

Association for Information Systems

AIS Electronic Library (AISeL)

CONF-IRM 2022 Proceedings

International Conference on Information
Resources Management (CONF-IRM)

10-2022

The Nature of Business Process Redesign in Small and Medium-Sized Enterprises in a Developing Country Context

David Sanka Laar

Lisa F. Seymour

Follow this and additional works at: <https://aisel.aisnet.org/confirm2022>

This material is brought to you by the International Conference on Information Resources Management (CONF-IRM) at AIS Electronic Library (AISeL). It has been accepted for inclusion in CONF-IRM 2022 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

25. The Nature of Business Process Redesign in Small and Medium-Sized Enterprises in a Developing Country Context

David Sanka Laar
Department of Information Systems
University of Cape Town,
South Africa
LRXDAV013@myuct.ac.za

Lisa F. Seymour
Department of Information Systems
University of Cape Town
South Africa
lisa.seymour@uct.ac.za

Abstract

As important drivers of the economy, Small and medium-sized enterprises (SMEs) in developing countries need to adopt innovative business practices to deal with their volatile economic environment. Business process (BP) redesign provides transformational capabilities that can improve the performance of SMEs. However, research in BP redesign has concentrated on large organisations, mostly in developed economies, resulting in methods that are not suitable for SMEs in developing countries. This has resulted in limited adoption of BP redesign among these enterprises. SMEs have unique challenges such as resource poverty, lack of business skills, and different business goals and practices. Thus, they require BP redesign methods tailored to their needs. To contribute to addressing this gap, this paper explored the issues raised by SMEs in BP redesign initiatives in a developing country context. Through exploratory interviews with managers of SMEs, the findings show that the SMEs are characterised by severe limitations in resources, and uncertain business environment. Thus, they engage in agile, iterative, systemic, and context-sensitive process change practices. As part of a larger design science research (DSR) project, these findings serve as a foundation for designing and developing a BP redesign method suitable for SMEs in developing country contexts.

Keywords: Business process management, Business process redesign, SMEs, Developing countries.

1. Introduction

Small and medium-sized enterprises in developing countries contribute significantly to national income, employment, exports, and entrepreneurship development (Agboh, 2015). However, they face many challenges including resource poverty, and volatile and business environment which inhibit their growth and sustainability (Amoah & Amoah, 2018). Thus, they need to adopt innovative practices such as advanced management strategies, new technologies and organisational forms (Terziovski, 2010). Business Process (BP) Management (BPM) provides the capabilities to innovate and continuously transform businesses and entire cross-organizational value chains (Buh, Kovacic, & Indihar Štemberger, 2015). It leads to substantial improvements in performance such as greater flexibility, increased accuracy, reduced cost, increased productivity and customer satisfaction (Hammer, 2010).

Although there is a positive correlation between BPM and organisational performance among SMEs, the extent of BPM adoption is very low in SMEs in developing countries (Radosavljevic, 2014). On the other hand, research in BPM has dwelled heavily on larger, organizations, mostly in developed economies (Dallas & Wynn, 2014). This has resulted in generic and mechanistic BPM methods (Bucher, Raber, & Winter, 2015) that are not appropriate for SMEs since the conditions in SMEs are different from that of large organisations (Fogarty & Armstrong, 2009). Meanwhile, studies on BPM in SMEs in developing countries have concentrated on identifying the conditions that should prevail in

SMEs to ensure the success of BPM initiatives without considering the suitability of existing BPM methods (Bazhenova, Taratukhin, & Becker, 2010). As Rosemann and vom Brocke (2015) caution, it is important to consider the diverse contexts of process change initiatives when employing methods since any one-size-fits-all solution is unlikely to succeed.

We focus on BP redesign as it has been considered the backbone and a critical stage in BPM adoption, and the most value-adding activity in the BPM lifecycle (Dumas, La Rosa, Mendling, Reijers, & others, 2018). It has also received the least methodical support (Vanwersch et al., 2016). Thus, it is important to provide SMEs in developing country contexts with an effective BP redesign method to help them develop the needed capabilities for effective innovation. This requires prior knowledge of how their process change looks like. Thus, the research question is *What does business process redesign look like in SMEs in a developing country context?* The objectives are to: (1) explore the characteristics, challenges, and practices of SMEs with regards to BP redesign, and (2) to determine the implications of the redesign characteristics for BP redesign methods. Section 1 provided the research background, question, and objectives. Section 2 provides a brief literature review and a conceptual framework for the research. Section 3 deals with the research methodology, outlining the research process as well as the techniques and tools used for data collection and analysis. In section 4, the results are presented and discussed while section 5 provides the concluding remarks.

2. Conceptual Framework

Studies on BP redesign in SMEs have focused on identifying the critical success factors (CSFs) such as communication, continuous improvement, cross-functional mindset amongst senior executives, top management support, clarity on a strategic level, and information technology (Lückmann & Feldmann, 2017). However, little work has been done to uncover the features of BP redesign methods for SMEs. Although some of the studies such as Smart et al. (2004) adopted a methodological approach on BP redesign, they have not taken the impact of the organisational context into consideration. Kirchner (2017) has considered the influence of the SMEs context but focused exclusively on developed contexts.

2.1 Business process redesign methods and SMEs

BP redesign is considered broadly as the articulation of a BP in terms of its interdependent tasks, resources and other factors that have an influence on the success of the process (Limam Mansar & Reijers, 2007). It can be based on the philosophy of BP improvement (BPI) where it is concerned with relatively minor specific changes to existing BPs, or BP reengineering (BPR) where it involves major efforts undertaken to significantly improve existing processes or to create new ones (Zellner, 2011). It has been used for structuring and improving enterprise systems and processes in SME's value chain (Feldbacher et al., 2011).

Researchers have suggested that BP redesign should be approached as an 'art' rather than a science in order not to stifle innovation and creativity (Davenport, 1993). However, a methodology provides guidance for practitioners to avoid mistakes, help focus on important issues and raise important questions during a redesign effort (Vakola & Rezgui, 2000). A BP redesign method can be defined as a consistent set of techniques, guidelines and tools which enables the BP redesigner to reorganize business activities and processes in an organization (vom Brocke et al., 2021). Various researchers have proposed frameworks for BP redesign (Vanwersch et al., 2016). A set of elements synthesised from these frameworks include the *aim, actors, input, output, procedure model, technique, and tool*. However, vom Brocke, Zelt, & Schmiedel (2016) have criticized the existing frameworks as lacking a contextual dimension, arguing that context is critical for success. Thus, we conceptualise a context-sensitive methodological framework for BP redesign as comprising the elements of a BP redesign method embedded in the context of the organisation as illustrated in Figure 1.

The **aim** specifies the objectives and intended outcome that result from the application of a redesign method (Smart, Maull, & Childe, 1997). The **procedure model** indicates the order of activities to be fulfilled when redesigning BPs (Zellner, 2011). Palma-Mendoza et al. (2014) provide one of the most detailed procedure models for BP redesign. **Techniques** and **tools** help to generate the required output for each activity of redesign (Grant, 2016; Kettinger, Teng, & Guha, 1997). **Inputs** include information such as redesign requirements, redesign limitations, and as-is process specifications that are to be analysed and redesigned. **Outputs** or deliverables refer to artifacts such as documents, to-be assessments, and to-be or final redesigned process models that are produced by the activities of redesign (Vanwersch et al., 2016). **Actors** refer to the intended participants, who are responsible for carrying out the tasks of redesign (Smart et al., 1997).

However, BP redesign is shaped by the context of organisations in which it is applied including SMEs (vom Brocke et al., 2016). Although it is difficult to classify SMEs as a whole, recent developments points to the need for more investigations into their functional characteristics linked to specific areas of management methods (Kozlowski & Matejun, 2016). Varied definitions of SMEs have been devised. In this work, a SME is defined as any enterprise with 5 - 99 employees (Kayanula & Peter, 2000). Ghobadian and Gallea (1997) provide a comprehensive treatment of SMEs. Cocca and Alberti (2010) broadly categorise SME characteristics into **internal** and **external** contexts. SMEs are characterised by personalized management, severe limitations in human and financial resources, limited number of customers and access to markets; informal, dynamic strategies; a reactive, fire-fighting attitude; high innovative potential, and flat and flexible organisational structure. Most of these characteristics can be assumed to shape the practice of BP redesign in SMEs.

Previous studies have identified the most outstanding challenges of BP redesign in SMEs as including lack of financial resources, time pressure, cost pressure, limited human resource capacity, multiple roles of employees, low skill level, lack of support from senior executives, and poor knowledge of process-oriented approaches (Chong, 2007; Kirchmer, 2017). In developing countries, these constraints are compounded by adverse environmental factors such as the poor state of IT infrastructure, IT security issues, frequent power outages, lack of training opportunities and low IT skills (Asare, Gopolang, & Mogotlhwane, 2012). These result in high initial investments, and significant obstacles for undertaking BPM projects (Becker, Pfeiffer, Räckers, Falk, & Czerwonka, 2015). However, some characteristics of SMEs facilitate the adoption of BPM in SMEs (Kirchmer, 2017). Thus, a BP redesign approach for SMEs need to exploit the facilitating factors while addressing the inhibiting ones to ensure successful redesign.

3.0 Research methodology

The work reported in this article is part of a larger research project based on the Design Science Research (DSR) paradigm (Hevner, March, Park, & Ram, 2004) which is aimed at designing and developing a business process redesign method, an artifact of DSR (Gregor & Hevner, 2013). The project follows the DSR methodology (DSRM) by Peffers, Tuunanen, Rothenberger, & Chatterjee (2007), consisting of six steps: (1) Problem identification and motivation, (2) definition of the objectives for a solution, (3) Design and development, (4) Demonstration, (5) Evaluation, and (6) communication. It draws heavily from pragmatic lines of inquiry where theories are judged not by their claims to truth, but by their ability to accomplish work processes (Dewey, 1938; Goldkuhl, 2011). This view recognises that research occurs in social, historical, political, and other contexts, thus opening the door to different worldviews and assumptions (Cherryholmes, 1992), and varied research approaches (Tashakkori & Teddlie, 1998).

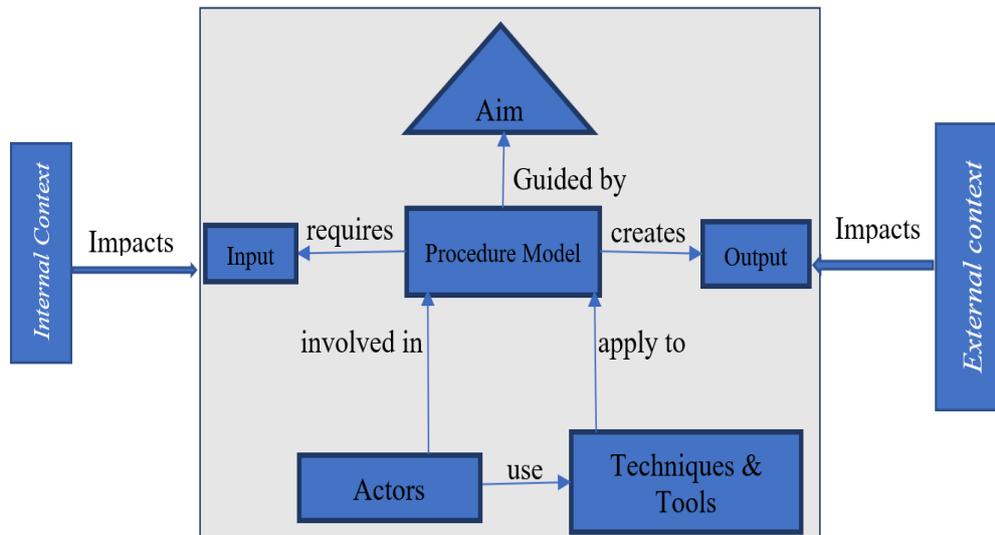


Figure 1: A Context-Sensitive method meta-model for Business process redesign

This paper is concerned with the first and second steps of the DSRM, aimed at understanding the nature of BP redesign in SMEs. Thus, an exploratory review of literature was conducted to identify the research problem and understand the concept of BP redesign (Levy & Ellis, 2006). This was followed by a qualitative study to help uncover the issues faced by SMEs and their BP redesign practices and provide a problem analysis on which to ground the design of a BP redesign method in subsequent research. The study involved three SMEs in Ghana, a developing country, which had recently undertaken some form of BP change. SMEs in Ghana form a core element that fosters employment, economic growth, and poverty alleviation (Amoah & Amoah, 2018). However, they face major challenges, most notably access to Finance, which affect their growth.

The instrument used for data collection was semi-structured interviews (Myers, 2013) and participants included SME managers, project team members, and process owners and executors. The interviews lasted for 40-60 minutes, and were audio recorded, transcribed, and loaded into NVivo 12 Plus, a Computer-Assisted Qualitative Data Analysis Software, for coding and analysis. The data was analysed using the thematic analysis method (Braun & Clarke, 2006). Ethics clearance was obtained from the Ethics Committee of the University of Cape Town and further permissions received from the management of the participating SMEs. The participants also completed a consent form before interviews proceeded. To ensure anonymity, the SMEs are labelled as Enterprise A, B, and C as shown in Table 1 together with the study participants.

4. Findings and Discussion

Themes were inductively generated from the data and categorised according to the conceptual framework in section 2. The findings are grouped into internal and external characteristics of SMEs, and their BP redesign practices. The implications of these for BP redesign approaches and methods are subsequently discussed.

4.1. Characteristics of SMEs that may shape business process redesign

In the internal context, several issues were raised by the participants as shaping their business operations. The participants talked about *goals* their enterprises had, including gaining competitive edge, offering high quality products, expanding business operations, refocusing services, and satisfying

customers. The CEO of Enterprise B stated, “high quality products first of all within the three northern regions and beyond.” For the Director of enterprise C, “... one of the objectives is to be the leading agro-chemical distributor in the north and also to be the best seed processing company in the north.” In terms of BPs, majority of the participants revealed that the SMEs were characterised by *undocumented and informal business processes*. “Yes, we have processes, but it is not well formalised, we have a way of doing that, which includes either the open market or selling to customers at the government subsidized price.” (C-CEO); “No. we just use the traditional way of doing things, that is the oral communication between me and the customer. We do not have any formal way of operation. They are in our heads” (A-CEO).

Another issue was *weak human resource capacity* occasioned by *few workers* who are *overstretched, inadequate training, and poor attitude towards work*. “Yeah, getting the employee, someone to work with was a problem. Those that can use the machine, getting such people became a problem. The working hours also becomes too much sometimes.” (B-Accounts officer). “I was the one operating the system, I just trained myself to do that.” (B- Training manger). “Workers’ behavior towards work, sometimes, a worker will not come to work and will not give any excuses.” (C-Assistant director). The participants also exhibited *limited knowledge of BPM*. “I heard of it during my school days but don’t know more about it.” (A- CEO). “I have heard of it but don’t know much about it.” (A-Storekeeper). “No for business process redesign and BPR, yes for BPM but no idea what it is.” (B-Training manager). “No idea.” (B-Accounts officer). “Yes, in general terms.” (B-CEO). The enterprises were also found to be characterised by *Limited financial resources, difficulty collecting debts, and limited physical space*. “The challenges ... are in terms of financing to grow.” (B-CEO). “Collecting money from debtors, one of the problems faced is on our debtors. Sometimes we run short of stock, but we can’t refill because we don’t have money. We find it difficult collecting the debts.” (A-Storekeeper); “We do give them on credit to use and come and pay. There are people you will chase and chase for long time before they will come and pay.” (C-Accountant). “The place is too small and for that matter affecting the growth. We want to bring in more goods but it isn’t possible because of either capital or the location of the shop, etc.” (A-CEO).

In the external context of SMEs, the issues included *high cost of energy, financial obligations to state agencies, and Customer pouching*. “I think it’s the cost of power. We pay more to [...] than any single staff at...takes home. ...That is the most difficult challenge, that can affect a lot of things.” (B- CEO). “Sometimes [...] will come and say you have not paid your taxes or [...] will say you have not paid your workers’ contribution for some time.” (C-Operations manager). “Some people come for our invoices for the purpose of using it to take money for payment from customers. These people go to inflate our prices in order to convince the customer to buy from them.” (A-Salesperson). Other external issues included *policy restrictions and Limited literacy of customers*. “Like my previous workplace, you know it’s a financial institution, but later they wanted to move into transport ... but the certificate they acquired didn’t make it possible for them.” (C-Accountant). “The illiteracy level of our farmers. We are dealing with lives (in terms of chemicals), and sometimes we find it very difficult explaining issues to the farmers. Most of the products come with labels and directions as to how to use the product, but because majority of my people are illiterates, we find it difficult selling this information to them.” (C-CEO).

4.2. Business process change practices of SMEs

Various *aims* were cited by the participants for redesigning BPs and introducing new systems. Some the reasons include to *retain and grow clients and revenue* “There are some customers, they have genuine concerns.” (C-Director). “We think we could find a way to bond closer to our customers.” (B-CEO); “We wanted to improve our services or our sales and attract more customers.” (B-Accounts officer). Some of the enterprises aimed at *improving operations, reducing cost and waste, and improving output*. For example, at enterprise A, the aim was “to improve the way, we work.” (A-Salesperson). The accounts officer at Enterprise B explained that they benefited so much from implementing a new software application: “The thing is just there all you need to do is change. That’s when there is a change on price or the dollar exchange rate in the international market... It reduces the cost of stationary that are often used in the processes.”

Another motivation was to *improve order processing and product distribution*. “We benefited a lot from the change... our distribution has really improved. Formerly, when we import goods, it will be on the warehouse for long and we will not know how to distribute. Not that they don’t request, but as I said, we don’t know how to distribute to them because of where they stay. As a result of that, we introduced the distribution in badges. It is helpful.” (C-Assistant director); “... but now the accountant is involved in the fifth process. He will complete the fifth process then the cashier receives the cash before the customer goes to the warehouse to take the goods, ... At first, the cashier will always issue what we call an invoice, and that invoice is given to the warehouse, and they will also deliver that. But now everything has been computerized.” (C-Accountant). Some of the enterprises undertook process redesign to *adopt new technology*. A manager pointed out that his enterprise redesigned its BPs to enable it to adopt a new technology. “Yeah, just recently we did some changes, we were doing normal like I told you, but we just introduced some software for accounting purpose, ... initially we use to give the waybills, sometimes where you buy, we give you receipt or invoices.” The computer generates the invoice and prints it for you.” (C-warehouse manager).

Actors in process redesign: Participants reported that most *process change projects are initiated by the CEO*. For example, “Those times we were finding difficulty in our work, so he [CEO] just came to inform us about it and... said he will introduce a system so that we will not find it difficult in our work.” (A-Storekeeper). “From the starting, he [Director] brought the idea... The CEO is leading because he brings out all the information and other issues.” (C-Assistant director). “Our boss is the main person involved. He comes to collect our suggestions so he can now guide us on how to do it (B-Training manger). The participants reported *inclusive form of stakeholder involvement*. “My boss - the CEO and some of my seniors (A-Storekeeper); “Board Chairman, Consultant of the company, legal team, the Operations Manager and the Deputy CEO of the company, and the accountant”. (C-Director). “Some of us were part; some from other branches were part.” (B- Accounts officer).

Procedures and tools for business process redesign:

The enterprises engaged *occasionally in major process redesign projects* while doing *process improvement frequently*. “We make major changes once or twice every year because the thing is that we have a meeting every month ... every manager comes out to talk about his or her unit, the challenges they face and then the rest of the house will suggest how to improve it...but major changes, once or twice a year.” (B-CEO). The steps involved in BP redesign were *informal, iterative, and collaborative*. While some of the participants described the steps they followed, others said there were no steps involved. “There was nothing like steps or any technique, it just came by itself.” (A-CEO); “We divided the work and gave it out to individuals, after which we came together to discuss the results and conclusions ... after discussion, we are to visit our previous stage, ... We were designing, ... There is a time you come back to revisit other things listed but not achieved.” (B-Accounts officer).

It was pointed out that the redesign of BPs is a complicated process and that it required the *right guidance tools and digital technologies*. However, the participants were unable to mention specific methods, techniques or tools used in their redesign projects. “If there was a structured method to follow in implementing the change it would have been better.” (A-Storekeeper). “I would prefer a guide/ tool to help guide me do things better than I use to do.” (A-CEO. “What I am saying is that the approach may be good but the implementation. If you didn’t take the right tool, you’ll finally have some challenges.” (C-Accounts officer). “We always wait until we all come together then we pinpoint some of the things we need to do, but I suggest that we should have a platform or email then we can discuss this and share the ideas with each other online before we now come together...” (B-Training manager).

Priorities in process redesign:

The participants expressed the need for *effective planning and consideration of key factors* to help mitigate challenges in redesign. “We need to strictly consider other factors and plan before we decide what we want to do. We do it but we don't do it thoroughly.” (B-Training manager). It was also considered critical to engage in *monitoring and evaluation, and to adopt new technologies* that will aid in efficiently rendering services “We have someone who normally does the assessment, a daily analysis

of how work is done.” (C-Accountant). “It should be a system with bar code like Melcom, I think it will be fine.” (A-Salesperson). It was also emphasized that *an inclusive working space should be provided* “Also, commercial areas like this [upstairs] the place should be disable-friendly.” (B-Training manager).

Staff retention, training and development were considered a priority in redesign. “The other thing that was considered was staffing. I had this that no matter the kind of change, all staff should be maintained. Their roles may change but they shouldn’t leave.” (B-CEO). *Training staff* on newly introduced systems was considered critical to enable employees operate effectively. “Even if they are not there and one of you is around, you should be able to adjust... So, everyone is trained to know almost all the services rendered so if someone is not around, others can work for him.” (B-Accountant). “After the installation of the software, they were taken through using their computers as to how to come out with an electronic invoice, how they can change prices as and when the need arises.” (C-Operations manager). The participants revealed that the need to consider the *implications of finances*. “It was well checked because people’s role will eventually lead to a change in their salaries.” (B-CEO). “And moreover, all will be done with finance, money, if there is much money, we should have been able to separate some of these things and position them in a very nice place than mixing it with other services.” (B-Training manager).

Customer centricity was considered critical in redesign. “From the middle to the end of 2016 we started realizing that our clients were not happy as they used to be. And then... we kept looking for the solutions and we realized that customer care was very necessary. No customer should walk in and spend more than 15 seconds without being attended to” (B-CEO). Similarly, enterprise C prioritised making its BPs more customer focused. “The approach we used was the farmer-based method. What happens is that we had the farmer groups already, some ... grow rice, others... grow soya beans, etc. So, you will meet the farmer group and talk to them” (C-Accountant). “May be, talking about welcoming the person, even if what the person is looking for isn’t there, you can go to the near-by shops to look for it for the person.” (A-Salesperson).

4.3. Summary of findings

The findings of study are summarised in Figure 2. The model shows the nature of BP redesign as practiced by the studied SMEs and shaped by their external and internal features. The SMEs are characterised by limited resources, informal practices, empathy for workers, limited literacy, and high level of competition. This portrayed a highly uncertain environment requiring attention in process redesign. In line with previous studies which have noted that SMEs are uncomfortable with formal change approaches (Ghobadian & Gallea, 1997), none of the participants mentioned a specific method followed in their redesign initiatives. However, they expressed the desire for a structured approach and guidance tools. Existing literature does not provide guidance on how to evaluate, select or develop redesign methods for SMEs.

The uncertain environment, organic structure and fluid culture of SMEs make them rely on business agility and innovation as a competitive advantage (Marjanovic, 2009). This featured prominently in the organisational goals of SME as the desire for change and business model innovation is high and frequent. Consequently, they require less bureaucratic redesign methods to allow them to learn about their environment and develop solutions in line with their peculiar characteristics and needs.

As the SMEs have little control over most of their constraints, notably limited financial resources, they need to focus on important initiatives and their key capabilities, and aim to make process change occur quickly and effectively (Kirchmer, 2017). Their redesign approaches must incorporate risk- or cost-benefit analysis to enable them to evaluate a proposed change against their resource capacity and environmental characteristics to ensure alignment. This calls for a context sensitive and systemic approach to redesign to enable SMEs to effectively incorporate their peculiar needs in a redesign project. The SMEs need to employ cost effective redesign methods, techniques, tools and strategies such as beginning on a small scale, flexible approach, and continuous improvement in order to deal with their limited financial capacity, managerial time, skills, and technical skills (Thiemich & Puhlmann, 2013).

The procedure model shared by the SMEs is not too different from those in mainstream literature on BP redesign (Palma-Mendoza et al., 2014). However, the difference lies in the order of activities, tools, and priorities in the redesign exercise. For the case SMEs, the procedure needs to be iterative and flexible in nature. As indicated by existing literature (vom Brocke et al., 2016; Yusof & Aspinwall, 2000), the nature of BPs and activities require them to use process change methods that are systematic, be easily understood, be simple in structure, have clear links between elements which are presented, be general enough to suit different contexts as SMEs are not a homogenous group. It should also represent a road map and a planning tool for redesigning and implementing BPs as SMEs are concerned with operational issues and immediate results. It must also incorporate digital and social technologies to facilitate collaboration among redesigners while easing the cognitive burden of redesign. It is important to note that though most of the empirical SME characteristics resemble that of large enterprises, these are on a higher side for the studied SMEs. The highlighted characteristics are specifically associated with SMEs in developing countries and should be given special attention in redesign methods and projects. The findings are not meant to be generalised, but to shade light on the features and redesign practices of the studied SMEs for projecting to similar contexts in developing countries.

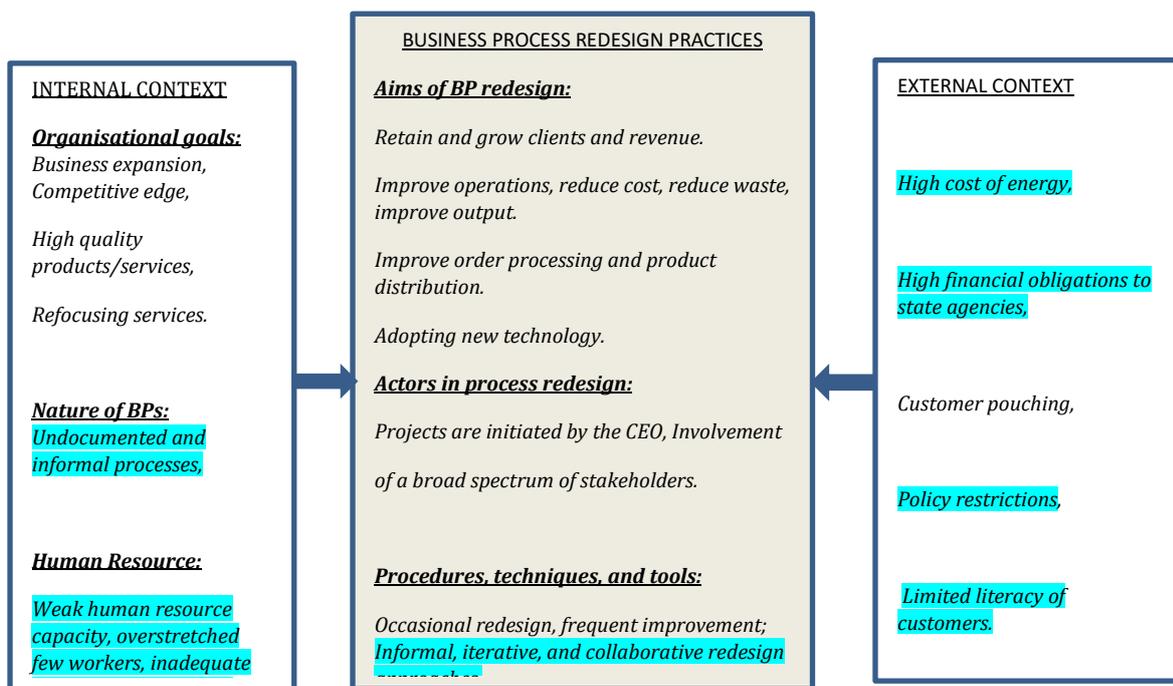


Figure 2: A Model of Business Process redesign in SMEs

5. Conclusion

We sought to address the problem of lack of suitable BP redesign methods for SMEs in developing country contexts. First, we inductively derived a conceptual framework of BP redesign methods from the mainstream BP redesign literature which helped to frame the research endeavor. The framework is an original contribution as existing literature does not provide a context-sensitive perspective for investigating BP redesign practices. The constructs of a BP redesign method have been well defined. However, they do not incorporate the peculiarities of SMEs, especially those in developing country

contexts. This makes it difficult for these entities to effectively engage in BP redesign initiatives. Therefore, there is the need to design and develop business process redesign methods specifically tailored to the needs of SMEs in developing country contexts. We contributed towards addressing this problem by revealing the challenges and process change practices of SMEs in a developing country context. The studied SMEs exhibited peculiar characteristics such as severe limitations in human and financial resources, and uncertain business environment. These in turn occasioned special approaches and priorities such as agile, cost effective, and systemic redesign approaches which have implications for the design of BP redesign methods for SMEs. The empirically generated model adds to the BP redesign literature by providing an understanding for practitioners and researchers to design BPs and develop methods for SMEs respectively.

The main limitation of this study is the small sample size involved, which makes the results difficult to generalise. However, amid limited prior work and the emerging nature of BP redesign in the study area, the qualitative study on the small sample provided the opportunity to unearth the challenges and needs of SMEs. Future studies can use mixed methods to validate these findings with large sample sizes while qualitatively looking for additional emerging issues. Future work can also build on these findings to derive more formalised design requirements for designing a BP redesign method that fits the needs of SMEs in developing countries.

Acknowledgements: David Sanka Laar acknowledges support from the Hasso Plattner Institute (HPI) Research School at University of Cape Town.

References

- Agboh, D. K. (2015). Drivers and challenges of ICT adoption by SMEs in Accra metropolis, Ghana. *Journal of Technology Research*, 6, 1.
- Amoah, S. K., & Amoah, A. K. (2018). The role of small and medium enterprises (SMEs) to employment in Ghana. *International Journal of Business and Economics Research*, 7(5), 151–157.
- Asare, S. D., Gopolang, B., & Mogothlwane, O. (2012). Challenges facing SMEs in the adoption of ICT in B2B and B2C E-commerce: A comparative case study of Botswana and Ghana. *International Journal of Commerce and Management*, 22(4), 272–285.
- Bazhenova, E., Taratukhin, V., & Becker, J. (2010). Towards business process management on small-to medium enterprises in the emerging economies. *2012 7th International Forum on Strategic Technology (IFOST)*.
- Becker, J., Pfeiffer, D., Räckers, M., Falk, T., & Czerwonka, M. (2015). Semantic business process modelling and analysis. *Handbook on Business Process Management 1* (pp. 187–217). Berlin, Heidelberg: Springer.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77–101.
- Bucher, T., Raber, D., & Winter, R. (2015). A taxonomy of business process management approaches. *Handbook on Business Process Management 2* (pp. 203–225). Berlin, Heidelberg: Springer.
- Buh, B., Kovacic, A., & Indihar Štemberger, M. (2015). Critical success factors for different stages of business process management adoption—a case study. *Economic Research-Ekonomska Istraživanja*, 28(1), 243–258.
- Cherryholmes, C. H. (1992). Notes on pragmatism and scientific realism. *Educational researcher*, 21(6), 13–17.
- Chong, S. (2007). Business process management for SMEs: an exploratory study of implementation factors for the Australian wine industry. *Journal of Information Systems and Small Business*, 1(1-2), 41–58.
- Cocca, P., & Alberti, M. (2010). A framework to assess performance measurement systems in SMEs. *International Journal of Productivity and Performance Management*, 59(2), 186–200.

- Dallas, I., & Wynn, M. T. (2014). Business Process Management in Small Business: A Case Study. *Information Systems for Small and Medium-sized Enterprises* (pp. 25–46). Berlin, Heidelberg: Springer.
- Davenport, T. H. (1993). *Process innovation: reengineering work through information technology*. Cambridge, MA: Harvard Business Press.
- Dewey, J. (1938). *Logic: The theory of inquiry* Vol. 12.
- Dumas, M., La Rosa, M., Mendling, J., Reijers, H. A., & others. (2018). *Fundamentals of business process management* (2nd ed., Vol. 1). Springer.
- Fogarty, G., & Armstrong, D. B. (2009). Modelling the interactions among factors that influence successful computerisation of small business. *Australasian Journal of Information Systems*, 15(2).
- Ghobadian, A., & Gallea, D. (1997). TQM and organization size. *International journal of operations & production management*, 17(2), 121–163.
- Goldkuhl, G. (2011). Design research in search for a paradigm: Pragmatism is the answer. *European Design Science Symposium* (pp. 84–95). Berlin Heidelberg: Springer.
- Grant, D. (2016). Business analysis techniques in business reengineering. *Business Process Management Journal*, 22(1), 75–88.
- Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. *MIS quarterly*, 37(2), 337–355.
- Hammer, M. (2010). What is business process management? *Handbook on Business Process Management 1* (pp. 3–16). Springer.
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS quarterly*, 28(1), 75–105.
- Kayanula, D., & Peter, Q. (2000). *The policy environment for promoting small and medium-sized enterprises in Ghana and Malawi*. Manchester, UK: Institute for Development Policy and Management, University of Manchester.
- Kettinger, W. J., Teng, J. T., & Guha, S. (1997). Business process change: a study of methodologies, techniques, and tools. *MIS quarterly*, 55–80.
- Kirchmer, M. (2017). Small and Medium Enterprises Need Value-Driven BPM. *High Performance Through Business Process Management* (pp. 169–182). Berlin, Heidelberg: Springer.
- Kozlowski, R., & Matejun, M. (2016). Characteristic features of project management in small and medium-sized enterprises.
- Limam Mansar, S., & Reijers, H. A. (2007). Best practices in business process redesign: use and impact. *Business Process Management Journal*, 13(2), 193–213.
- Lückmann, P., & Feldmann, C. (2017). Success Factors for Business Process Improvement Projects in Small and Medium Sized Enterprises—Empirical Evidence. *Procedia Computer Science*, 121, 439–445.
- Marjanovic, O. (2009). Inside Agile Processes: A Practitioner’s Perspective. *System Sciences, 2009. HICSS’09. 42nd Hawaii International Conference on* (pp. 1–10). IEEE.
- Myers, M. D. (2013). *Qualitative research in business and management*. Thousand Oaks, California: Sage publications.
- Palma-Mendoza, J. A., Neailey, K., & Roy, R. (2014). Business process re-design methodology to support supply chain integration. *International Journal of Information Management*, 34(2), 167–176.
- Peffer, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A design science research methodology for information systems research. *Journal of management information systems*, 24(3), 45–77.
- Radosavljevic, M. (2014). Assessment of process management maturity in developing countries based on SAW method. *Journal of Business Economics and Management*, 15(4), 599–614.
- Rosemann, M., & Brocke, J. vom. (2015). The six core elements of business process management. *Handbook on business process management 1* (pp. 105–122). Springer.
- Smart, P. A., Maull, R., & Childe, S. (1997). Integration in small and medium enterprises: specification of a business process re-engineering methodology. *Enterprise Engineering and Integration* (pp. 449–458). Springer.
- Smart, P. A., Maull, R., Childe, S., & Radnor, Z. (2004). Capitalizing on thematic initiatives: a framework for process-based change in SMEs. *Production Planning & Control*, 15(1), 2–12.

- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Sage.
- Terziovski, M. (2010). Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: a resource-based view. *Strategic Management Journal*, 31(8), 892–902.
- Thiemich, C., & Puhlmann, F. (2013). An agile BPM project methodology. *Business Process Management* (pp. 291–306). Berlin Heidelberg: Springer.
- Vakola, M., & Rezgui, Y. (2000). Critique of existing business process re-engineering methodologies: The development and implementation of a new methodology. *Business process Management journal*, 6(3), 238–250.
- Vanwersch, R. J., Shahzad, K., Vanderfeesten, I., Vanhaecht, K., Grefen, P., Pintelon, L., Mendling, J., et al. (2016). A critical evaluation and framework of business process improvement methods. *Business & Information Systems Engineering*, 58(1), 43–53.
- Vom Brocke, J., Baier, M.-S., Schmiedel, T., Stelzl, K., Röglinger, M., & Wehking, C. (2021). Context-Aware Business Process Management. *Business & Information Systems Engineering*, 1–18.
- Vom Brocke, J., Zelt, S., & Schmiedel, T. (2016). On the role of context in business process management. *International Journal of Information Management*, 36(3), 486–495.
- Yusof, S. M., & Aspinwall, E. (2000). Total quality management implementation frameworks: comparison and review. *Total quality management*, 11(3), 281–294.
- Zellner, G. (2011). A structured evaluation of business process improvement approaches. *Business Process Management Journal*, 17(2), 203–237.