Pak. j. life soc. Sci. (2025), 23(2): 881-887 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2025-23.2.00219

RESEARCH ARTICLE

Bridging the Digital Divide: The Impact of Digital Transformation on Socioeconomic Inequality in Emerging Economies

Adedeji Daniel Gbadebo*

Department of Accounting Science, Walter Sisulu University, Mthatha, South Africa

ARTICLE INFO

Received: May 16, 2025

Accepted: Jul 24, 2025

Keywords

Business Process Redesign
Idea Generation
Explorative Techniques
Exploitative Techniques
Innovation and Appropriateness

***Corresponding Author:**

agbadebo@wsu.ac.za

ABSTRACT

Business process redesign (BPR) plays a vital role in enhancing organizational flexibility and long-term value generation. This research examines how explorative and exploitative ideation techniques influence the outcomes of redesign efforts. Using data from a controlled simulation involving 200 participants, the study evaluates the number, originality, and practicality of ideas produced by each method. The findings show that explorative techniques lead to a greater volume of ideas that are more novel and varied, whereas exploitative techniques generate ideas considered more suitable for immediate implementation. Interestingly, the study finds a positive relationship between creativity and appropriateness, challenging the notion that innovative ideas are less practical. These insights underscore the distinct advantages of both approaches and advocate for their combined use in business process management. The research provides practical guidance on encouraging innovation while maintaining operational viability in BPR initiatives.

1.INTRODUCTION

Business process redesign (BPR) continues to be a key area of focus in both scholarly research and organizational practice, particularly as firms strive to boost operational efficiency, foster innovation, and remain competitive. In an era of rapidly changing environments and shifting stakeholder expectations, the importance of effective redesign strategies is increasingly evident. At the heart of BPR lies idea generation, a deliberate, creative process aimed at developing alternative process configurations to enhance performance. Despite its acknowledged significance, there remains a lack of empirical insight into how different idea generation techniques affect the quality and effectiveness of redesign outcomes.

The existing literature typically classifies idea generation techniques into two main categories: exploitative and explorative. Exploitative methods emphasize incremental change, leveraging established best practices to produce feasible and contextually appropriate solutions. In contrast, explorative methods focus on creativity and originality, aiming to uncover novel and potentially radical process innovations. Although this conceptual dichotomy is well-documented, empirical comparisons of the outcomes associated with each approach are relatively scarce. This study seeks to fill that gap by empirically investigating the influence of exploitative versus explorative idea generation techniques on BPR results. Specifically, it contrasts two well-known methods: the Best Practices of Process Redesign (exploitative) and the Business Process Design Space (explorative). A free-simulation experimental design is employed to assess the quantity, variety, innovativeness, and suitability of the ideas produced using each approach.

Recent studies, such as that by Groß et al. (2024), have begun to explore these differences more closely. Their research compared the same two techniques and found that the explorative method generated a greater number of ideas, which were also more diverse and innovative. Surprisingly, the exploitative approach did not outperform in terms of producing more suitable or high-impact solutions, challenging previous assumptions. Based on this, the study formulates the following hypotheses:

H1: Participants using the explorative technique will generate significantly more novel and diverse ideas than those using the exploitative method.

H2: Participants using the exploitative technique will produce ideas that are significantly more appropriate than those generated using the explorative method.

These findings highlight the strategic importance of aligning idea generation methods with the specific goals of BPR initiatives. While exploitative techniques may be more effective for achieving incremental gains and enhancing efficiency, explorative methods appear better suited for uncovering breakthrough innovations. Importantly, the study suggests that these approaches are not mutually exclusive. A combined or hybrid strategy that leverages both techniques may provide the most balanced outcomes—delivering both immediate operational improvements and long-term transformative value. As organizations navigate increasingly complex business landscapes, a nuanced understanding of these ideation strategies will be essential for the successful implementation of BPR.

2. EMPIRICAL LITERATURE

Empirical research consistently indicates that no single business process redesign (BPR) technique proves universally superior; rather, their effectiveness is shaped by contextual variables such as environmental volatility, technological advancement, and organizational culture. A growing body of literature has examined how various BPR strategies contribute to enhancing innovation, organizational adaptability, and performance. Central to this discourse is the distinction between exploitative and explorative ideation techniques. Exploitative methods are often associated with operational efficiency and regulatory alignment, while explorative approaches are regarded as more effective in stimulating creativity and driving long-term innovation. The most impactful BPR initiatives, as documented through both controlled experiments and comparative case studies, adopt a tailored, strategic blend of techniques that align with the unique characteristics and goals of the organization and its processes.

Dumas et al. (2018), Reijers and Limam Mansar (2010), and Groß et al. (2019) have emphasized the critical influence of the ideation phase on BPR success. Their findings consistently show that the choice of redesign method significantly affects the novelty, diversity, and contextual fit of the proposed process improvements. Exploitative techniques are frequently praised for their efficiency, rapid implementation potential, and consistency with operational benchmarks. Studies by van der Aalst et al. (2012) and Becker et al. (2011) found that methods based on process mining and established best practices perform particularly well in structured, low-uncertainty settings. These approaches have been shown to enhance throughput, optimize resource allocation, and improve compliance. Similarly, Lim et al. (2013) and Trkman (2010) reported that exploitative strategies often yield short-term gains in service delivery and customer satisfaction.

The limitations of relying solely on exploitative approaches are well-documented. An increasing number of studies highlight that while these techniques may deliver improvements within existing paradigms, they often fail to foster transformative change. Beverungen et al. (2020) and Mendling et al. (2020) caution that an overdependence on best practice repositories can lead to mimicry rather than meaningful innovation. Malinova et al. (2022) provide empirical evidence that exploitative strategies often overlook emerging digital opportunities and the complexity of evolving stakeholder expectations, especially in turbulent environments. Consequently, researchers have called for the inclusion of explorative techniques to drive creativity and strategic alignment over time.

Explorative methods are gaining recognition as vital enablers of process innovation. Empirical studies by Polyvyanyy et al. (2022), Fahland et al. (2020), and Groß et al. (2024) demonstrate that tools such as the Business Process Design Space, scenario-based modeling, and sketching exercises increase both the volume and originality of generated ideas. These techniques promote open-ended thinking, interdisciplinary collaboration, and conceptual flexibility, contributing to a wider array of novel solutions. Fahland and Weidlich (2017) showed through simulation-based modeling how hypothetical scenarios can challenge entrenched process assumptions and expose alternative pathways. Similarly, participatory modeling involving domain experts has revealed hidden inefficiencies that would remain undetected through exploitative methods.

Von Thienen et al. (2023) conducted a mixed-method study exploring how structured ideation processes, such as Design Thinking, influence idea generation. Their experiments showed that differentiating between problem exploration and solution formulation enhanced the originality and feasibility of outcomes. Participants trained in this dual-space framework produced significantly more diverse and creative solutions, which were also judged as more practical. Likewise, Maedche et al. (2019), in their case study on digital innovation projects, found that when teams actively engaged in contextual analysis they were more successful in producing user-oriented and technically viable redesigns.

A recurring theme in the literature is the trade-off between novelty and appropriateness. While explorative approaches tend to generate more innovative ideas, they are not always perceived as the most practical or executable. Groß et al. (2024) found that although explorative methods resulted in more original outputs, their operational feasibility was sometimes limited. This observation aligns with findings from Recker and Mendling (2016), who argue that high cognitive demands inherent in open-ended design processes can hinder implementation, especially in organizations with rigid hierarchies or strict governance systems. Relatedly, Rosemann et al. (2015) and Lillrank (2012) caution that without rigorous validation processes, explorative outputs may introduce inefficiencies or compliance risks.

Recent empirical work increasingly supports the hybridization of exploitative and explorative techniques. Vom Brocke et al. (2021), through a meta-analysis of 43 case studies, found that organizations combining structured, best-practice-driven methods with explorative frameworks like design thinking were more likely to achieve successful BPR outcomes. This integrated or "ambidextrous" approach allows firms to simultaneously pursue incremental improvements and radical innovations. Complementary studies by García-Crespo et al. (2020) and Gronau et al. (2022) show that digital tools facilitate this balance by enhancing both analytical rigor and creative capacity in process redesign.

3. METHODS

This study utilized a quantitative experimental design to examine the comparative effects of explorative and exploitative idea generation techniques on BPR outcomes. A between-subjects experimental setup was adopted, whereby participants were randomly assigned to one of two conditions following methodological guidelines from Campbell and Stanley (1963) and Malinova et al. (2022). This approach enabled a controlled evaluation of key outcome variables, including idea quantity, creativity, and implementation suitability.

The sample consisted of 200 individuals, drawn from both graduate business programs and professional backgrounds, all of whom possessed foundational knowledge in business process management. This ensured domain relevance and contextual familiarity, consistent with prior research (Kettinger et al., 1997; Groß et al., 2019). Participants were evenly and randomly distributed across the two experimental groups (n = 100 per group), a strategy employed to reduce selection bias and strengthen the internal validity of the findings (Shadish et al., 2002).

To simulate realistic redesign challenges, a free-form simulation task was developed based on commonly used BPM scenarios (Malhotra, 1998; Malinova et al., 2022). Participants in the explorative group applied the Business Process Design Space method, which promotes open-ended ideation and divergent thinking (March, 1991; Benner & Tushman, 2003). Those in the exploitative group used the Best Practices of Process Redesign technique, designed to enhance existing processes using established heuristics and industry standards (Attaran, 2003; Kettinger et al., 1997). Each participant was given 60 minutes to generate and document process redesign ideas through concise written descriptions.

Independent expert raters evaluated each idea's creativity and feasibility using validated 5-point Likert scales, aligned with prior BPM ideation assessment practices (Recker & Mendling, 2016; Malinova et al., 2022). Inter-rater reliability was confirmed using the intraclass correlation coefficient (ICC), which exceeded 0.85, indicating high consistency in expert evaluations (Koo & Li, 2016). The following outcome measures were used:

Idea Quantity: The total number of distinct redesign ideas generated per participant, serving as a measure of ideation productivity (Anderson et al., 2014).

Novelty: Rated on a 5-point scale, this measure captured the creativity and originality of each idea (Amabile, 1996; Jansen et al., 2006).

Appropriateness: Also evaluated on a 5-point scale, this dimension assessed each idea's feasibility, alignment with organizational goals, and practical relevance (Benner & Tushman, 2003; Groß et al., 2019).

Descriptive statistics were used to compare ideation outcomes across groups. Independent samples t-tests were conducted to test for significant differences in means between the two techniques (Field, 2018). Cohen's *d* was calculated to interpret the practical significance of observed effects (Cohen, 1988). Additionally, Pearson correlation analyses were performed within each group to explore the relationship between novelty and appropriateness, assessing whether these attributes function as trade-offs or reinforce one another (Amabile, 1996; Recker & Mendling, 2016). All statistical analyses were conducted using SPSS version 28, with an alpha threshold of 0.05 for significance testing.

4. RESULTS

The analysis yields strong empirical support for the first hypothesis (H1), demonstrating that explorative redesign techniques significantly boost both the quantity and novelty of business process redesign ideas. Participants in the explorative condition generated over 50% more ideas on average compared to those using exploitative methods, with a substantial effect size (Cohen's d = 1.45). This outcome is consistent with previous research indicating that explorative techniques foster divergent thinking and encourage broader, more creative ideation (Jansen et al., 2006; Anderson et al., 2014). The higher novelty scores assigned to ideas in the explorative group further reinforce the view that such methods promote richer, more innovative conceptualizations in process improvement tasks.

The second hypothesis (H2) also received support, although the effect was more modest (Cohen's d = 0.39). Ideas generated by participants in the exploitative group were rated significantly more appropriate, suggesting a stronger alignment with organizational objectives, greater feasibility, and higher operational relevance. This aligns with prior studies which highlight the strengths of exploitative techniques in yielding practical, efficiency-oriented solutions grounded in proven best practices (Benner & Tushman, 2003; Malinova et al., 2022). While the difference in appropriateness was less pronounced than the disparities observed for idea quantity and novelty, it underscores the value of exploitative methods in producing actionable redesign concepts.

Moderate positive correlations were found between novelty and appropriateness in both experimental groups. This suggests that greater creativity does not necessarily compromise the feasibility or practicality of idea. This finding contradicts the traditional assumptions of a trade-off between innovation and implementation potential (Amabile, 1996; Recker & Mendling, 2016). Instead, the results imply that participants were able to generate ideas that integrated both inventive thinking and real-world applicability, regardless of the ideation strategy used. This insight points to the possibility of achieving both creativity and operational fit in BPR initiatives.

Taken together, these findings highlight the strategic value of employing both explorative and exploitative techniques in business process redesign. While explorative approaches are instrumental in expanding the ideation landscape and uncovering transformative possibilities, exploitative methods help ensure that proposed solutions are viable and aligned with current capabilities. For organizations seeking sustainable and high-impact process innovation, an integrated or ambidextrous approach may be most effective—one that leverages the strengths of both creativity-driven and implementation-focused strategies (March, 1991; Malinova et al., 2022).

The results of this study offer valuable insights for organizational decision-makers and BPM professionals seeking to optimize redesign initiatives. Firstly, the strong performance of explorative techniques in generating a greater quantity of novel ideas highlights the importance of embedding creativity-driven practices within BPM structures. Organizations are encouraged to adopt policies that institutionalize explorative ideation as part of routine process improvement, fostering a culture

of innovation and responsiveness crucial for thriving in volatile and competitive markets (Brown & Wyatt, 2010; Malinova et al., 2022).

The finding that exploitative approaches yield more appropriate and feasible redesign ideas affirms the ongoing relevance of methods grounded in best practices. To this end, policymakers should ensure that redesign frameworks include structured mechanisms for evaluating feasibility, managing risk, and aligning proposals with strategic objectives. This could involve integrating formal stages that emphasize benchmarking, regulatory compliance, and operational optimization (Ketchen et al., 2015; Groß et al., 2019).

The observed complementarity between explorative and exploitative approaches suggests that neither should be used in isolation. Rather, organizations should adopt integrated BPM policies that intentionally combine both methods across different phases of redesign. For instance, early stages of the redesign process could prioritize divergent, explorative ideation to expand potential solutions, followed by exploitative refinement phases that focus on implementation, validation, and alignment. Such a hybrid or sequential strategy can maximize creative potential without compromising feasibility, ultimately improving both the quality and sustainability of process changes (March, 1991; Malinova et al., 2022).

The positive correlation between novelty and appropriateness found in this study suggests that fostering creativity does not inherently conflict with generating practical solutions. As a result, organizational policies should support capacity-building initiatives that cultivate dual competencies in creative ideation and critical evaluation. Training programs designed to enhance these complementary skills will better equip teams to generate process redesigns that are both innovative and operationally viable (Amabile, 1996; Recker & Mendling, 2016).

Lastly, organizations should invest in digital tools and technologies that facilitate both explorative and exploitative methods. Collaborative platforms, simulation tools, and process analytics software can play a key role in supporting ideation, scenario testing, and performance benchmarking. These technologies can help ensure that redesign initiatives produce outcomes that are not only inventive but also executable and aligned with strategic goals (Groß et al., 2019; Malinova et al., 2022).

Table 1. Empirical Results

Dependent Variable	Group	Mean-M	SD	t-value	Cohen's d	Significance
Quantity of Ideas	Exploitative	10.2	3.8	10.24	1.45	Significant
	Explorative	16.1	4.5			
Novelty of Ideas	Exploitative	3.3	0.7	9.18	1.30	Significant
	Explorative	4.3	0.9			
Appropriateness of Ideas	Exploitative	4.0	0.6	2.74	0.39	Significant
	Explorative	3.8	0.7			
Correlation (Novelty & Appropriateness)	Exploitative			r = 0.38		Significant Positive
	Explorative			r = 0.35		Significant Positive

Note: SD: Standard Deviation

Sources: Author (2025)

5. CONCLUSIONS

This study advances the business process management literature by empirically highlighting the distinct yet complementary contributions of explorative and exploitative redesign techniques in the context of idea generation. The explorative approach was shown to significantly foster creativity, resulting in a greater number of novel and varied process improvement ideas. The exploitative approach was more effective in generating ideas that were practical, feasible, and aligned with organizational strategies and constraints. Notably, the positive association between novelty and appropriateness challenges the conventional notion of a trade-off between innovation and implementation, indicating that organizations can pursue both objectives concurrently.

These findings reinforce the value of adopting a balanced redesign strategy that deliberately combines explorative and exploitative techniques. Such an integrated approach not only expands the range of potential process improvements but also enhances the likelihood that proposed changes

are viable and enduring. As a result, BPM practitioners and policymakers are encouraged to design frameworks and policies that enable the strategic deployment of both ideation modes to improve redesign effectiveness. Future research should build on these insights by examining the long-term impacts of hybrid redesign approaches on organizational performance and by exploring contextual factors, such as industry dynamics or organizational culture, that may influence the relative effectiveness of each technique.

6. REFERENCES

Amabile, T. M. (1996). *Creativity in context: Update to the social psychology of creativity*. Westview Press.

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management, 40*(5), 1297–1333.

Attaran, M. (2003). Information technology and business-process redesign. *Business Process Management Journal, 9*(4), 440–458.

Becker, J., Kugeler, M., & Rosemann, M. (2011). *Process management: A guide for the design of business processes* (2nd ed.). Springer.

Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review, 28*(2), 238–256.

Beverungen, D., Mendling, J., & Wetzstein, B. (2020). Guidelines for business process modeling. *Business & Information Systems Engineering, 62*(3), 193–213.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Houghton Mifflin.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Dumas, M., La Rosa, M., Mendling, J., & Reijers, H. A. (2018). *Fundamentals of Business Process Management* (2nd ed.). Springer.

Fahland, D., et al. (2020). Business process model complexity: Current state and future directions. *Business & Information Systems Engineering, 62*(6), 555–572.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

García-Crespo, Á., Ruiz-Mezcua, B., & Colomo-Palacios, R. (2020). Toward a framework for business process redesign in digital transformation. *Information Systems Frontiers, 22*, 1351–1365.

Grisold, T., Mendling, J., & vom Brocke, J. (2019). Exploring the role of process mining in business process redesign: A research agenda. *Business Process Management Journal, 25*(3), 393–414.

Gronau, N., Mendling, J., & Gross, S. (2022). Digital technologies in business process management: A review and research agenda. *Business Process Management Journal, 28*(3), 848–870.

Groß, S., Grisold, T., Mendling, J., & Haase, J. (2024). Idea generation in exploitative and explorative business process redesign techniques. *Information Systems and e-Business Management, 22*, 527–555.

Groß, S., Mendling, J., & vom Brocke, J. (2019). Structuring redesign techniques: A classification approach for business process redesign. *Business Process Management Journal, 25*(6), 1284–1310.

Hélie, S., & Sun, R. (2010). Incubation, insight, and creative problem solving: A unified theory and a connectionist model. *Psychological Review, 117*(3), 994–1024.

Gross, S., Mendling, J., & Pentland, B. (2019). Toward multi-method evaluation of process redesign techniques: An experimental design. *Business & Information Systems Engineering, 61*, 645–659.

Jansen, J. J. P., Van den Bosch, F. A. J., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science, 52*(11), 1661–1674.

Kettinger, W. J., Teng, J. T. C., & Guha, S. (1997). Business process change: A study of methodologies, techniques, and tools. *MIS Quarterly, 21*(1), 55–80.

Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine, 15*(2), 155–163.

Lillrank, P. (2012). The quality of process redesign proposals: What does it depend on? *Total Quality Management & Business Excellence, 23*(11), 1333–1347.

Lim, M. K., Pan, S. L., & Tan, B. C. (2013). Business process reengineering: A comprehensive review and classification. *Information Systems Frontiers, 15*(1), 59–79.

Maedche, A., Legner, C., Benlian, A., Berger, B., Gimpel, H., Hess, T., … Söllner, M. (2019). AI-based digital assistants. *Business & Information Systems Engineering, 61*, 535–544.

Malhotra, Y. (1998). Business process redesign: An overview. *IEEE Engineering Management Review, 26*(3), 27–31.

Malinova, M., Leopold, H., & Mendling, J. (2022). Towards an integrated view on business process redesign: The impact of process knowledge and creativity. *Information Systems, 107*, 102049.

Malinova, M., Leopold, H., Mendling, J., & vom Brocke, J. (2022). A theory of business process redesign. *Business & Information Systems Engineering, 64*(6), 649–668.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science, 2*(1), 71–87.

Mendling, J., Pentland, B. T., & Recker, J. (2020). Building a complementary agenda for business process management and digital innovation. *European Journal of Information Systems, 29*(3), 208–219.

Polyvyanyy, A., & van der Aalst, W. (2022). Business process design spaces: Supporting creative and explorative redesign. *Information Systems, 101*, 101765.

Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management, 34*(3), 375–409.

Recker, J., & Mendling, J. (2016). The state of the art of business process management research as published in the BPM conference: Recommendations for progressing the field. *Business & Information Systems Engineering, 58*, 55–72.

Reijers, H. A., & Limam Mansar, S. (2010). Best practices in business process redesign: Use and impact. *Business Process Management Journal, 16*(3), 410–433.

Rosemann, M., Recker, J., & Flender, C. (2015). Contextualization of business processes. *International Journal of Business Process Integration and Management, 5*(1), 4–14.

Sandkuhl, K., & Stirna, J. (2018). Enterprise modeling: Tackling business challenges with models. *Business & Information Systems Engineering, 60*(4), 287–293.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin.

Trkman, P. (2010). The critical success factors of business process management. *International Journal of Information Management, 30*(2), 125–134.

van der Aalst, W. M. P., Adriansyah, A., & van Dongen, B. F. (2012). Replaying history on process models for conformance checking and performance analysis. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 2*(2), 182–192.

vom Brocke, J., Mendling, J., & Rosemann, M. (2021). Business process management success factors: What is really important? *Business Process Management Journal, 27*(4), 955–972.

von Thienen, J. P. A., Fisseler, B., Meinel, C., & Corazza, G. E. (2023). Idea generation in design thinking: An empirical study of how separating problem and solution spaces improves ideation. *Creativity Research Journal, 35*(1), 61–75.