud* 30(2):214–229
- Boyatzis R (1998) Transforming qualitative information. Sage Publications, California
- Carr D, Johansson H (1995) Best practices in re-engineering: what works and what doesn't in the re-engineering process. McGraw-Hill, New York

- Caroli E, Greenan N, Guellec G (2001) Organisational change and skill accumulation. *Ind Corp Chang* 10:479–504
- Champy J (1995) *Reengineering management. The Mandate for New Leadership*. Harper Business, New York, NY
- Choi H, Park S, Lee J-D (2011) Government-driven knowledge networks as precursors to emerging sectors: a case of the hydrogen energy sector in Korea. *Ind Corp Chang* 20(3):751–787
- Currie W, Guah M (2007) Conflicting institutional logics: a national programme for IT in the organisational field of healthcare. *J Inf Technol* 22:235–247
- Davenport TH (1993) *Process Innovation: Re-engineering Work through Information Technology*. Harvard Business School Press
- Earl MJ (1994) The new and old of business process redesign. *J Strat Inf Syst* 3(1):5–22
- Eisenhardt KM, Graebner ME (2007) Theory building from cases: opportunities and challenges. *Acad Manag J* 50(1):25–32
- El-Haddadeh R, Weerakkody V, Al-Shafi S (2013) The complexities of electronic services implementation and institutionalisation in the public sector. *Inform Manag* 50(4):135–143
- Emery Y, Giaque D, Rebmann F (2014) The slow transformation of Swiss federal administrative elites. *Int Rev Adm Sci* 80(4):687–708
- Fan B, Luo J (2014) Benchmarking scale of e-government stage in Chinese municipalities from government chief information officers' perspective. *Inf Syst E-Bus Manage* 12:259–284
- Flyvbjerg B (2011) Case Study. In: Denzin NK, Lincoln YS (eds) *The sage handbook of qualitative research*, 4th edn. Sage, Thousand Oaks, CA, pp 301–316
- Foley P, Alfonso X (2009) eGovernment and the transformation agenda. *Public Adm* 87(2):371–396
- Grant D (2002) A wider view of business process re-engineering. *Commun ACM* 45(2):85–90
- Gong Y, Yang J, Shi X (2020) Towards a comprehensive understanding of digital transformation in government: analysis of flexibility and enterprise architecture. *Gov Inf Q* 37(3):101487
- Hammer M, Champy J (1993) *Re-engineering the cooperation: a manifesto for business revolutions*. Harper Business, New York
- Harrington H (1991) *Business process improvement: the breakthrough strategy for total quality, productivity and competitiveness*. McGraw Hill, New York
- Hinterhuber H (1995) Business process management: the European approach. *Bus Change Re-Eng* 2(4):63–73
- Higgins J (1993) *Information technology & business process redesign: IT-enabler or disabler of BPR*. Wiley, London
- Hood C (2007) Intellectual obsolescence and intellectual makeovers: reflections on the tools of government after two decades. *Gov Int J Policy Adm Inst* 20(1):127–144
- Hood C, Dixon R (2015) *A government that worked better and cost less?* Oxford University Press, Oxford
- House of commons/committee of public accounts (2017) Progress on the common agricultural delivery programme (HC 766). Retrieved from
- Hutton G (1995) BPR-overcoming impediments to change in the public sector. *N Technol Work Employ* 10(2):147–151
- Iden J, Eikebrokk TR (2015) The impact of senior management involvement, organisational commitment and group efficacy on ITIL implementation benefits. *Inf Syst E-Bus Manage* 13:527–552
- Irani Z, Elliman T, Jackson P (2007) Electronic transformation of government in the UK: a research agenda. *Eur J Inf Syst* 16(4):327–335
- Irani Z, Love PED, Elliman T, Jones S, Themistocleous M (2005) Evaluating e-government: learning from the experiences of two UK local authorities. *Inf Syst J* 15(1):61–82
- Irani Z, Love PED, Jones S (2008) Learning lessons from evaluating eGovernment: reflective case experiences that support transformational government. *J Strateg Inf Syst* 17(2):155–164
- Janssen M, Shu WS (2008) Transformational government: basics and key issues. In: *Proceedings of the 2nd international conference on Theory and practice of electronic governance*, 117–122, ACM
- Janssen M, van den Hoven J (2015) Big and open linked data (BOLD) in government: a challenge to transparency and privacy? *Gov Inf Q* 32(4):363–368. <https://doi.org/10.1016/j.giq.2015.11.007>
- Jun K-N, Wear C (2010) Institutional motivations in the adoption of innovations: the case of e-government. *J Public Adm Res Theory* 21(3):495–519
- Kan AKS, Adegbite E, El Omari S, Abdellatif M (2016) On the use of qualitative comparative analysis in management. *J Bus Res* 69(4):1458–1463
- Kim H, Pan G, Pan S (2007) Managing IT-enabled transformation in the public sector: a case study on e-government in South Korea. *Gov Inf Q* 24:338–352

- Kotter J (1996) Leading change: why organisational transformation efforts fail. *Harvard Business Review*, March–April, pp 59–67
- Kraemer K, King J (2005) Information technology and administrative reform: will e-government be different? *Int J Electron Gov Res* 1:1–18
- Král P, Králová V (2016) Approaches to changing organisational structure: the effect of drivers and communication. *J Bus Res* 69(11):5169–5174. <https://doi.org/10.1016/j.jbusres.2016.04.099>
- Layne KJL, Lee J (2001) Developing fully functional E-government: a four stage model. *Gov Inf Q* 18(2):122–136
- Lee S, Tan X, Trimi S (2005) Current practices of leading e-government countries. *Commun ACM* 48(10):99–104
- Mahmood M, Weerakkody V, Chen W (2019) The role of information and communications technology in the transformation of government and citizen trust. *Int Rev Adm Sci* 77(3):451–479
- Massey A, Pyper R (2005) Public management and modernisation in Britain. Palgrave Macmillan, Basingstoke
- Matt C, Hess T, Benlian A (2015) Digital transformation strategies. *Bus Inf Syst Eng* 57(5):339–343
- Mergel I, Edelmann N, Haug N (2019) Defining digital transformation: results from expert interviews. *Gov Inf Q* 36(4):101385
- Nograšek J, Vintar M (2014) E-government and organisational transformation of government: black box revisited? *Gov Inf Q* 31(1):108–118
- Mingers J (2001) Combining IS research methods: towards a pluralist methodology. *Inf Syst Res* 12(3):240–259
- Mumford E (1994) New treatments or old remedies: is business process re-engineering really socio-technical design. *J Strat Inf Syst* 3(4):313–326
- Norris D, Moon M (2006) Advancing E-government at the grassroots: tortoise or hare? *Public Adm Rev* 65(1):253–272
- O'Neill P, Sohal AS (1999) Business process re-engineering a review of recent literature. *Technovation* 19(9):571–581
- Omar A, Weerakkody V, Daowd B (2020) Studying transformational government: a review of the existing methodological approaches and future outlook. *Gov Inform Q* 37(2):101458
- Omar A, Weerakkody V, Sivarajah U (2017) Digitally enabled service transformation in UK public sector: a case analysis of Universal Credit. *Int J Inf Manage* 37(4):350–356
- Pollitt C (2000) Is the emperor in his underwear? An analysis of the impacts of public management reform. *Pub Manag Int J Res Theory* 2(2):181–200
- Reis J, Amorim M, Melão N, Matos P (2018) Digital transformation: a literature review and guidelines for future research. In: *Proceedings of the World conference on information systems and technologies* (pp. 411–421). Springer, Cham
- Sahay S, Walsham G (1997) Social structure and managerial agency in India. *Organisation Studies* 18(3):417–443
- Saunders M, Lewis P, Thornhill A (2002) *Research methods for business students*, 3rd edn. Prentice Hall, London
- Siau K, Long Y (2005) Synthesising e-government stage models—a meta synthesis based on meta-ethnography approach. *Ind Manag Data Syst* 105(4):443–458
- Teng J, Kettinger W (1995) Business process redesign and information architecture: exploring the relationships. *Database Adv* 26(1):30–42
- The World Bank (2017) Digital governance projects database primary tabs. Retrieved from <https://datacatalog.worldbank.org/dataset/digital-governance-projects-database>
- Troshani I, Janssen M, Lymer A, Parker LD (2018) Digital transformation of business-to-government reporting: an institutional work perspective. *Int J Account Inf Syst* 31:17–36
- Vial G (2019) Understanding digital transformation: a review and a research agenda. *J Strateg Inf Syst* 28(2):118–144
- Walsham G (1995) Interpretive case studies in IS research: nature and method. *Eur J Inf Syst* 4(2):74–81
- Waller P, Weerakkody V (2016) Digital government: overcoming the systemic failure of transformation (Working Paper 2). London: Brunel University Press. Retrieved from <http://bura.brunel.ac.uk/handle/2438/12732>
- Weerakkody V, Dhillon G (2008) Moving from E-Government to T-Government: a study of process re-engineering challenges in a UK local authority perspective. *Int J Electron Gov Res* 4(4):1–16
- Weerakkody V, Janssen M, Dwivedi Y (2011) Transformational change and business process reengineering (BPR): lessons from the British and Dutch public sector. *Gov Inf Q* 28(3):320–328

- Weerakkody V, Hinton C (1999) Exploiting information systems and technology through business process improvement. *Knowl Process Manag J Corp Transform* 6(1):17–23
- Willcocks L, Smith S (1995) IT enabled business process reengineering: organisational and human resource dimensions. *J Strat Inf Syst* 4(3):279–301
- Willcocks L (1995) IT-enabled business process re-engineering: organisational and human resource dimensions. *J Strat Inf Syst* 4(3):279–301
- Wirtz B, Daiser P (2016) A meta-analysis of empirical e-government research and its future research implications. *Int Rev Adm Sci* 84(1):144–163
- Yildiz M (2007) E-government research: reviewing the literature, limitations, and ways forward. *Gov Inf Q* 24(3):646–665
- Yin RK (2003) *Case study research: design and methods*, 3rd edn. Sage, Thousand Oaks, CA

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.