

A hermeneutic research on project management approaches applied in a business process re-engineering project

Innocent Musonda

*Department of Construction Management and Quantity Surveying,
Faculty of Engineering and the Built Environment,
Centre for Applied Research and Innovation in the Built Environment,
University of Johannesburg, Doornfontein Campus, Doornfontein, South Africa, and*

Chioma Sylvia Okoro

*Department of Finance and Investment Management,
College of Business and Economics, University of Johannesburg,
Auckland Park, South Africa*

Abstract

Purpose – Business process re-engineering (BPR) initiatives are complex endeavours which require many factors to ensure success. However, most studies focus on the organisational processes and improvement within the organisation itself and less on the project team and management dynamics. The study aimed to identify factors that enabled the completion of a BPR, in a technical firm, based on reflections on the project management style.

Design/methodology/approach – The study entailed a descriptive and interpretive case study with reflections from project team members. Data were analysed using descriptive statistics and content analysis.

Findings – Findings revealed that critical success factors for BPR in a technical firm include project leadership and sponsorship, organisational culture and attributes, team dynamics and the nature (activities), and duration of the process.

Practical implications – The findings will benefit project managers in improving their competence and project success through reflective practice. The identified factors could be used in future projects of a similar nature and size to improve how organisations execute BPR projects.

Originality/value – The study used reflections to identify success factors for BPR in a technical firm.

Keywords BPR, Business process, Leadership, Organisation, Project management, Project success, Project team, Re-engineering, Reflection, Stakeholder interactions, Technical, Project performance

Paper type Case study

Introduction

Changing business environments have increased organisations' need to adapt and shift focus, modify goals, restructure roles and responsibilities, and develop new forms (Jalagat, 2016). With ever-changing customer needs, constant competition, rapid technological advancements, customers' expectations, demographic changes, skill requirements, and market situations, organisations are compelled to reassess how they work and to understand, adopt, and implement



changes in their business model (Abbas and Asghar, 2010; Harika *et al.*, 2021). In addition, given the norm necessitated by the COVID-19 pandemic, organisations are faced with decision-making on how to meet their duties to internal and external stakeholders and achieve strategic and financial objectives (Coughran, 2021). Delivering the necessary improvements demands an approach that combines strategic thinking, decisive leadership, and efficient management of stakeholder expectations and response to changing needs. Change or re-engineering is, therefore, part of an organisation's existence and growth (Jalagat, 2016; Asikhia *et al.*, 2021).

The main aim of re-engineering is to optimise operations, increase productivity, reduce costs, improve quality, and provide a competitive advantage (Harika *et al.*, 2021). In that sense, BPR significantly impacts organisational performance (Bako and Banmeke, 2019). According to Asikhia *et al.* (2021), organisational performance areas include financial (profits and returns on investment), product market performance (market share and sales) and shareholder returns and value-add. Firms' performance increased in terms of labour productivity, return on assets, and return on equity increased among large firms in the United States (Ozcelik, 2010); while 38% of respondents in a survey among executives in the United Kingdom reported that change in their organisation led to achieving high performance (Holbeche, 2006). Without change, businesses would lose their competitive edge and fail to meet customers' ever-changing needs, preferences, and understanding of value (Reeves and Deimler, 2011). With globalisation and new technologies, and the need to adopt lean practices to cater for sustainability objectives, it is imperative to revisit strategies to keep up with market trends and future needs (Lee and Trimi, 2018; Metz, 2021). Further, organisations are currently under pressure for strategic change in the last decade, and recently with the COVID-19 pandemic (Harika *et al.*, 2021; Sedej, 2021).

However, while change is needed for organisations to survive and achieve high performance, it can negatively impact organisational outcomes, regardless of the form (structure, strategy, technological, or people) (Stouten *et al.*, 2018; Metz, 2021). Making meaningful sustainable changes can be complex as organisations may struggle with basic change processes, stress, and resistance with contemporary workers, and adverse consequences of failed change on beneficiaries (Stouten *et al.*, 2018). An estimated 50%–70% of BPR initiatives fail to achieve intended strategic objectives or dramatic results (Nkomo and Marnewick, 2021). There is, therefore, a need to manage change to ensure successful BPR. Careful analysis of factors that could affect the quality of the change process, including internal- and external elements, is critical. Such factors may include organisational politics, culture, power dynamics, resistance to change, leadership, imperatives (business and organisational), decision-making strategies (top-down or bottom-up), and such other factors classifiable under the "PESTEL" umbrella (Al-Anqoudi *et al.*, 2021; Subramaniam, 2021).

Studies have investigated the above factors that may impact BPR initiatives in an organisation and identified that standardisation, unique requirements, planning aspects, time management, the scope of the change (organisation-wide or subsystem change), transformational processes and training, change agents and communication, can affect such projects (Jalagat, 2016; Al-Anqoudi *et al.*, 2021; Asikhia *et al.*, 2021). However, the project management dynamics are at the heart of all these factors, which integrate relational issues with stakeholders, leadership, project planning, and time conscientiousness; and these links have been understudied. Project management contributes 22.3% to project success (Joslin and Muller, 2015). Therefore, one of the ways to ensure successful organisational change is through project management (Nkomo and Marnewick, 2021).

The approach to managing a project aligns with the core aspect of project administration with developed principles, rules, prospects, attributes, and procedures (Spundak, 2014). While project management principles have been applied in construction- and engineering ventures, needs have evolved over time across different fields with diverse project characteristics (Bayomy *et al.*, 2021). Recent projects require specialised management given the paucity of resources, constrained period, and team dynamics (Cristobal *et al.*, 2018).

Previous studies have investigated the role of project management in successful BPR. [Hussein *et al.* \(2014\)](#) identified a theoretical gap on incorporating the human element and change management factors and proposed an agile process re-engineering integrated spiral model (PRISM). While [Bako and Banmeke \(2019\)](#) concurred that the people involved in decision-making contribute to the success of re-engineering efforts, the study focused on hierarchy within organisations. According to [Bayomy *et al.* \(2021\)](#), integrating critical success factors with performance measurement as re-engineering takes place ensures successful implementation. Hammer and Champy (1993, cited in [Nkomo and Marnewick, 2021](#)) propounded that BPR entails a “fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical performance measures (cost, quality, service and speed)”. An effective redesign of organisational processes could lead to cost, efforts and time reduction, as well as service speed and quality improvement. However, this requires a management team to undertake the BPR to generate the desired alternatives and outcomes, with the consideration of possible influencers (endogenous or exogenous) to increase the chances of successful implementation ([Bayomy *et al.*, 2021](#)).

Further, [Musa and Othman \(2016\)](#) explored BPR application in healthcare using a systematic review. [Harika *et al.* \(2021\)](#) highlighted BPR challenges in software project management in a review and emphasised the critical role of project management in software re-engineering, especially regarding planning, execution, monitoring, and control of aspects such as conflict, risk, requirement, and change factors. [Nazif \(2022\)](#) undertook a systematic review of BPR in logistics in Iran; [Al-Anqoudi *et al.* \(2021\)](#) reviewed literature on BPR methodologies, tools, and techniques, and success factors (drivers and enablers) and how machine learning can be used in BPR to achieve a desired state. [Fasna and Gunatilake \(2019\)](#) engaged with BPR processes in apparel, telecommunications, and manufacturing industries, including mostly in-house BPR teams. However, the findings from these studies may not be generalisable to technically oriented organisations. In their review of critical success factors for technology-related BPR in Asia, Africa, Middle East, and North America, [Virzi \(2019\)](#) identified human factors, poor project management, communication, and IT-related issues. However, this study does not reveal the experiences of the people involved; thus, may not comprise a true reflection of BPR project management realities. Further, studies in South Africa, [Edward and Mbohwa \(2013\)](#), explored leadership functions and commitment, while [Nkomo and Marnewick \(2021\)](#) investigated roles, challenges, and success factors in BPR initiatives in financial institutions. It appears that most of the extant studies are opinion pieces or have appraised BPR success factors in a review. Moreover, limited studies exist on team dynamics in a technical BPR project.

Therefore, the current study attempts to identify the critical factors in successfully undertaking a BPR project from different project management approaches. It reflects on how a BPR project was managed in a technically oriented organisation; the challenges, outcome, and project management approach applied using reflections and lessons learned. Therefore, the following research questions were posed: What factors contribute to the success of a BPR project in a technical organisation and could the project management approach adopted on the case study BPR project be applied in a similar project? The study adopts a unique approach that is rarely used in BPR research. The study’s findings will be noteworthy, especially at this time of recent global organisational changes necessitated by the COVID-19 pandemic. It is envisaged that the findings will contribute to knowledge on BPR project management success factors. The findings will benefit project managers in improving success through reflective practice.

Literature review

Project management approaches can influence BPR initiatives and processes. This section identifies factors critical to BPR project success and establishes a link with project management approaches.

Project management approaches – features and applicability

Organisations are involved in creating products and services for customers to meet a goal. Therefore, applying know-how, expertise, tools, and techniques directed at meeting specific project requirements is critical (Project Management Institute (PMI), 2013). A project often requires expertise across diverse disciplines to establish evidence-based decisions and choose appropriate methodologies, which could be traditional, agile, or hybrid, to satisfy an organisation's vision and objectives (Abbasi and Jaafari, 2018).

The traditional approaches are well established in research and practice, for example, the PMBOK Guide and Projects IN Controlled Environments (PRINCE) (Conforto *et al.*, 2014; Niederman *et al.*, 2018). They require a clear budget, comprehensive documentation and work estimates, minor customer input, and low probability of knowledge loss (PMI, 2017). Agile approaches entail specifying outcomes and preliminary targets, re-evaluating, and refining through an adaptive procedure (Kothari, 2019). Value is created sooner through fast deployments, timely tasks, and less waste of resources (Serrador and Pinto, 2015; Dikert *et al.*, 2016). Agile methods can be applied in diverse sectors for business policy, process review, and manufacturing (Kothari, 2019). They are interactive and applicable where constant communication is needed, and project specifications and solutions are established through multi-functional self-organising units (Islam, 2013).

Hybrid project management, on the other hand, promotes greater agility in responding to the demands of innovation in line with the specific organisational and project characteristics and environments (Azenha *et al.*, 2021). The hybrid method incorporates agile and traditional approaches depending on project context, managerial policy, culture, systems, and technological improvements (Niederman *et al.*, 2018). They are applicable in fast-paced projects, small start-ups and dedicated teams that can forego stringent rules and the traditional order. West *et al.* (2010) and Serrador and Pinto (2015) found that 35% and 62% of their study respondents, respectively, blended agile and other methodologies (hybrid). According to Berssaneti and Carvalho (2015), adopting well-rounded methodologies enhances the performance of projects. Project teams have adapted and combined methodologies and procedures that suit their specific context and requirements, compliance, security, documentation, budget, and time (Serrador and Pinto, 2015). While Cao *et al.* (2013) opined that hybrid methods evolve as companies adapt traditional practices with the contradictory need to employ agile methods in a changing development setting, Kerzner (2013) emphasised refraining from rigid restrictions and “one-size-fits-all” methodologies.

The attributes of the approaches are summarised in Table 1, as gleaned from various sources (Cao *et al.*, 2013; Serrador and Pinto, 2015; Collyer, 2016; Cooper and Sommer, 2016; Dikert *et al.*, 2016; Brandl *et al.*, 2018; Butler *et al.*, 2019; Tereso *et al.*, 2019). This study examines the approach used in a BPR project based on the preceding.

Business process re-engineering as a project management endeavour

Successful BPR is adaptive, collaborative, and context-aware (compliance, complexity, data-driven actions, and reasoning) and improves critical efficiency and effectiveness measures (cost, quality, service, and time) (Kir and Erdogan, 2021; Musa and Othman, 2016). Organisations that embark on BPR to respond to change must deal with complexities and technological advancements (Harika *et al.*, 2021). As projects become complex, applying traditional techniques and tools may be inappropriate (Cristobal *et al.*, 2018).

BPR has been applied in various industries, including health care, marketing, manufacturing, higher education, and technology and software engineering (Harb and Abazid, 2018; Zaini and Saad, 2019; Harika *et al.*, 2021). It has also been used in public sector transformation efforts (Mao and Jiancuo, 2018; Weerakkody *et al.*, 2021). However, a single

Table 1.
Features and
applicability of project
management
approaches

Approaches	Design prospect	Management style	Task development	Project span	Conformity	Monitor and supervising	Shortcomings
Traditional	Extended-term design; whole project life phase	Mechanically, formally, and bureaucratically driven; Strong authority, specialised	Complex development for the whole project life cycle	Comprehensive description of design; vigorous reporting of goals and anticipated outcomes	Variations are recognized and actions modified to retain design	Performance indicators, schedules, official certification and evaluation	Costly and difficult modifications; No scope for error; Deadlines; Difficult to predict and avoid problems
	Requires least customer inputs						
Agile	Short-term design with emphasis on iteration goals	Adaptable, variable, and flexible; Inter-disciplinary groups, independently managed	Lean planning for iteration sequences; Continuous re-assessment and modifications	Objectives of what needs to be built. All-inclusive, symbolic and vague depiction of goals/ anticipated results	Variations are identified and design is adapted for every interaction	Real/simulated objects and tools; Quick and regular group meetings	Little emphasis on documentation; challenging to bring new team members; progress is difficult to measure over the several cycles
Hybrid	Extended-term design centered on the entire project life and short-term design aimed at iterations	Flexible and formal; Inter-disciplinary groups with average hierarchy	Complex preliminary development with continual re-assessment and modifications	Extended-term with clear outcomes for entire task; short-term for reiterations, based on symbolic and conceptual descriptions of each reiteration goal	Adjustments are recognized and brief-term design is modified for each interface, preventing changes in extended-term design	Integrates conventional control and supervision systems	Freedom to select tasks; challenging to trace individual progress and impact

industry-wide methodology cannot apply, whether in combination or singly since organisations' resources, competence, and capabilities (Kerzner, 2013; Guesalaga *et al.*, 2018), leadership characteristics (Edward and Mbohwa, 2013) and the human element (customer service and employee involvement) (Nkomo and Marnewick, 2021) can differ within projects. Thus, facilitation, systems thinking, and process analysis skills are fundamental.

Business process re-engineering – process and methodologies

BPR entails a cycle of modelling, analysis, improvement, and implementation of processes to enhance the work in organisations (Edward and Mbohwa, 2013). It involves restructuring of processes, control-flows, environment, and perspectives systematically and holistically to accomplish dramatic improvements (Elepatha and Jehan, 2020; Kir and Erdogan, 2021). According to Radnor (2010), BPR implementation involves an analysis of needs and processes (culture, objectives, customer requirements, baseline analysis, and design specifications); design (benchmarking, brainstorming, modelling to-be) and implementation (executing and managing change). It also entails setting the vision and business goals, establishing a competent team and redesigning based on identified needs and technology (Zaini and Saad, 2019).

The most common methodology applied in many BPR processes is Hammer and Champy's 1990 model, which examines "as-is" (process modelling) towards achieving "to-be", and proposes obliteration of non-value-adding activities and redesigning from the start (Al-Anqoudi *et al.*, 2021). For example, existing systems were analysed in Ford Motors and Mutual Benefit Life, and operations were revamped to reduce the number of people working to achieve a goal (Hammer, 1990). This model supports organising the outcomes around tasks, involving end-users, treating geographically dispersed resources as though they were centralised, linking parallel activities instead of integrating their results, putting the decision point where the work is performed, process control, and capturing information once at the source. This suggests complete overhaul and streamlining of processes to achieve operational goals.

On the contrary, Davenport's 1993 views of BPR as an innovation process with IT as the primary driver of change and Manganelli and Klein's 1994 views as a rapid and radical redesign of strategic, value-added business processes, advocate a targeted approach to the specific processes requiring change for measurable gains (Zaini and Saad, 2019). This suggests that radical overhaul of organisational processes is not necessary; only those that are crucial to the company's strategic goals and customer requirements. While Hammer and Champy's model focused on the clean slate approach, Davenport focused on IT and prototype processes, and Manganelli and Klein on technical and social design with an emphasis on speed (Zaini and Saad, 2019). Wells (2012) highlighted the significance of flexibility realised via methodology tailoring and adaptive application to resolve managerial and project contextual difficulties. Organisations may concentrate on structural changes in procedures, strategies, and events during administrative changes, influencing employees, systems, methods, and work philosophy (Habib and Shah, 2013). Therefore, to admit such changes and deal with impending challenges, it is crucial to recognise the necessary change and anticipate the influence of such change.

Further, Chen (1999) emphasised the criticality of a work breakdown structure with related tools, participants, tasks and methods aligned with defined inputs and deliverables at different project phases. Bhaskar (2018) added that re-engineering endeavours should be customer-focused to ensure an improved service in an efficient way. Mao and Jiancuo (2018) suggested the use of multiple plans to coordinate BPR-led change in public sector organisations. Nonetheless, selecting an appropriate methodology must be guided by the organisation's objectives, risk level, individuals, and cost (Zaini and Saad, 2019).

Further, issues regarding the users and change management influencers need to be considered in BPR processes. According to [Hussein et al. \(2014\)](#), an integrated approach, PRISM, needs to be adopted to incorporate possible changes that may arise based on end-users' insights. The PRISM cycle accommodates an agile and iterative development process that entails determining the project objectives (scope and approaches), assessing possible risks (prototyping and progress monitoring), developing and planning detailed requirements and management (engaging end-users and further planning based on feedback). These features are the foundation of agile project management approaches and are developed within short-term phases or cycles ([Kothari, 2019](#)). Therefore, PRISM can handle problems during BPR initiatives and continuously improve the process, which is not possible in traditional approaches.

Nonetheless, while it is agreed that BPR is motivated by a need for change, it requires fundamental rethinking, radical redesign, and visible improvements in processes ([Harb and Abazid, 2018](#)). Further, since the use of BPR methodologies should not be generalised to all industries, given that each project has unique features and possible uncertainties, project management skills and expertise are essential ([Fasna and Gunatilake, 2019](#)). Based on an organisation's objectives for the BPR undertaking, evolving needs, and iterations from the process itself, unique settings and scenarios can be adapted.

Success factors and challenges of BPR projects

The success of a BPR project and the performance of the improved business process depend on the resources, capabilities and procedures that an organisation adopts and deploys ([Fasna and Gunatilake, 2019](#)). Resources, in the context of BPR projects, are objects, characteristics, conditions, and energies that are valued by the people, such as technology (hardware and software), human resources (intelligence, experience, and relationships), and tradeable assets (raw materials, patents, and licenses) ([Ali et al., 2020](#); [Jurisch et al., 2014](#)). These resources and capabilities, which can be tangible and intangible, must be employed to conceive and implement plans strategically ([Guesalaga et al., 2018](#)).

Further, change management, effective stakeholder management, defining the methodology, and an ability to measure engineered processes are critical in BPR ([Nkomo and Marnewick, 2021](#)). Organisations that continuously upgrade and implement new systems to accommodate customers' needs require change management, engaging and training people during implementation to effectively fulfil the BPR objectives ([Swartz, 2018](#)). Without engaging employees, up to 70% of BPR projects could fail, as [Madushela and Pretorius \(2017\)](#) showed.

Additionally, the expertise of the project team is critical. In their investigation of BPR projects in a Namibian public sector organisation, [Swartz \(2018\)](#) demonstrated the importance of an expert-led team with ample management support for proactive risk management and change in BPR. [Radnor \(2010\)](#) also found that visible leadership support, middle managers, cross-functionality and rapport between project teams influence the acceptance of BPR initiatives in public services. Radnor's review study suggested that public sector firms may outsource BPR projects and as such, require expertise and coordination between internal and external project teams to ensure project success. Therefore, the challenges related to BPR initiatives could be organisational culture and processes or related to project team characteristics including competence and coordination. This study examines the challenges faced in managing the technical BPR project.

Methodology

Research design

For this study, case study research was suitable for providing a holistic in-depth investigation into a contemporary phenomenon in a particular context; in this case, a BPR

project undertaken by a consulting team (Farquhar, 2012). The study adopted an interpretive case study analysed through quantitative and qualitative (reflective) methods (Babones, 2015). It was necessary to adopt a pragmatic approach and include both types of data due to the nature of the phenomenon under consideration. The researchers drew inferences from the textual and numeric data; however, with greater reliance on the qualitative aspect underpinned by interpretation (Aikenhead, 1997). Quantitative data were collected and reported to triangulate the data sources (Salkind, 2010).

Although it is believed that bias may influence the research, thus, the overall legitimacy may be questionable, it has also been argued that no research enterprise is entirely free from bias (Qaddo, 2019). Moreover, qualitative researchers are integral to the process and final product, and separation is neither possible nor desirable (Galdas, 2017). The concern should be whether there has been transparency and reflexivity (critically self-reflective about their preconceptions, relationship dynamics, and analytic focus) about the process of data collection, analysis, and presentation (Polit and Beck, 2014). The quality of inferences also depends on the personal construction of meanings based on individual experience, role, commonsense meanings ascribed and how skilled the researcher is at gathering the data and interpreting them (Babones, 2015). Further, qualitative inquiries involve asking questions that focus on the “why” and “how” of human interactions (Agee, 2009).

A reflective approach was employed to gather qualitative information on how the BPR project was undertaken. The reflection methodology is used in studies that propose better formulations of practice experience and ultimately better practice (Fook, 2011). From the hermeneutic perspective, technical reflection (concerns the efficiency and effectiveness of the means to achieve unproblematised ends) and practical reflection (which considers the means and ends of one's actions) were incorporated (Mortari, 2015). Reflection is “the active and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it leads” (Kerns, 2014, p. 1). It is often instigated by an attempt to solve a problem presented in an unusual case, or by an attempt to revisit past experiences. A reflective experience develops a careful survey of the situation, interrogates the mind, and describes and formulates a tentative hypothesis for future action. Although, this research method has been criticised for its lack of rigour, Mortari (2015) argues that “reflection is rigorous when it is grounded in a ‘scrupulous faithfulness of description’”. Further, although participant observation could have been used to observe, make notes and report on the findings, it was not suitable for this study which was conceptualised after the experience had occurred (Kawulich, 2005).

Data collection and sampling

Depending on the research environment or phenomenon, different techniques can be adopted in reflection studies, including oral or written interviews, questionnaires, written journals, and autobiographies (Mortari, 2015). The current study used structured written interviews (with open and closed-ended questions) to elicit reflections about the BPR project (Fox, 2009). Structured interviews enable the researcher to obtain responses to the same questions in the same way, which can be written down on the tool and analysed quantitatively and/or qualitatively (Fox, 2009). The theoretical framework shaped the study's questions and connected the reflective research to the BPR case and project management theories (Merriam, 2006; Smythe *et al.*, 2008).

The purposeful sampling technique was used in this study. Qualitative samples are purposive, based on the selection of participants by virtue of their capacity to provide richly textured information, relevant to the phenomenon under investigation (Vasileiou *et al.*, 2018). This strategy pre-defines which participants or cases are needed to cover all the relevant variations based on the literature, theory, or experience (Busetto *et al.*, 2020).

A single case was deemed sufficient based on practical considerations. A single case research is known for its descriptive power and attention to context (Shakir, 2002). Although studying a small number of cases restricts making statements about how the research can be extended to other situations as in survey research, clear statements should be in the research objectives about the research focus and extent to ensure trustworthiness (Farquhar, 2012). Case study choices must be governed by arbitrary or practical rather than logical considerations (Flyvbjerg, 2006). The case study was a BPR undertaken within a technical firm to improve service delivery. The appropriateness of the case under investigation was justifiable by the fact that it is an “extreme case” and “opportunistic” as described by Shakir (2002). Extreme cases demonstrate an unusual manifestation of the phenomenon such as outstanding success and notable failures and include cases that would ordinarily be inaccessible for investigation.

This study was a documentation of a case where a project team was contracted to undertake a BPR of existing processes in a technical public sector organisation in South Africa. The organisation needed improvement in processes to translate to improved product quality and staff productivity. The BPR consultant team had an opportunity to work on this project, and the fact that there is usually no such access to public organisations made it a rare opportunity. Moreover, the authors were not aware of any other project in South Africa that was undergoing a BPR of a similar size and nature.

Data were collected on the team members’ perspectives on the factors that contributed to the success of the BPR project. The team of nine members consisted of the client organisation (internal) and the outsourced project team. It was deemed acceptable to include the reflections of the project manager because, according to Smith (2003), in developing professional experience (in this case management of the BPR project), personal inclusion is required as a unique condition since meaningful, personally significant activity becomes an experience, grounded in a person’s appreciation of a system. The number of participants (nine) was deemed sufficient in this reflexive study. The sample size in studies such as this should be related to the research purpose, the chosen methodology and the sample composition (who was included and why) (Busetto *et al.*, 2020). Additionally, based on the principle of information power, the more information the sample holds, relevant for the study, the lower the number of participants required; the sample size was deemed acceptable (Malterud *et al.*, 2016).

Based on the insights from the literature review on BPR project objectives, approaches, and factors that influence BPR projects and management, open and closed-ended questions were developed. The statements were adapted from previous work and guides on how to capture lessons learned and BPR project success factors in technical organisations, in particular (California Department of Technology, 2017; Project Management Qualification, 2019; Virzi, 2019; Al-Anqoudi *et al.*, 2021; Harika *et al.*, 2021). The questions related to project planning, execution, and outcome, including processes and activities involved in a BPR project, establishing a common understanding of the scope of the project, putting the team together with clear responsibilities, leadership qualities, management commitment, resources, and alignment with organisational objectives. The questions were distributed to the participants via email in October 2020. Through the structured questioning, descriptive feedback on the reflections of the participants was obtained. The first two sections sought feedback on the project initiation and execution, respectively, on a level of agreement scale. Section C required a rating on factors that influenced the project on a scale ranging from 1 = “Not at all” to 5 = “To a great extent”; and an overall impression on the outcome of the BPR process (open-ended question).

Data analysis

Description and interpretation were used to explain the findings within the context and to enhance the reader’s understanding (Kerns, 2014). The quantitative data was analysed using

Microsoft Excel and presented in tables with mean and standard deviation (SD) values, whereas the qualitative data was analysed using content analysis. Content analysis has been used in previous studies that employed reflection (Smythe *et al.*, 2008; Kerns, 2014).

According to [Fereday and Muir-Cochrane \(2006\)](#), qualitative data can be deductively and inductively analysed in a hybrid approach. The current study adopts the qualitative content analysis over thematic analysis as the aim was to reach a descriptive (manifest content) and not interpretive (latent) level ([Vaismoradi and Snelgrove, 2019](#)). Qualitative content analysis uses codes and categories in the analytic phase of the study with the aim of developing a taxonomy for identifying relationships between pieces of data ([Vaismoradi and Snelgrove, 2019](#)). Therefore, the current study adopted the content analysis process exemplified by [Erlingsson and Brysiewicz \(2017\)](#). The following process was followed:

- (1) Step 1 – Familiarising oneself with the data and the hermeneutic spiral – reading and re-reading of the data while keeping your aim in focus. In this case, reflections on how the BPR project was undertaken were sought. However, a directed approach to content analysis was used where the analysis started with relevant research findings from the quantitative part as guidance for initial codes ([Hsieh and Shannon, 2005](#)).
- (2) Step 2 – Dividing up the text into meaning units and condensing (shortening, but still conveying the essential message of the meaning units), where necessary, based on the research aim and questions.
- (3) Step 3 – Formulating codes – Codes that concisely describe the condensed meaning units were then developed. Codes make it easier to identify connections between meaning units ([Erlingsson and Brysiewicz, 2017](#)).
- (4) Step 4 - Developing categories and themes – The codes were then sorted into categories. A category consists of codes that relate to the same topic and manifest visible content with limited interpretation on the researcher's part.
- (5) Step 5 – Generating themes and write-up – Themes were then generated in line with the evidence. The different parts were re-checked to ensure that the different parts of the text match the whole text, in a hermeneutic spiral ([Erlingsson and Brysiewicz, 2017](#)). The write-up was then presented under these themes.

From the above process, results from the open- and closed-ended questions were integrated in the presentation and discussion of findings.

Ethical considerations

Ethical considerations in the study included informed consent (participants had full knowledge of what the study entails and what the data will be used for), harm and risk (that the study will not harm participants in any way), honesty and trust (that the research is truthful in presenting the data and protects anonymity and confidentiality), and voluntary participation ([Yip *et al.*, 2016](#)). Confidentiality in data collection and reporting was ensured. Only the researchers have access to the data. In addition to the qualitative and quantitative data collected from the project team members, the project manager's handwritten memos, throughout the project and during data collection, were included. The project manager's reflections during the project were collated to complement and triangulate the findings from the other team members ([Salkind, 2010](#)).

Validity and reliability

The hermeneutic methodology challenges the expectations that certain procedures underpin trust in research ([Smythe *et al.*, 2008](#)). According to [Smythe *et al.* \(2008\)](#), "what matters is not accuracy in the sense of reliability, or how the researcher came to make certain statements,

but what has held the thinking of the researcher and in turn holds the thinking of the reader; what provokes them to wonder. Phenomena need to be examined in their existence, in the living world where people find themselves amidst twists and tangles. To remove a story from its rich textual background is to remove meaning and thus the possibility of understanding the experience as it as lived." Essentially, this hermeneutic process was attentive to thinking and listening to how the texts speak (Smythe *et al.*, 2008) and providing a faithful description of the evidence (Mortari, 2015).

To enhance validity, care was taken to ensure that the research protocol was limited to the purpose of the study (Kerns, 2014). The questions were created to guide reflexivity, aligned with the research questions and data analysis process (Swaminathan and Mulvihill, 2017). The data collection and analysis were consistently applied according to the intended understanding of the methodology (Kerns, 2014). Moreover, validity was stronger with the use of triangulation (Kawulich, 2005).

Further, this interpretive approach also met the trustworthiness criteria through: credibility (checking the interpretations against the data, transferability (capability of being applied in a different setting or context), dependability (transparent and coherent explanation of research processes), and confirmability (use of an audit trail, raw notes and triangulating data sources) (Kerns, 2014). Member checks were also used to enhance the quality of the research (Busetto *et al.*, 2020).

Findings

The findings from the study are presented and discussed in this section. The quantitative data are presented in tables and open-ended responses are enclosed in quotes, with the project manager's responses in boxes.

The BPR project and team

The BPR team was engaged by the client firm to assess the impact of the existing model used for housing inspection towards ensuring quality compliance. Initial project activities included meetings with internal project team members to explain the project and expected outcomes, and with the legal department to ensure that the outcomes were understood and agreed upon. A desktop study and document analysis of existing processes, systems, structure, reports, and policies, and stakeholder focus group workshops followed. The focus group workshops were undertaken among inspectors in four provinces; convenient locations were selected for the inspectors from the nine provinces in South Africa. Interviews were conducted with management and technical staff involved in the core business functions. Thereafter, an impact report was produced using the data. A further review of BPR processes was undertaken in line with policies in the global context. Further input from the project steering and executive committees were received and incorporated. An operational inspection model was then developed and presented for implementation in October 2020. The proposed model entailed a shift from a single in-sourced model focused on quality control to an agile model (in or duo-sourced capacity driven by demand) centred on quality assurance. The presented model included recommendations to address the voids, key processes, linkages, and people that characterise and influence the efficiency and effectiveness of housing inspections.

The BPR team was from a research centre within a higher education institution. The team comprised four people from the client organisation and five from the outsourced firm. There were five male and four female members, with experience ranging from five to twenty years in interdisciplinary fields, research, and project management. The two managers from the outsourced and client organisations were senior management staff with 15–20 years of experience.

Reflections on the BPR process and management style

The reflections on the need for the BPR initiative, the management and leadership, and resource management during project execution, factors that influenced the project and the overall outcome, were amassed.

The participants expressed their thoughts on the identified need for the project and value to the client organisation. Their responses showed that the initiative was beneficial to the organisation:

It was important to evaluate the inspection model noting that the existing one was implemented for a period to determine whether it was the optimum model for the organisation; it was important in terms of organisational development. – Participant 2

The organisation observed that change was needed ... to improve the inspection process. - Participant 1

The proposed new inspection model will benefit inspectors greatly. Inspection efficiency will be improved; with less money spent on remedial works. – Participant 4

The envisaged value of the project to the organisation was evident when the outsourced team was approached to undertake the BPR project. In undertaking the project, the team was tasked to determine what underlying factors influence inspections and the performance of inspectors and essentially how the existing processes could be improved. Initiation meetings were held to establish the requirements, project team composition, and support resources. The project leadership defined the scope and allocated roles and responsibilities. The project also required an intensive commitment of time for meetings, which yielded the opportunity to reflect on the process and scope intermittently.

Further findings in Table 2 showed that the participants were in strong agreement regarding the project being in the organisation's best interest and "all the information that was needed was provided by the organisation" with mean scores approximately 5.00. Six people agreed that the project's scope was well defined, while two disagreed. The participants were also mostly in agreement regarding having a clear understanding of how the project would be executed and the constitution of the project team. However, they disagreed on the adequacy of the time allocated for the project (Mean = 2.50). They were neutral about having a clear idea of the outcome from the project and understanding everyone's responsibilities. However, the SD of 1.32 evinces that there were varied responses regarding these last three statements.

Further comments on the initiation process supported that the project was well established and planned initially, as proffered, "*The project tasks were clear to project team; We had clear tasks in contributing to the successful delivery of the project; The study aim was clearly explained*". However, changes were inevitable down the line. These changes were related to the scope, duration, and roles. Aligned with the quantitative findings (neutral response about having clarity about the project outcome, and disagreement on the adequacy

	Statements	Mean	SD
1	I believe the project is in the best interest of the organisation	4.88	0.33
2	All the information that was needed was provided by the organisation	4.86	0.35
3	The project team was constituted in a proper manner	4.38	0.70
4	The project's scope was well defined	4.13	1.27
5	I clearly understood how the project was going to be executed	4.13	0.93
6	The project plan and schedule were well-documented	4.00	1.12
7	I understood everyone's responsibilities	3.50	1.32
8	I had a clear idea of what the outcome would be from the project	3.38	1.32
9	The allocated time for the project was adequate	2.50	1.32

Table 2.
Responses on project
initiation

of allocated time), the team got more clarity as the project progressed: “*We established our roles as the project was progressing*” (Participant 5), which in turn affected the duration of the project. The participants believed that the allocated time was insufficient, as the scope kept changing (expanding) as the project progressed. According to a participant (2): “*As in all projects, time is of the essence. The initial allocated time of three months was not adequate to conduct a study of this magnitude. Hence, the project was ongoing for about 15 months.*”

Notably, flexibility was critical to accommodate the required changes that emanated with time. The outsourced team also had to be self-sufficient through the process, working with the resources they had at their disposal, but coordinating closely with the client organisation and its stakeholders to get the job done. In fact, the agility of the leadership was a major take-away from experience, as reported by the participants.

Further reflection on how the project was executed as the BPR process progressed showed that the respondents agreed regarding the statements, mostly about “all the information that was needed was collected to inform the study” and “the methods used to undertake the study were appropriate” with the mean scores above 4.50 (Table 3). They also agreed that critical stakeholders were engaged in the process (consultation and feedback). Workshops were held with stakeholders and top-level management including inspectors, management, executives, and the council, to confirm findings from secondary research and observations on the organisation’s existing process, policies, and structure. The preliminary and mid-term findings were presented to the organisation’s representatives and the conceptualised inspection model was assessed. These sentiments were expatiated by some of the participants:

Feedback was important to ensure that the project was progressing accordingly and any areas for improvement were identified; Different views were relevant to establish the status quo and determine influencers. – Participant 1

We were able to go back to participants, and the findings were validated, and we ensured that we recorded every information as provided to us; It was important to improve on the model by involving everyone in the organisation. Upon validation of the study’s findings with the inspectorates, more inputs were incorporated to improve the model. - Participant 4

The workshops were helpful to validate all the collected data from participants before it was documented. We were able to confirm with the participants that all data collected was what they gave us, factors that can improve the delivery of quality housing. We were able to assess the model in all levels by involving everyone from the organisation.

Table 3.
Responses on project
execution

	Statements	Mean	SD
1	I believe that all the information that was needed, was collected to inform the study	4.75	0.43
2	The methods used to undertake the study were appropriate	4.63	0.48
3	All critical stakeholders were engaged	4.50	1.00
4	Presenting to all levels of the organization, i.e. inspectors, management, executive, and the council was very important to the project	4.50	0.50
5	The project experienced changes	4.50	0.50
6	The findings’ validating workshops were very helpful	4.38	0.70
7	The informants were sincere in their responses	4.38	0.48
8	The methods used to produce the inspection model were appropriate	4.00	1.31
9	It was a good idea to have in addition to the terms of reference, a service level agreement	4.00	0.76
10	The project changes were well managed	3.86	0.64
11	The project outcome matched what was defined in the terms of reference	3.67	1.25

Reflections on the factors that influenced the BPR process and outcome

The participants were asked to rate the extent to which identified factors affected the project and the lessons learned in general. The mean scores (Table 4) indicated that the respondents agreed with most of the factors, with the most influential being the project sponsor (Mean = 4.57), team composition (Mean = 4.29), and senior management (Mean = 4.14). With regard to organisational culture (Mean = 4.00), the organisation's staff (Mean = 3.86) and understanding of the process by staff (Mean = 3.71), the responses bordered on the agreed category; however, with greater variation as indicated by the SD value above 1.00. The findings also showed that the respondents were neutral regarding contract management as an influential factor on the project.

Supporting the above quantitative findings, the participants viewed that the project seemed difficult to manage as a result of the unplanned changes experienced, which posed challenges to the project. While the project sponsor, steering committee and senior management as stakeholders influenced the project, their input at intermittent periods during the BPR process was invaluable. The stakeholder workshops revealed essential contributions which helped to identify gaps and support the design ideas being conceptualised by the outsourced team.

Notable challenges were felt from the inspectors (end-users of the intended change model). The project experienced little cooperation from some inspectors due to fear of job loss, expansion of contracted scope and duration, and introduction of adjunct or support staff to manage the process better, all of which increased the costs. The participants informed:

Terms (scope and expected deliverables) could have been ironed out from the start; the changes that occurred later on could have been avoided by clear terms and obligations of both parties. – Participant 1

It was difficult to get inspectors to participate in this project, in fear of their jobs. It was also difficult to get some participants due to their busy schedule. - Participant 6

It was only difficult because inspectors seemed they were not ready for change; others were worried that the new model might take away their jobs; and some people had negative intentions. - Participant 4

It was only different from other projects we worked on as some participants were panicking thinking that the improvement of the model could increase the chances of them losing their jobs, so it was a bit difficult to manage in that perspective.

Further, the project was negatively affected by change of the project sponsor, who identified the need for BPR within the organisation. However, the project proceeded because there was a clear need for change and “*many study outcomes had been implemented throughout the Business Services section*”, as the client project manager explained, and thus the impact was minute.

Notably, most of the issues raised were a lack of clarity about the scope of the BPR project and conflict and apprehension regarding the role of inspectors if the proposed technology-integrated model was implemented to improve processes. One main takeaway was that the project was in the organisation's best interest and there was coordinated leadership from both internal and external project managers. There were, however, mixed feelings regarding other aspects of the project, especially the duration and reception of the conceptualised model.

Table 4.
Factors that influenced
the project

	Factors	Mean	SD
1	Project sponsor	4.57	0.49
2	Project team composition	4.29	0.45
3	Senior management	4.14	1.12
4	Project steering committee	4.14	0.64
5	Organizational culture	4.00	1.41
6	Organization's staff	3.86	1.36
7	Understanding of the process by staff	3.71	1.28
8	Validating workshops	3.71	0.88
9	Internal communication within organization	3.57	1.05
10	Contract management	3.29	1.03

The outcome was good as the intended objectives of the study were met to the satisfaction of the client organisation. – Participant 1

It was unsuccessful in terms of time . . . There was no proper time spent on planning the project, designing the study methodology, understanding, or designing the project objectives. Timelines of the project were impractical . . . - Participant 5

The study was a good initiative to improve quality inspections and the involvement of inspectors has added value as they could voice out their concerns; The study has outlined some of the challenges faced by the inspectors and this will give management the chance to improve the inspection processes. - Participant 6

Further, the participants opined that the leadership and team composition contributed to the project's success. As a result of the challenges and alternative scenario evaluation results, roles were redefined, and relevant resources were added when necessary. These sentiments were shared: *"The leadership was commendable on both sides . . . we could not have successfully completed the project."*

In terms of the team, the composition, capability, and experience they brought to the team were also important as a lot of flexibility was needed. Some people believe you set up a system, hit the ground, finish, and move on to the next step, but for a project of this nature where objectives were not fully defined, and very short-term, the team members needed to be flexible. That was frustrating for some of the team members; they did not like the back-and-forth, asking why we were going back and changing things. Also, in-between, the roles of team members needed to be redefined in further processes.

Some team members viewed that the project experienced some of the mentioned challenges partly as a result of poor planning. The expansion of the scope and duration was necessary given the input from the stakeholders. However, this was seen as a problem in the study as evidenced by the following statement from one of the client organisation's representatives: *"At some point it looked like the project team actually had project outcomes before the project started. The timeline was an indication that either the service provider did not understand the organisation and their stakeholders or there was a poor experience on project scheduling (both service provider and client representatives)."* However, the iterations and refining of objectives for further steps are consistent with the agile approach to project management.

The conflicting issues and varying management styles were highlighted by some inspectors who disagreed with the initially developed version of the model. The consultations with the management and council also highlighted some gaps that needed to be covered based on international best practices: *"Management were not pleased with the initial outcome*

because they felt the study documented the opinions of inspectors as they were without verifying them and the study reflected badly on their management skills. They also thought the study would have strategic findings backed by the adoption of some elements from other countries who are conducting inspections not operational findings.” Consequently, the team revisited the conceptualised model and recommendations. Nonetheless, as was indicated by one of the participants, the project outcome was good and acceptable to the management and the project sponsor. There was a likelihood of implementing the conceptualised model: “*The project report could have been organised better but due to project schedule, this was not practical. The project was eventually completed and is of good quality, thanks to the perseverance and patience of the project manager from the service provider side and this is an indication that a project team has a big influence on the project outcome. Some stakeholders were not happy that they were not consulted, but they currently support implementing the project recommendations. The proposed model is practical, cost-effective and still preserves the skill of the current inspectors while creating employment for youth etc.*”

From the above, there was an indication of client satisfaction and acceptance of the BPR project outcome. It was also evident that different project management styles were applicable to the technical BPR project, traditional and agile, to achieve the same goal. However, the traditional approach was not practicable given the duration and challenges encountered in the process. These views were summed up in the project manager’s reflections:

The time allocated for the project was indeed inadequate. It was a rapid short-term turnaround project. It was also not clear about what we were getting and expected to develop from the client organisation. We then had to have a service level agreement. We also needed a lot of interactions and back-and-forth process with the client to understand and not assume what they want to achieve from the project. The interaction was critical in the beginning, and also, because of the period or duration itself, you do not have to go too far just in case something was wrong. We wanted each piece that we worked on to be settled. Of course, it did not end up like that in the end. We achieved the intended goal with frequent interactions amongst members in the outsourced team and with the team members from the client organisation, and the presentations to management. In traditional project management, that is not possible. First of all, there would be a structure, everything is fully defined, and you are given an instruction to deliver. On this project, we did not have the complete picture. There was continuous re-planning and input on some of the aspects that needed to be done for the next phase. To ensure that what the client wanted in the end was achieved, there were many frequent meetings and presentations and every time, changes would be made, and you move forward with the input. Adjustments had to be made to adapt, with every interaction. The project manager from the client organisation inclined towards traditional project management, wanting specific things to be done before moving on to the next phase. However, because we were in frequent communication, there were elements of traditional and agile approaches coming through; thus, the process can be said to be hybrid, but with a strong bias towards agility. Overall, I do believe that what they got at the end of the project was what they wanted.

From the above, successful BPR project management should encompass the following considerations, as depicted in [Figure 1](#), which could affect the project positively or negatively:

- (1) Project process activities (needs analysis, engagement with stakeholders, alternative scenario analysis) and nature (non-confrontational, accommodating, feedback-seeking, iterative, and within expected duration).
- (2) Project leadership competences including championship qualities (flexibility, patience, expertise, and communication skills), management style, capabilities, expertise, sponsor, contracts management, and change management.

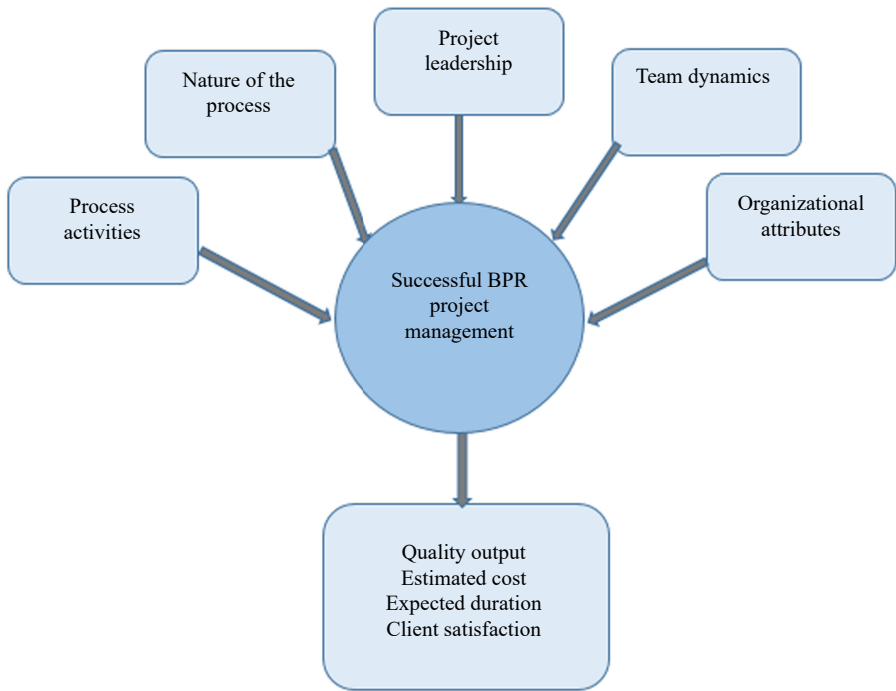


Figure 1.
BPR project
management critical
success factors

- (3) Team (people) dynamics and collaborative factors including co-ordination, composition, and flexibility of roles.
- (4) Organisational attributes including culture, policies, and strategic objectives.

The above factors could influence the extent to which BPR projects are successfully undertaken to achieve desirable outcomes – quality output, within the estimated costs, expected timelines, and to the client’s satisfaction.

Discussion

The current paper identified critical factors that affected the BPR project undertaken within a technical firm in South Africa. A project manager was appointed from the organisation’s business services section and the outsourced organisation to lead the BPR process. This was the first step in the BPR process as outlined in Manganelli and Klein’s model. The targeted change was necessary, and the project team understood what needed to be changed and the expected measurable gains, as supported in [Zaini and Saad \(2019\)](#).

In line with the PRISM approach, the re-engineering efforts began with a rethink of its view of the market and a readjustment of the company’s strategic focus. The iterations and back-and-forth cycle were necessary to establish the scope, objectives, and alternative outcomes based on the inspectors’ needs, as described in [Mao and Jancuo \(2018\)](#), which supported the use of multiple plans and reconsideration depending on emergent views from stakeholders. While the project scope and deliverables were defined at the initiation stage, changes were necessary after the interactions with inspectors. This process is in tandem with the agile approach of project management, which involves specification of outcomes and initial targets, revaluation, re-specification and refining through an adaptive procedure as advocated by [Kothari \(2019\)](#).

The study also identified that the role of the project manager was key in the iterative process. This draws on the notion that project team members should understand their roles and responsibilities, the scope, and objectives of the project, if proper planning is undertaken during the initiation process, with the leadership of the person or persons guiding the project, as was supported in [Radnor \(2010\)](#) and [Cristobal et al. \(2018\)](#). Further findings indicated that the BPR project created a space for knowledge sharing and concession on project management styles, a view supported in [Wells \(2012\)](#). Business process reengineering efforts should be flexible and tailor methodologies or management styles to particular managerial and project contextual difficulties.

Arguably, the disagreements on the management style were practically agile. Much flexibility was needed to manage the process. The challenge that arose from the BPR process due to the conflicts and disagreement with the initially developed model are common in BPR processes managed with the agile approach. The BPR process and issues identified align with [Marnada et al.'s \(2022\)](#) findings on agile approaches, which entail adaptive and iterative procedures using lessons learned. Prototyping and scope changes are common, and continuous improvement is acceptable based on end-users' needs and benchmarking with best practices. This is in line with views expressed in [Cao et al. \(2013\)](#) and [Kerzner \(2013\)](#) that traditional practices could evolve in a changing development setting and a one-size-fits-all approach is practically impossible in public entities given contemporary needs and market demands. In addition, BPR projects are uniquely characterised by organisational requirements, resources, leadership characteristics and capabilities which can also change during the project, as found by [Guesalaga et al. \(2018\)](#). Therefore, flexibility was critical.

Further, time was committed during the short period to understand the organisational culture, policies, existing processes, and expected outcomes to be able to benchmark. This is consistent with the views expressed in [Madushela and Pretorius \(2017\)](#) on the phases of BPR, involvement of employees, and project management elements incorporable. These allowed for effective communication and evaluation of alternatives. Further inputs from the validation workshops had to be incorporated in the findings. Although changes were inevitable, the project manager's flexibility to incorporate the changes in this innovative project was essential and sensed ([Ali et al., 2020](#)). This is consistent with the case of the ABC Cruise Line, where the promoters recognised that the project could use important adjustments in user requests and adopted agile approaches ([Batra et al., 2013](#)). The accommodation of changes identified during the validating workshops also aligns with the flexible PRISM model, which considers the criticality of the human element and change management factors, as was found in [Hussein et al.'s \(2014\)](#) theoretical study. Process objectives and usability are developed along with the evolving needs of the users. The BPR team becomes more cognisant of further needs and are able to define revised priorities for the characteristics to be admitted into the process. These led to the eventual acceptance of the model developed in this BPR project.

The findings that project leadership competences, including championship qualities (flexibility, patience, expertise, and communication skills) were essential in completing the BPR project correspond with [Bako and Banmeke's \(2019\)](#) results. Leadership's decision-making qualities contribute to the success of re-engineering efforts. This also resonates with the South African studies by [Edward and Mbohwa \(2013\)](#) and [Nkomo and Marnewick \(2021\)](#), who found that leadership's active commitment to delivering a project while attending to team's participation, processes and making fact-based decisions is critical.

Therefore, from the above, it can be said that the BPR project was managed using some elements of a hybrid model, but with a strong inclination towards the agile project management approach. The factors relevant to this conclusion were also identified in extant literature as reasons for changes in project management styles which in turn contributed to successful outcomes ([Vrchota et al., 2021](#); [Marnada et al., 2022](#)). Attention to the organisational attributes ([Al-Anqoudi et al., 2021](#); [Subramaniam, 2021](#); [Piwowar-Sulej,](#)

2021), project leadership and sponsorship (Bako and Banmeke, 2019; Podgórska and Pichlak, 2019), process activities involved and duration (Fasna and Gunatilake, 2019), as well as team dynamics (Bond-Barnard *et al.*, 2018). These identified factors could be used in future projects of a similar nature and size to improve how organisations execute projects.

Conclusion

The study interrogates critical success factors for project management in a BPR project through reflection. Findings revealed that project leadership and team dynamics coupled with stakeholder interactions are essential to the success of a BPR project within a technical firm. Other factors identified include project activities, nature of the process [non-confrontational, teamwork, regular meetings, engagement with stakeholders at all levels, identifying potential risks to the project, project duration, flexibility in schedule (approach to deadlines, less pressure, flexibility of the team), conflict resolution (how it was approached)], and organisational (partner) culture/expertise/experience with project management.

The study has managerial implications for BPR teams and organisations. The study was done to assess how the BPR consulting team undertook the process within the organisation. The question was whether the same project management approach could be used in a project of a similar nature. While the team faced unique factors and complex situations that influenced how the case BPR project was handled and completed, this might not be the case in another project of a similar nature. That remains to be investigated. The findings are, therefore, essential in directing organisations, especially technically oriented firms, on typical risks or success factors on their BPR initiatives. These factors should be given considerable focus if change is to be effectively implemented and in the most cost-effective way. It is up to project managers to devise ways to successfully implement projects and avoid the negative impacts of a failed project.

Therefore, these findings are beneficial in designing project management endeavours, especially BPR projects with a technical outlook or intent. Project management professionals should take cognisance of these factors and allow for adequate time for consultations, ensure that a flexible approach is adopted and engage with the end-users and management early in the project to identify their interests, which may be varied. Organisations will benefit from a clear approach on how to implement successful BPR plans to achieve desirable outcomes and internal acceptability of such projects. These findings, from a reflective point of view, could improve the success of technical BPR projects.

The study's contribution to the body of BPR and project management literature is significant as a rare methodology was used in the case study. However, the use of one case study is a limitation. Future studies could employ more cases to investigate the critical success factors for a successful BPR project. Alternative research techniques could also be employed to expand the model developed in this paper, which is by no means exhaustive. Further studies could also establish the impact of the BPR factors on project outcomes. Another possible extension is the characterisation there BPR project success factors into constructs and evaluating possible relationships. This could identify related project management concerns to tackle together in a cost-effective way. Therefore, there is scope for more studies to refute or validate the current study's findings.

References

- Abbas, W. and Asghar, I. (2010), "The role of leadership in organizational change: relating the successful organizational change to visionary and innovative leadership", Unpublished master's dissertation, University of Gavle.
- Abbasi, A. and Jaafari, A. (2018), "Evolution of project management as a scientific discipline", *Data and Information Management*, Vol. 2 No. 2, pp. 91-102.

- Agee, J. (2009), "Developing qualitative research questions: a reflective process", *International Journal of Qualitative Studies in Education*, Vol. 22 No. 4, pp. 431-447.
- Aikenhead, G.S. (1997), "A framework for reflecting on assessment and evaluation", *Proceedings of the International Conference on Science Education*, Seoul, Korea, 26-30 May.
- Al-Anqoudi, Y., Al-Hamdani, A., Al-Badawi, M. and Hedjam, R. (2021), "Using machine learning in business process re-engineering", *Big Data and Cognitive Computing*, Vol. 5, p. 61.
- Ali, M., Zhang, L., Shah, S.J., Khan, S. and Shah, A.M. (2020), "Impact of humble leadership on project success: the mediating role of psychological empowerment and innovative work behavior", *Leadership and Organization Development Journal*, Vol. 41 No. 3, pp. 349-367.
- Asikhia, O.U., Nneji, N.E., Olafenwa, A. and Owoeye, O.A. (2021), "Change management and organisational performance: a review of literature", *International Journal of Advances in Engineering and Management*, Vol. 3, p. 6779.
- Azenha, F.C., Reis, D.A. and Fleury, A.L. (2021), "The role and characteristics of hybrid approaches to project management in the development of technology-based products and services", *Project Management Journal*, Vol. 52 No. 1, pp. 90-110.
- Babones, S. (2015), "Interpretive quantitative methods for the social sciences", *Sociology*, Vol. 50 No. 3, pp. 453-469.
- Bako, Y.A. and Banmeke, M.B. (2019), "The impact of business process re-engineering on organizational performance", *Journal of Management and Technology*, Vol. 5 No. 1, pp. 1-14.
- Batra, D., Xia, W., VanderMeer, D. and Dutta, K. (2013), "Balancing agile and structured development approaches to successfully manage large, distributed software projects: a case study from the cruise line industry", *Communications of the Association of Information Systems*, Vol. 27 No. 1, pp. 378-394.
- Bayomy, N.A., Khedr, A.E. and Abd-Elmegid, L.A. (2021), "Adaptive model to support business process re-engineering", *Peer J Computer Science*, Vol. 7, e505.
- Berssaneti, F.T. and Carvalho, M.M. (2015), "Identification of variables that impact project success in Brazilian companies", *International Journal of Project Management*, Vol. 33 No. 3, pp. 638-649.
- Bhaskar, H.L. (2018), "Business process reengineering framework and methodology: a critical study", *International Journal of Services and Operations Management*, Vol. 29 No. 4, pp. 524-556.
- Bond-Barnard, T.J., Fletcher, L. and Steyn, H. (2018), "Linking trust and collaboration in project teams to project management success", *International Journal of Managing Projects in Business*, Vol. 11 No. 2, pp. 432-457.
- Brandl, F.J., Kagerer, M. and Reinhart, G. (2018), "A hybrid innovation management framework for manufacturing enablers for more agility in plants", *Procedia CIRP*, Vol. 72, pp. 1154-1159.
- Busetto, L., Wick, W. and Gumbinger, C. (2020), "How to use and assess qualitative research methods", *Neurological Research and Practice*, Vol. 2, pp. 1-14.
- Butler, C.W., Vijayarathay, L.R. and Roberts, N. (2019), "Managing software development projects for success: aligning plan- and agility-based approaches to project complexity and project dynamism", *Project Management Journal*, Vol. 51 No. 3, pp. 262-277.
- California Department of Technology (2017), "Business process reengineering framework", available at: <https://tinyurl.com/msfz4j7h> (Accessed 10 February 2022).
- Cao, L., Mohan, K., Ramesh, B. and Sarkar, S. (2013), "Adapting funding processes for agile IT projects: an empirical investigation", *European Journal of Information Systems*, Vol. 22 No. 2, pp. 191-205.
- Chen, M. (1999), "BPR methodologies: methods and tools", in Elzinga, D.J., Gulledge, T.R. and Lee, C.Y. (Eds), *Business Process Engineering*, Springer, Boston, MA.
- Collyer, S. (2016), "Culture, communication, and leadership for projects in dynamic environments", *Project Management Journal*, Vol. 47 No. 6, pp. 111-125.

- Conforto, E.C., Salum, F., Amaral, D.C., da Silva, S.L. and de Almeida, L.F.M. (2014), "Can agile project management be adopted by industries other than software development?", *Project Management Journal*, Vol. 45 No. 3, pp. 21-34.
- Cooper, R.G. and Sommer, A.F. (2016), "The agile-stage-gate hybrid model: a promising new approach and a new research opportunity", *Journal of Product Innovation Management*, Vol. 33 No. 5, pp. 513-526.
- Coughran, S. (2021), "Managing increased pressures to perform", *Strategic Financial Leadership*, available at: <https://www.strategicfinancialleadership.com/publications/managing-increased-pressures-to-perform> (accessed 10 February 2022).
- Cristobal, J.R.S., Carral, L., Diaz, E., Fraguera, J.A. and Iglesias, G. (2018), "Complexity and project management: a general overview", *Complexity*, 4891286.
- Dikert, K., Paasivaara, M. and Lassenius, C. (2016), "Challenges and success factors for large-scale agile transformations: a systematic literature review", *Journal of Systems and Software*, Vol. 119, pp. 87-108.
- Edward, L.N. and Mbohwa, C. (2013), "The role of leadership in business process re-engineering: leaders, do you want to change?", *Information and Knowledge Management*, Vol. 3 No. 2, pp. 125-130.
- Elepatha, V. and Jehan, S. (2020), "An analysis of the implementation of business process re-engineering in public services", *Journal of Open Innovation Technology Market and Complexity*, Vol. 6 No. 4, pp. 1-13.
- Erlingsson, C. and Brysiewicz, P. (2017), "A hands-on guide to doing content analysis", *African Journal of Emergency Medicine*, Vol. 7 No. 3, pp. 93-99.
- Farquhar, J. (2012), *What is Case Study Research? Ch 1 in Case Study Research Methods for Business*, Sage Publications, London.
- Fasna, M.F.F. and Gunatilake, S. (2019), "A process for successfully implementing BPR projects", *International Journal of Productivity and Performance Management*, Vol. 68 No. 6, pp. 1102-1119.
- Fereday, J. and Muir-Cochrane, E. (2006), "Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development", *International Journal of Qualitative Methods*, Vol. 5 No. 1, pp. 80-92.
- Flyvbjerg, B. (2006), "Five misunderstandings about case-study research", *Qualitative Inquiry*, Vol. 12 No. 2, pp. 219-245.
- Fook, J. (2011), "Developing critical reflection as a research method", *Creative Spaces for Qualitative Researching*, Sense Publishers, pp. 55-64.
- Fox, N. (2009), "Using interviews in a research project", *The NIHR RDS for the East Midlands / Yorkshire & the Humber 2006*.
- Galdas, P. (2017), "Revisiting bias in qualitative research: reflections on its relationship with funding and impact", *International Journal of Qualitative Methods*, Vol. 16, pp. 1-2.
- Guesalaga, R., Gabrielsson, M., Rogers, B., Ryals, L. and Cuevas, J.M. (2018), "Which resources and capabilities underpin strategic key account management?", *Industrial Marketing Management*, Vol. 75, pp. 160-172.
- Habib, M.N. and Shah, A. (2013), "Business process Re-engineering: literature review of approaches and applications", *Proceedings of the 3rd Asia-Pacific Business Research Conference*, Kuala Lumpur, Malaysia, 25-26 February.
- Hammer, M. (1990), "Re-engineering work: don't automate, obliterate", *Harvard Business Review*, available at: <https://hbr.org/1990/07/re-engineering-work-dont-automate-obliterate> (accessed 20 October 2021).
- Harb, H. and Abazid, M. (2018), "An overview of the business process re-engineering in higher education", *Asian Journal of Management Sciences and Education*, Vol. 7 No. 2, pp. 99-106.
- Harika, A., Kumar, M.S., Natarajan, V.A. and Kallam, S. (2021), "Business process re-engineering: issues and challenges", in Goyal, D., Chaturvedi, P., Nagar, A.K. and Purohit, S. (Eds),

-
- Proceedings of Second International Conference on Smart Energy and Communication, Algorithms for Intelligent Systems*, pp. 363-382.
- Holbeche, L. (2006), *Understanding Change: Theory, Implementation and Success*, Butterworth-Heinemann, Oxford.
- Hsieh, H. and Shannon, S.E. (2005), "Three approaches to qualitative content analysis", *Qualitative Health Research*, Vol. 15 No. 9, pp. 1277-1288.
- Hussein, B., Hammoud, M., Bazzi, H. and Haj-Ali, A. (2014), "PRISM-process re-engineering integrated spiral model: an agile approach to business process re-engineering (BPR)", *International Journal of Business and Management*, Vol. 9 No. 10, pp. 134-142.
- Islam, K.A. (2013), *Agile Methodology for Developing & Measuring Learning: Training Development for Today's World*, Author Solutions, Indiana.
- Jalagat, R.C. (2016), "The impact of change and change management in achieving corporate goals and objectives: organizational perspective", *International Journal of Science and Research (IJSR)*, Vol. 5 No. 11, pp. 1233-1239.
- Joslin, R. and Muller, R. (2015), "Relationship between a project management methodology and project success in different project governance contexts", *International Journal of Project Management*, Vol. 33 No. 6, pp. 1377-1392.
- Jurisch, M.C., Palka, W., Wolf, P. and Krcmar, H. (2014), "Which capabilities matter for successful business process change?", *Business Process Management*, Vol. 20 No. 1, pp. 47-67.
- Kawulich, B.B. (2005), "Participant observation as a data collection method", *Forum Qualitative Social Research*, Vol. 6 No. 2, Art 43.
- Kerns, W. (2014), "Demonstrating reflection: a content analysis of reflection that English teacher candidates demonstrate in writing", *All Dissertations*, 1364.
- Kerzner, H. (2013), *Project Management Metrics, KPIs, and Dashboards: A Guide to Measuring and Monitoring Project Performance*, Wiley, Online.
- Kir, H. and Erdogan, N. (2021), "A knowledge-intensive adaptive business process management framework", *Information Systems*, Vol. 95, 101639.
- Kothari, P. (2019), "Redefining the project manager role in scrum", available at: <https://www.agileconnection.com/article/redefining-project-manager-role-scrum> (accessed 27 October 2021).
- Lee, S.M. and Trimi, S. (2018), "Innovation for creating a smart future", *Journal of Innovation and Knowledge*, Vol. 3 No. 1, pp. 1-8.
- Madushela, N. and Pretorius, J.H.C. (2017), "An integrated approach to business process re-engineering management", *Paper Presented at the World Congress on Engineering*, 5-7 July, London.
- Malterud, K., Siersma, V.D. and Guassora, A.D. (2016), "Sample size in qualitative interview studies: guided by information power", *Qualitative Health Research*, Vol. 26 No. 13, pp. 1753-1760.
- Mao, M. and Jiancuo, Z. (2018), "Exploration of the key points of the 'multiple planning integration' reform from the perspective of BPR", *Proceedings of the 4th International Conference on Social Science and Management (ICSSM)*.
- Marnada, P., Raharjo, T., Hardian, B. and Prasetyo, A. (2022), "Agile project management challenge in handling scope and change: a systematic literature review", *Procedia Computer Science*, Vol. 197, pp. 290-300.
- Merriam, S.B. (2006), "Transformational learning and HIV-positive young adults", in Anfara, V. and Mertz, N. (Eds), *Theoretical Frameworks in Qualitative Research*, Sage, Thousand Oaks, CA, pp. 23-38.
- Metz, M. (2021), "Overview of change in organizations. Resistance to change. a literature review", *"Ovidius" University Annals, Economic Sciences Series*, Vol. XXI No. 1, pp. 611-620.
- Mortari, L. (2015), "Reflectivity in research practice: an overview of different perspectives", *International Journal of Qualitative Methods*, Vol. 14 No. 5, pp. 1-9.

- Musa, M.A. and Othman, M.S. (2016), "Business process reengineering in healthcare: literature review on the methodologies and approaches", *Review of European Studies*, Vol. 8 No. 1, pp. 20-34.
- Nazif, H. (2022), "Systematic review on business process re-engineering in logistics", *Modern Research in Performance Evaluation*, Vol. 1 No. 2, pp. 112-126.
- Niederman, F., Lechler, T. and Petit, Y. (2018), "A research agenda for extending agile practices in software development and additional task domains", *Project Management Journal*, Vol. 49 No. 6, pp. 3-17.
- Nkomo, A. and Marnewick, C. (2021), "Improving the success rate of business process re-engineering projects: a business process re-engineering framework", *South African Journal of Information Management*, Vol. 23 No. 1, a1259.
- Ozcelik, Y. (2010), "Do business process re-engineering projects payoff? Evidence from the United States", *International Journal of Project Management*, Vol. 28 No. 1, pp. 7-13.
- Piowar-Sulej, K. (2021), "Organizational culture and project management methodology: research in the financial industry", *International Journal of Managing Projects in Business*, Vol. 14 No. 6, pp. 1270-1289.
- Podgórska, M. and Pichlak, M. (2019), "Analysis of project managers' leadership competencies: project success relation: what are the competencies of polish project leaders?", *International Journal of Managing Projects in Business*, Vol. 12 No. 4, pp. 869-887.
- Polit, D.F. and Beck, C.T. (2014), *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*, Wolters Kluwer/Lippincott/Williams and Wilkins Health, Philadelphia, PA.
- Project Management Institute (PMI) (2013), *Project Management Institute A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, 5th ed., PMI Publications, Newtown Square, PA.
- Project Management Institute (PMI) (2017), *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, 6th ed., PMI, Pennsylvania.
- Project Management Qualification (2019), "How to do lessons learned in project management", available at: <https://www.projectmanagementqualification.com/blog/2019/08/21/lessons-learned/> (accessed 10 February 2022).
- Qaddo, M. (2019), "Participant observation as research methodology: assessing the validity of qualitative observational data as research tools", available at: https://www.researchgate.net/publication/334726309_Participant_Observation_as_Research_Methodology_Assessing_the_VValidity_of_Qualitative_Observational_Data_as_Research_Tools (accessed 28 August 2021).
- Radnor, Z. (2010), "Review of business process improvement methodologies in public services", NAO White Paper, available at: https://www.researchgate.net/publication/266868980_Review_of_Business_Process_Improvement_Methodologies_in_Public_Services (accessed 20 October 2021).
- Reeves, M. and Deimler, M. (2011), "Adaptability: the new competitive advantage", *Harvard Business Review*, available at: <https://hbr.org/2011/07/adaptability-the-new-competitive-advantage> (accessed 10 February 2022).
- Salkind, L.J. (Ed.) (2010), "Triangulation", *Encyclopaedia of Research Design*, Sage Research Methods, available at: <https://dx.doi.org/10.4135/9781412961288.n469> (accessed 20 October 2021).
- Sedej, T. (2021), "The change management process in the contemporary environment", *International Journal of Diplomacy and Economy*, Vol. 7 No. 1, pp. 66-78.
- Serrador, P. and Pinto, J.K. (2015), "Does agile work? A quantitative analysis of agile project success", *International Journal of Project Management*, Vol. 33 No. 5, pp. 1040-1051.
- Shakir, M. (2002), "The selection of case studies: strategies and their applications to IS implementation cases studies", *Research Letters in the Information and Mathematical Sciences*, Vol. 3, pp. 191-198.
- Smith, T.J. (2003), "Connecting theory and reflective practice through the use of personal theories", available at: <https://files.eric.ed.gov/fulltext/ED501125.pdf> (accessed 27 September 2021).

- Smythe, E.A., Ironside, P.M., Sims, S.L., Swenson, M.M. and Spence, D.G. (2008), "Doing Heideggerian hermeneutic research: a discussion paper", *International Journal of Nursing Studies*, Vol. 45, pp. 1389-1397.
- Spundak, M. (2014), "Mixed agile/traditional project management methodology – reality or illusion?", *Procedia - Social and Behavioral Sciences*, Vol. 119, pp. 939-948.
- Stouten, J., Rousseau, D.M. and De Cremer, D. (2018), "Successful organizational change: integrating the management practice and scholarly literature", *The Academy of Management Annals*, Vol. 12 No. 2, pp. 752-788.
- Subramaniam, P.R. (2021), "Quality engineering transformation over the years and issues - a review", *International Journal of Engineering Applied Sciences and Technology*, Vol. 5 No. 10, pp. 247-256.
- Swaminathan, R. and Mulvihill, T.M. (2017), *Critical Approaches to Questions in Qualitative Research*, Routledge, New York.
- Swartz, E.J.M. (2018), "Challenges to the implementation of business process re-engineering of the recruitment process in the Ministry of Fisheries and Marine Resources, Namibia", Unpublished master's dissertation, Stellenbosch University.
- Tereso, A., Ribeiro, P., Fernandes, G., Loureiro, I. and Ferreira, M. (2019), "Project management practices in private organizations", *Project Management Journal*, Vol. 50 No. 1, pp. 6-22.
- Vaismoradi, M. and Snelgrove, S. (2019), "Theme in qualitative content analysis and thematic analysis", *Forum: Qualitative Social Research*, Vol. 20 No. 3, Art 23.
- Vasileiou, K., Barnett, J., Thorpe, S. and Young, T. (2018), "Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period", *BMC Medical Research Methodology*, Vol. 18, p. 148.
- Virzi, K. (2019), "Examining the success and failure factors of business process reengineering in Africa, Asia, the Middle East, and North America: a literature review", *Open Access Library Journal*, Vol. 6, e5722.
- Vrchota, J., Řehoř, P., Maříková, M. and Pech, M. (2021), "Critical success factors of the project management in relation to Industry 4.0 for sustainability of projects", *Sustainability*, Vol. 13, p. 281.
- Weerakkody, V., Janssen, M. and 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*, Vol. 19, pp. 993-1014.
- Wells, H. (2012), "How effective are project management methodologies? An Explorative evaluation of their benefits in practice", *Project Management Journal*, Vol. 43 No. 6, pp. 43-58.
- West, D., Grant, T., Gerush, M. and D'Silva, D. (2010), "Agile development: mainstream adoption has changed agility", *Forrester Research*, Vol. 2 No. 1, p. 41.
- Yip, C., Han, N.L.R. and Sng, B.L. (2016), "Legal and ethical issues in research", *Indian Journal of Anaesthesia*, Vol. 60. No. 9, pp. 684-688.
- Zaini, S. and Saad, A. (2019), "Business process re-engineering as the current best methodology for improving the business process", *Journal of ICT in Education (JICTIE)*, Vol. 6, pp. 66-85.

Corresponding author

Chioma Sylvia Okoro can be contacted at: chiomao@uj.ac.za

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com