

EVALUATING THE IMPACT OF BUSINESS PROCESS OUTSOURCING ON THE PERFORMANCE OF THE SOUTH AFRICAN MOBILE TELECOMMUNICATION INDUSTRY

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ABSTRACT

During challenging times, businesses need to think critically about their core revenue-generation functions and look to streamline everything else. The outsourcing of manufacturing, services and other economic operations is a common occurrence in most industries and is a widespread phenomenon in modern businesses including the mobile telecommunications industry, although the trade-off of the impact of business process outsourcing (BPO) on the company operational performance is still inconclusive. Few studies have been conducted to empirically evaluate the impact of BPO on the operational performance of the mobile telecommunication industry quantitatively in the developing countries. Researchers have suggested that BPO implication on company performance using quantitative evaluation is underexplored, in the infancy stage, and worthy of further study in the Southern African countries including South African mobile telecom operators. This research tries to redress the existing knowledge gap and the limited body of literature by proposing a cost and productivity (CP) BPO performance measurement framework, to evaluate the impact of BPO in the mobile telecommunication industry using cost and productivity as the underpinning quantitative performance measurements. A structured closed-ended questionnaire was used to collect raw data from 210 employees. Descriptive and chi-square tests were conducted to establish the statistically significant relationship between business process outsourcing and the operational performance of mobile telecommunication. The results reflect a statistically significant relationship between the implementation of BPO and cost and productivity. The study recommended that before deciding on outsourcing, supply chain practitioners should consider using the developed cost and productivity framework, which will guide supply chain practitioners in deciding whether to insource or outsource. This research contributed to the body of knowledge by developing a cost and productivity framework that assisted the mobile telecommunications industry in evaluating the impact of BPO on operational performance using quantitative measures. Further research is needed in order to do comparison studies confirming lessons gained across industries on the impact of BPO on cost and productivity, as well as international studies.

Keywords: Business Process Outsourcing, Operational Performance, Cost, Productivity.

INTRODUCTION

Mobile telecommunication firms must remain vigilant and aware of current and emerging market conditions to remain competitive. Companies must develop operative strategies that can create customer loyalty and also develop products and services that can address customer needs.

Outsourcing has emerged as a response to the demands of the global market. Based on their use of business process outsourcing (BPO), many companies have an opportunity to reduce their costs, pay more attention to basic business operations, reducing of non-core activities and acquire new ideas, and this also applies to mobile telecom operators (Cai et al., 2020; Yuan, Chu, Lai & Wu, 2020). Business process outsourcing (BPO) was identified as the appropriate strategy for businesses to decrease costs, increase productivity and profits and create new opportunities by maximizing internal and external resources (Kulembayev, Seitkazyeva & Yelshibayev 2021; Ge, Wang & Yang, 2021). Despite its prominence in companies, the result is still inconclusive and an unexplained puzzle (Lahiri, 2016; Wu, Tannen, Anyu, Ivanov & Xu, 2023).

Regardless of, the quickly increasing literature of BPO, there is hardly any account of performance measurement using quantitative metrics for decisions to outsourcing, and such initiatives have not been introduced in related publications to our knowledge, especially in developing countries, particularly in the Southern Africa and special reference to South Africa (McIvor, 2016). Developing countries particularly Southern Africa and special reference to South Africa mobile telecom operators seem to be poorly represented in studies related to the field of business process outsourcing (BPO) performance implications, evident by various studies by Espino-Rodríguez & Rodríguez-Díaz, (2021) in Spain; Wu et al., (2023) in US; Kulembayeva et al., (2022) in Russia, Cai et al., (2020) in China; Ge et al., (2021) US; Lahiri, (2016) in USA as examples. Some studies were conducted in Kenya, Ghana and Nigeria, but no framework was developed. However, the adoption of BPO practices and their influence on firm performance is still in its early stages in developing countries (Christiansson & Rentzhog, 2020). Researchers have suggested that BPO implication on company performance using quantitative evaluation is underexplored, in the infancy stage, and worthy of further study (Wu et al., 2023). This research aims to redress the existing gap by proposing a cost and productivity (CP) framework to evaluate its impact on the organizational performance of South African mobile operators using productivity and cost efficiency as the performance measurement.

This research is motivated by the effects of BPO on firms which remains unclear and under-researched since attention was primarily centered on the decision-making aspect of whether and where to outsource (Brewer et al., 2014; Lahiri, 2016; Pratap, 2014). The South African mobile telecommunications companies are outsourcing some of their operational activities but evidence of the results of BPO on their operational performance has not been empirically proven since management use estimates that are devoid of empirical testing provides most of the evidence (Lahiri, 2016). Several studies have evaluated the impact of outsourcing on company operational performance, with the majority of them employing qualitative performance measurements in their frameworks, like quality, flexibility while others only consider cost as the quantitative metric (Prajapati, Kant & Tripathi, 2020; Espino-Rodríguez & Rodríguez-Díaz, 2021; Sandhu, Shamsuzzoha & Helo, 2017). Nevertheless, none of these has used quantitative metrics to evaluate the impact of BPO on the organization's operational performance, especially in the mobile telecommunications industry. This gives the researcher room to bring in new quantitative knowledge on measuring business performance.

In light of the above, this research explored possible solutions and proposed a framework to evaluate the impact of BPO from a developing country's perspective, particularly Southern Africa special reference to South African mobile operators using cost efficiency and productivity as the quantitative performance measurement underpinning the research.

Empirical evidence on whether or not outsourcing is beneficial with reference to cost reduction and improving productivity lacks in the mobile telecommunication industry,

particularly the southern Africa, with special reference to South Africa (Christiansson & Rentzhog, 2020); hence the need for a framework to evaluate its impact on the company's operational performance to bridge the gap. This study aims to bridge or redress the existing knowledge gap in the literature by developing a framework for quantitatively evaluating the impact of BPO on the operational performance of the South African mobile telecommunication industry using cost and productivity as the performance measurements. The literature derived from the study will also address various outsourcing aspects from a Southern African and developing country's perspective, with special attention given to South African Mobile operators.

Business Process Outsourcing in The South African Mobile Telecommunication Industry

South Africa remains one of the prominent locations for outsourcing services owing to the rapidly growing cluster of mobile telecom companies. MTN, Vodacom, Cell C, and Telkom are the four licensed mobile operators in South Africa. The South African government views business process outsourcing (BPO) as critical to job creation. In 2012, the South African BPO business was expected to have made US\$ 1.3 billion in sales (Anwar & Graham, 2019; BPESA, 2018). In 2018, South African telecommunications operators saw positive, if modest, growth as total subscriptions, device ownership, Internet penetration, and data use all increased. In 2018, the South African telecoms sector grew by over 14% to R187 billion. Telkom, which leads fixed-line telephony, and Vodacom and MTN, which dominate the mobile arena, are among the 56 companies profiled in detail. Cell C and Virgin Mobile are among the companies profiled by fibre providers such as Vumatel, Vox, and Dark Fibre (Anwar & Graham, 2019; BPESA, 2018). The South African business process outsourcing market was valued at USD 1.4 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 13.2% from 2020 to 2027. Despite its growing emphasis, the result is still vague and not tested empirically in South Africa, as little research has been conducted to empirically evaluate the impact of BPO on the company's operational performance using quantifiable measurements (Christiansson & Rentzhog, 2020; Anwar & Graham, 2019).

South African mobile telecom operators are forced to look for ways to reduce costs of operations, improve productivity and profitability by outsourcing some of its value chain activities such as tower infrastructure management, security, asset management, network planning, maintenance, operation of mobile network base stations, network infrastructure, resolving software problems and monitoring the network on capacity overload (network operation services) equipment maintenance and manufacturing/ assembling but there has been lack of established consensus on the actual end effect of outsourcing (Anwar & Graham 2019; BPESA, 2018). The results of such decisions have yet to be proved empirically. Furthermore, empirical studies attempting to quantify the influence of BPO on firm operational performance have yielded mixed results (Wu et al., 2023; Lahiri, 2016). This research aims to reconcile these conflicting findings in the literature by proposing a cost efficiency and productivity model (CP) to explain the statistically significant relationship between BPO and firm performance to redress the existing knowledge gap. This research uses the words company, organization, business and firm interchangeably.

The Concept of Business Process Outsourcing

Business process outsourcing is defined as the "transferring responsibility for entire functions such as human resources, logistics, customer contact, and information technology (IT)

services to both local and offshore vendors"(Drzewiecki,2021:1287-1288; Ge et al.,2021;1570).Mbanje & Lunga,(2023:36) defined "outsourcing as a strategic decision by a company to reduce costs and increase efficiency by hiring another individual or company to perform tasks, provide services or handle operations that the company previously did".Organizations have resorted to business process outsourcing (BPO) to improve the operational performance of the organization (Ciasullo et al., 2018); Modak, Ghosh & Pathak, (2019). Regardless of the academic perspective that "outsourcing can result in gains for the firm if properly executed(kaur & Dutt, 2018:1-3)and pains if inadequately formulated and implemented" (Lee, Lee, Malatesta & Fernandez ,2019: 973-974;) there is limited empirical literature conducted on large-scale as to whether BPO profits a company (Lahiri, 2016).This discrepancy prompted the author to propose a new framework to bridge the gap, especially in developing countries, with a special reference to the South African mobile telecommunication industry.

Underpinning Theories

This section highlighted the various theories that build the understanding between BPO and cost efficiency and productivity regarding South African mobile telecom operators. The research is grounded by TCE and RBV as the two theories or theoretical lenses underpinning the study. The BPO theories adopted by the research are explained below.

Resource-Based View (RBV)

Resource-based view indicates that a "firm is a bundle of assets and resources that, if employed in distinctive ways, can create competitive advantage". In the RBV, firm resources refer to all assets, capabilities, organizational processes, firm attributes, knowledge, and other factors controlled by the firm that it can use to conceive and implement strategies to achieve a competitive advantage in the marketplace (Varadarajan ,2020:15-18). The RBV focuses managerial attention on the firm's internal resources to identify those assets, capabilities and competencies that can deliver superior competitive advantages and profit margins (Mojunder & Singh,2021; Barney,1991). Activities in which the firm maintains a superior resource position or capabilities will likely be retained in-house. In contrast, those for which resource position or capability is weak are candidates for outsourcing (Yu et al., 2020).

According to RBV, "Activities composed of valuable, rare, inimitable and non-substitutable resources will lead to obtaining the competitive advantage and make up the core competencies" (Varadarajan, 2020:15-18; Lacity et al., 2017:269-270). RBV takes a more "internal" approach, arguing that "competitive advantage can be acquired by effectively exploiting precious, uncommon, imperfectly imitable, and non-substitutable physical, technological, and human resources"(Sony & Aithal, 2020:2581-2582; Barney, 1991). If resources are utilized efficiently to perform a function or business processes, they can create a competitive edge in the mobile telecommunications industry. As a result, when enterprises lack the resources and capabilities to achieve the desired result, business tasks of mobile telecom companies should be outsourced to third parties to increase profit (Kumar & Rodrigues, 2020). This research utilized this theory as the mobile operators can tape competency from the market to reduce cost and improve productivity.

Transaction Cost Economies (TCE) / (Transaction Cost Theory)

Organizations endeavour to minimize costs (direct and indirect costs) by developing collaborations or providing structures or practices that lead to competitive advantage (Ketokivi & Mahoney, 2020). Transaction costs economics (TCE) indicates that "network operators can achieve production cost efficiencies through economies of scale and specialization if they outsource and thus improve profitability"(Motiani & Kulkarni,2021:249-250). From a "transaction cost economics standpoint, outsourcing certain activities in favour of external providers (i.e. buy) rather than internalizing those activities within the firm hierarchy (make) allows firms to lower transaction costs related to production" (Lahiri, 2016:464-465). In summary, experienced external service providers of network operating services can benefit from economies of scale and other cost savings, permitting them to avail services at reduced costs than in-house network operators' vendors.

According to Yuan, Chu, Lai & Wu, (2020:54-55) and Williamson, (2006), the transaction cost theory refers to the "costs of acquiring and handling the information about the quality of inputs, the relevant prices and the supplier's reputation". Additional expenses such as search, transaction, contracting, and coordination are widely used to evaluate whether to outsource or produce goods or services internally (Ge et al., 2021). The term " core competencies " also describes the activities that the firm performs better than its competitors" (Roeck, Sternberg & Hofmann ,2020:2124-2141;Lacity et al., 2017:269-270). This theory is relevant for this research because it examines cost & productivity considerations as one of the drivers of outsourcing.

Business Process Outsourcing Performance Measurements

As mobile network operators outsource large and sophisticated tasks, performance management has grown increasingly difficult. In particular, performance management can often be more complex in business services than manufacturing. For instance, "without a proper 3PL selection process (Hwang et al., 2016:103-104), the performance measures in outsourcing processes and an appropriate supplier control process, user firms can run the risk of loss of control over 3PL providers, difficulty in evaluating supplier competence, and supplier opportunism" (Zhu, Ng,Wang.,&Zhao., 2017; Yuan et al., 2020).

Bennett et al., 2017 (307-308) defined performance "as a multi-dimensional notion, which is the degree to which a firm manages to accomplish its predetermined goals". According to Neely, Gregory & Platts, (1995:80-81), "a measure is a metric which records an observable value like performance. A performance measure is a metric used to quantify the efficiency and/or effectiveness of an action", and the measurement of performance in the process of quantifying actions. Kivijarvi & Toikkanen, (2015: 156) defined "a performance measurement system as a set of related metrics used to quantify the efficiency and effectiveness of actions".

For this research in empirically evaluating the impact of BPO (independent variable) on the operational performance of the mobile telecommunications industry, the researcher adopted the direct measures in the form of cost and productivity (dependent variable) as the underpinning performance metrics. The BPO metrics adopted by the research are presented below.

Cost Efficiency as A Measure/Metric To Evaluate The Impact Of Business Process Outsourcing In The Mobile Telecommunications Industry

Cost efficiency is one of the primary drivers for business process outsourcing (BPO). Several research papers and more publications on the industry made the point that outsourcing permits an organization to minimize costs and focus on core competencies (Cai et al., 2020; Yuan et al., 2020). In tough times, the first thing companies need to do is look at cash flow to preserve funds and eliminate capital expenditure. By outsourcing processes that are essential for operations, companies can take cost-effective steps to ensure business continuity (Pia, Correa & Hurtado-Torres, 2021; Bhushan et al., 2018); and reduction of non-core activities (Yuan et al., 2020). Other benefits include cost reductions through process improvements and re-engineering to bring control administrative and production costs from fixed to flexible by paying only for a service as it is needed. With certain day-to-day operations taken care of, the business management team can spend more time growing the business (Pankowska, 2019; Zhu et al., 2017). The objective of outsourcing decisions would be to reduce cost (Zhang et al., 2018; Espino-Rodriguez & Rodriguez-Diaz, 2021). "Outsourcing network activities including order entry, provisioning, service rollout, and field maintenance, as well as base station maintenance, can result in significant cost savings and process efficiency" (Rodriguez et al., 2017:13-14).

Kenton (2021) explained cost cutting as means adopted by a company to minimise its expenses and improve profitability. Cost-cutting measures are typically implemented during times of financial distress for a company or during economic downturns. They can also be enacted if a company's management expects profitability issues in the future, where cost-cutting can then become part of the business strategy. Cost reduction" is defined by Naz, Ali, Naz & Sadiq (2013:683-684) "the process of maximizing profit by employing cost-effective methods and operating under the assumption of economies of scale." Economies of scale benefit both the suppliers and the customers financially. The vendor gains knowledge as well as access to new technology and equipment, reducing the cost of purchasing services rather than developing them internally. This has the potential to reduce opportunity costs by lowering infrastructure construction costs (capital investment). "Cost uncertainty may be eliminated if contract services are obtained at a fixed cost" (Bhushan et al., 2018:265-266).

Theoretically, BPO is expected to reduce costs and gain benefits from the service provider's competencies, and services permit direct the firm towards core capabilities. However, several studies have practically established that the proportions of outsourcing can deliver unacceptable results to the client (Lee et al., 2019). A large proportion of supply chain practitioners in several studies have indicated occurrences of the absence of expected benefits or having reversed decisions to outsource (Liu & Tyagi, 2017). In a report compiled by Deloitte & Touche, (2022), on outsourcing fixed costs on Information Technology, Human Resources, Finance and Accounting, and procurement as the big four types of fixed costs being changed to variable costs by outsourcing" hence it becomes apparent to use cost to evaluate the impact of BPO. Scholars argued their recommendation not to outsource the organization's competencies to lower costs and enhance innovative capabilities (Espino-Rodríguez & Rodríguez-Díaz, 2021).

The above theoretical evidence of BPO as a strategy to reduce costs are supported and compliment the research of Hanafizadeh & Zare Ravasan ,(2018) whose results indicated that reducing payroll costs, the minimization of cost was one of the key driving forces, moving domestic and offshoring ITO decisions. The findings are also consistent with the other studies by Zhang et al., (2018); Liu & Tyagi, (2017). Agreeing with the above results is the study by Pia Ellimaki, Aragon-Correa & Hurtado- Torres, (2021) .This results indicated a positive relationship between BPO implementation and cost efficiency.However the study by Espino-Rodríguez & Rodríguez-Díaz, (2021) conflicts with the above results. The author recommended not outsourcing the organization's core competencies to lower costs and enhance innovative capabilities. This research aims to confirm these conflicting findings in the literature by viewing the research question "Does BPO improve cost efficiency in the mobile telecommunication industry”.

The researcher used the following sub-constructs as the one underpinning the study to measure or describe a firm's cost efficiency: cost of labour, operational expenses/cost, total cost of ownership, capital investment, developmental cost, investment in research & development, elimination of the fixed cost of in-house staff by moving the function to a service provider and an improvement in selling, general, and administrative expense. These subconstructs were included in the research instrument(questionnaire). Cost efficiency is one of the dimensions underpinning the current research in evaluating business performance.

Productivity as A Measure/Metric To Evaluate The Impact Of Business Process Outsourcing In The Mobile Telecommunications Industry

Productivity metrics "can be measured from the ratios of outputs and inputs. Output is measured through the total revenue or sales of the firm, while inputs are measured through the number of employees and the total assets or inventory required to generate the output" (Mohr ,2019:157). Fawcett, Ellramand & Ogden ,(2021) defined productivity as the outputs generated by an activity to the resources consumed by the activity and is usually expressed as a ration. Mohr,(2019:157)defines productivity as "a measure of economic performance that compares the amount of goods and services produced (output) with the amount of inputs used to produce those goods and services."

Metrics measuring productivity growth include market share expansion and revenue growth linked to outsourcing (Maziarczyhk, 2020:41)."Improved delivery metrics, higher learning and acquisition of new skills, improved innovation, and increased access to international markets and resources" are some of the other areas of improved performance targeted through outsourcing (McIvor ,2016:321-322). By contracting out of service, firms can benefit from dynamic (productivity growth) and static (productivity level) specialized improvements. Organizations use production elements more effectively in those (more skill-intensive) stages that remain in-house by contracting out their least skill-intensive activities. They gain a variety of learning-by-doing benefits as a result of this. Instead, a less "standard" externalization strategy that seeks dynamic efficiency (e.g. through innovation outcomes) by externalizing high-value-added services such as "R&D," "Human Resource Management (HMR)," and, more broadly, the

so-called "Knowledge Intensive Business Services" (KIBS) could have a positive productivity impact" (Kaur & Dutta, 2018:1-3; Antonioli et al., 2015:292-293).

Scholars argued that outsourcing decisions affect productivity, but empirical findings in this strand are inconclusive. The above theoretical evidence of BPO improving productivity is compatible and in agreement with the work of with Prajapati, Kant & Tripathi's (2020) Maziarczyk, (2020), Kaur & Dutta, (2018) and Sandhu et al., (2017) in which they indicated a positive relationship between BPO implementation and Productivity. However, this conflicts with the study by Mazzola, Bruccoleri & Perrone (2019), in which the results confirmed a negative relationship between outsourcing and productivity. This is also supported by Lee, Lee, Malatesta & Fernandez, (2019), whose results indicated a negative relationship between BPO implementation and productivity. Capolupo, Amendolagine & Ferri, (2017) found no statistically significant relationship. This research aims to reconcile these conflicting findings in the literature by viewing the research question "Does BPO improve productivity in the mobile telecommunication industry" with a view of proposing a framework to evaluate the impact.

The researcher considered assets turnover, inventory turnover, increase in market share, increase in sales, reduction in customer response cycle time, economies of skill, improvement in new technology and improvement in process and employee productivity as the underpinning sub-constructs to measure a firm's productivity. These sub-constructs were included in the research instrument (questionnaire). Productivity is one of the dimensions underpinning the current research in evaluating business performance.

Researchers have not quantified the exact influence of BPO on an organization's operational performance (Christiansson & Rentzhog, 2020; Lahiri, 2016). The frameworks developed by Prajapati, Kant and Tripathi (2020), Taponen & Kauppi, (2020) and Sandhu, Shamsazzoha & Helo, (2017) as examples have the limitation of failing to address issues relating to performance management of evaluating the impact of BPO on organizational performance using quantifiable performance metrics and at the same time the frameworks do not indicate the outcome measurements of the BPO and its impact on business performance. The greatest limitation of these frameworks is that they do not address the relationship between BOP (independent variable) and cost and productivity (dependent variable), hence the need for a new framework to bridge the gap, especially in developing countries with special reference to the South African mobile telecommunication industry. The primary purpose of this quantitative study is to empirically investigate the effects of BPO on the operational performance of the South African mobile telecommunications industry using productivity and cost efficiency as the performance measurements.

Grounded on cost efficiency and productivity as the quantitative underpinning constructs, the cost and productivity (CP) conceptual framework is developed to bridge the gap by evaluating the impact of BPO on the operational performance of network companies. This research added a new body of knowledge resulting from the lack of researchers empirically evaluating the impact of BPO on the operational performance of the mobile telecommunications industry using cost and productivity as the underpinning performance metrics, especially in developing countries, particularly Southern Africa and special reference to South Africa.

Below is the proposed conceptual framework to be used to evaluate the impact of BPO on the performance of the mobile telecommunications industry using productivity and profitability as the performance measurements. Establishing evidence of BPO results is important and useful to corporate BPO management as this will avoid relying on managers' estimates instead of quantifiable metrics. The framework integrated quantitative performance measurement considerations into BPO processes and established the relationship between BPO and business performance. Below is the suggested theoretical framework that bridged the gaps of the other frameworks.

THEORETICAL CONCEPTUAL MODEL

This study offers a theoretical framework that synthesizes and integrates the knowledge acquired from the reviewed literature. This framework includes various dimensions of BPO practices identified in past research studies, the antecedents that influence the implementation of BPO practices, and the outcomes of such practices. Based on the literature review and subsequent postulated relationships, the conceptual model is depicted in Figure 1.

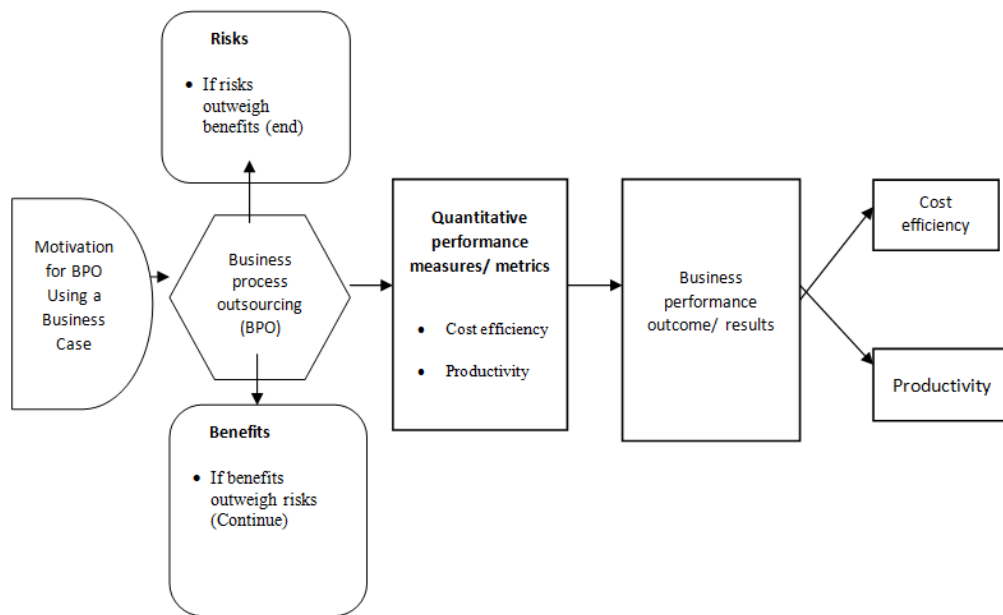


FIGURE 1

THEORETICAL CONCEPTUAL MODEL: PROPOSED COST AND PRODUCTIVITY(CP) BUSINESS PROCESS OUTSOURCING PERFORMANCE MEASUREMENT FRAMEWORK

RESEARCH METHODOLOGY

The positivist research paradigm informs the research, which explains the cause-and-effect relationship leading to outcomes (Bell & Bryman, 2015). A deductive approach was used to test existing frameworks by measuring the research variables. Descriptive research was

adopted to gather information relating to the current status of the phenomena (Babbie, 2020) and to describe the relationship between variables in a sample or population to summarize data in an organized manner (Kaur, Stoltzfus & Yellapu, 2018). The researcher adopted a quantitative research strategy (empirical research) associated with a deductive approach in which data are collected and analyzed to test theory (Saunders, Lewis & Thornhill, 2019) and to yield an exact outcome translated into generalizable statistical findings.

The total target population of this research was 1035 participants made up of middle and senior employees of the two mobile telecommunication companies who included engineers, technicians, assembly operators, project managers, finance and accounting officials, sales and marketing executives and procurement executives who are not involved in decision making of business process outsourcing to offer an unbiased and fair assessment of the practice in place (Yin, 2018). The sampling approach was probability sampling, with stratified cluster sampling getting special attention. This research used a stratified sample, in which employees were divided into groups based on their profession inside the company and then randomly selected. All groups were sufficiently sampled to ensure that the entire population and relevant subgroups were represented (Saunders et al., 2019). Stratified cluster sampling was adopted using the participants' profession as a stratum and the participants' company as a cluster. The simplified formula for proportions provided by Yamane, (1967) was used to calculate the sample sizes. The sample size of this research constituted 210 (selected with the sampling formula at 95% confidence) employees drawn from the two mobile communication companies randomly and proportionally specified.

A structured closed-ended questionnaire was used to collect raw data using the drop-off and collect method. The questionnaire was distributed to two hundred and ten (210) employees of the two mobile telecommunication firms. A five-point Likert scale was used in answering the questions that each respondent had to answer within the questionnaire. Respondents were asked to rank each variable on a five-point Likert scale. All these questions had a satisfaction range that starts from strongly agree, agree, don't know, disagree and strongly disagree, where the maximum score was strongly agree with a high score of 5, as contrasted to the minimum or low score of 1 for strongly disagree.

The data was appropriately coded in the STATA program. Analysis, using descriptive statistics commands, was also carried out in the same program. The research mainly employs univariate analysis. SPSS software Version 28.0 was used to analyze the data based on deductive and descriptive statistics. The descriptive analysis was also done to gather the demographics of responses. To clarify the relationship between BPO (independent variable) and business performance using the two constructs, cost efficiency and productivity (dependent variables), an inferential statistic in the form of a chi-square test was carried out.

The researcher conducted a pre-test (pilot study) whereby ten employees from the two (2) mobile networks were given the questionnaire to refine it, eliminate ambiguities in how research questions are crafted and improve its validity. The questionnaire pretesting was done to ascertain whether the questionnaire is well designed and capable of getting all the main survey's data gathering objectives. The instrument content validity was established, as was the validity of the primary constructs of the research, which are cost and productivity. Babbie, (2020) agrees with

this procedure by defining "validity" as the degree to which a research effectively measures what it purports to measure.

As prescribed by the Human and Social Sciences Research Ethics Committee (HSSREC) of the University of Kwazulu-Natal, the ethical clearance process was followed, and approval was granted before proceeding with the research. Measures were taken to protect research participants from harm or exploitation as the ethical clearance process prescribes. A consent form was made available to each participant in the interview. The participants were given the option to remain anonymous and assured that the confidentiality of their personal details would not be divulged to a third party. The findings of the research are presented in the next section.

RESULTS PRESENTATION AND DISCUSSION

The data was appropriately coded in the STATA program. Analysis, using descriptive statistics commands, was also carried out in the same program. The research mainly employs univariate analysis. The results presentation technique used were tables. A Chi-square statistical analysis also examined the statistically significant relationship between BPO (independent variable) and cost and productivity (dependent variables) among mobile telecom operators.

Performance Metrics on Cost Efficiency Perceptions

One of the research objectives of the study is to determine whether BPO improves cost efficiency in mobile telecom operators/ companies. Using a 5-point Likert scale ranging from strongly agree to strongly disagree, 210 subjects from the two mobile telecom operators/ companies were asked to indicate the extent to which they agree with the eight identified possible impacts of BPO on cost efficiency. The results are illustrated in Table 1.

| | | Percentage on Likert scale | Sample size (n) |
|--|-------------------|---|----------------------------|
| There is a reduction in labour costs after outsourcing | Strongly agree | 81.43 | 210 |
| | Agree | 2.86 | |
| | Don't know | 0.00 | |
| | Disagree | 1.43 | |
| | Strongly disagree | 14.29 | |
| | Total | 100.00 | |
| | | | |
| There is a reduction in operational | Strongly agree | 81.43 | 210 |
| | Agree | 0.00 | |

| | | | |
|--|-------------------|---------------|-----|
| expenses/costs after outsourcing | Don't know | 0.00 | |
| | Disagree | 18.50 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is a lower total cost of ownership after outsourcing | Strongly agree | 3.81 | 210 |
| | Agree | 10.00 | |
| | Don't know | 73.81 | |
| | Disagree | 12.38 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is a reduction in capital investment after outsourcing | Strongly agree | 1.43 | 210 |
| | Agree | 98.57 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is a reduction in developmental costs after outsourcing | Strongly agree | 5.24 | 210 |
| | Agree | 94.76 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | | | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is a reduction in investment in research & development (R & D) | Strongly agree | 99.52 | 210 |
| | Agree | 0.48 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| | Strongly | 92.86 | |

| | | | |
|--|-------------------|---------------|-----|
| There is an elimination of the fixed cost of internal staff by moving the function to a supplier | agree | | 210 |
| | Agree | 7.14 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is an improvement in selling, general and administrative expenses | Strongly agree | 54.76 | 210 |
| | Agree | 0.48 | |
| | Don't know | 44.76 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| Overall, business process outsourcing improves the cost efficiency | Strongly agree | 5.52 | 210 |
| | Agree | 42.94 | |
| | Don't know | 51.53 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |

Source: Author, 2023

Regarding the above Table 1, out of the eight possible variables or sub-constructs (performance metrics) on the perceptions of how BPO impacts cost efficiency, all or almost all subjects strongly agreed with the assertion that BPO has an impact on the cost efficiency of mobile telecommunication companies. The majority of the subjects supported the five possible sub-constructs/variables by strongly agree that there is a reduction in labour cost after outsourcing (81.43%), there is a reduction in operational expenses/ cost after outsourcing (81.43%), there is a reduction in investment in research & development(R & D), (99.52%), there is an elimination of the fixed cost of internal staff by moving the function to a supplier (92.86%).Lastly, there is an improvement in selling, general and administrative expenses (54.76%) after implementing BPO. The other subjects supported the two variables/sub-constructs that agree that mobile telecommunication companies' cost efficiency is affected by implementing BPO. Two possible variables/sub-constructs are BPO leads to a reduction in capital investment after outsourcing (agree=98. 57%) and a reduction in developmental cost after outsourcing (agree=94.76%).

In the remaining case of these eight identified possible variable/sub-constructs, there is some variation for BPO as a cost efficiency improvement. Other subjects indicated having no knowledge that there is a lower total cost of ownership after outsourcing (don't know =73.81%).

Overall the issues indicated that they are unsure whether overall business process outsourcing improves cost efficiency (don't know= 51. 53).

Overall, as indicated in Table 1, the results /outcomes indicate a linkage between the implementation of BPO and the reduction of cost or improvements in cost efficiency. Respondents overall agree with the perceptions that BPO improves cost efficiency. There is justification for the organization to adopt BPO. It is clear to see that out of the eight identified possible sub-constructs, seven agree with the assertion that implementation of BPO positively affects the cost efficiency of mobile telecom operators. The results suggest that there is a linkage between the adoption of BPO and the improvement in cost efficiency. In only one case, the results/outcomes indicate that the subjects are unsure about the link between BPO and cost efficiency. The results suggest that overall the subjects agreed that implementing BPO improves the mobile telecom operators' cost efficiency, and improving the company's operational performance.

The findings from the descriptive statistics of this current study reflect that the majority of the participants alluded that there is an improvement in cost efficiency after BPO, thereby improving the operational performance of the mobile telecom operators. This justifies the need for BPO implementation.

Chi-Square Statistical Test Results

A Chi-square test was conducted to clarify whether there is a statistically significant correlation between BPO (independent variable) and business performance using cost efficiency (dependent variables). See Table 2.

| | Value | D f | Asymptotic Significance (2- sided) |
|------------------------------|--------|--------|--|
| Pearson Chi-Square | 22.326 | 4 | .001 |
| Likelihood Ratio | 23.195 | 4 | .001 |
| Linear-by-Linear Association | 7.113 | 1 | .008 |
| N of Valid Cases | 210 | | |

Table 2 reflects a significant association between implementing BPO and improving cost efficiency. Statistically, [p-value (.001) < (0.05a)]. Since the p-value of (.001) is less than the significance level of (0.05). This means that statistically, there is a significant association between business process outsourcing (BPO) and improvement in cost efficiency. The findings of both the descriptive statistics and chi-square test of the current study reflect that the majority of the participants alluded that there is an improvement in cost efficiency after BPO, thereby

improving the operational performance of the mobile telecom operators. This justifies the need for BPO implementation.

Descriptive Statistics Results

Performance metrics on productivity perceptions

One of the research objectives is to ascertain whether BPO improves productivity in mobile telecom operators. Using a 5-point Likert scale ranging from strongly agree to strongly disagree, 210 subjects from the two-mobile telecom operators were asked to indicate the extent to which they agree with the eight identified possible sub-constructs on the impact of BPO on productivity. The results are illustrated in Table 3.

| | | Percentage on the Likert scale | Sample size (n) |
|--|----------------------|-----------------------------------|--------------------|
| There is an improvement in total revenue/ Sales(output) after outsourcing | Strongly agree | 99.52 | 210 |
| | Agree | 0.48 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| There is an improvement in asset turnover after outsourcing. | Strongly agree | 0.00 | 210 |
| | Agree | 100.00 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| There is an improvement in inventory turnover after outsourcing. | Strongly agree | 0.00 | |
| | Agree | 100.00 | |
| | Don't know | 0.00 | |

| | | | |
|---|-------------------|---------------|-----|
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is an improvement in investing more in new technology after outsourcing | Strongly agree | 0.00 | 210 |
| | Agree | 99.52 | |
| | Don't know | 0.48 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is an improvement in economies of skill after outsourcing. | Strongly agree | 99.52 | 210 |
| | Agree | 0.48 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is a reduction in customer response cycle time after outsourcing | Strongly agree | 10.00 | 210 |
| | Agree | 8.57 | |
| | Don't know | 44.29 | |
| | Disagree | 37.14 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is an increase in market share after outsourcing. | Strongly agree | 8.10 | 210 |
| | Agree | 91.90 | |
| | Don't know | 0.00 | |

| | | | |
|---|-------------------|---------------|-----|
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| There is an improvement in process and employee productivity. | Strongly agree | 26.67 | 210 |
| | Agree | 73.33 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |
| | | | |
| Overall, business process outsourcing increases productivity | Strongly agree | 22.86 | 210 |
| | Agree | 77.14 | |
| | Don't know | 0.00 | |
| | Disagree | 0.00 | |
| | Strongly disagree | 0.00 | |
| | Total | 100.00 | |

Source: Author,(2023)

Concerning the above Table 3. out of the eight possible variables or sub-constructs (performance metrics) on the perceptions of the influence of BPO on productivity, all or almost all subjects agreed with the assertion that BPO improves the productivity of mobile telecommunication companies. The majority of the subjects supported the five possible sub-constructs/variables that agree that there is an improvement in asset turnover after outsourcing (100%), there is an improvement in investing more in new technology after outsourcing (99.52%), there is an improvement in inventory turnover after outsourcing (100%), there is an increase in market share after outsourcing (91.90%), there is an improvement in process and employee productivity (73.33%) Overall business process outsourcing increases productivity (agree= 77.14%). The other subjects supported two variables/sub-constructs (performance metrics) that strongly agree that mobile telecommunication companies' productivity is affected by implementing BPO. Two possible variables/sub-constructs are that BPO improves total revenue/ Sales (output) after outsourcing (strongly agree=99.52%). There is an improvement in economies of skill after outsourcing (strongly agree= 99.52%). In the remaining case of these

eight identified possible variable/sub-constructs, subjects said they are unsure whether there is a reduction in customer response cycle time after outsourcing (don't know=44.21%).

As indicated in Table 3, the results /outcomes indicate a link between the implementation of BPO and improvement in productivity. Respondents overall agree with the perceptions that BPO improves productivity. There is justification for the organization to adopt BPO.

Chi-Square Statistical Test Results

A Chi-Square test was conducted to clarify whether there is a statistically significant relationship between BPO (independent variable) and business performance using productivity (dependent variable). The results are depicted in Table 4.

| CHI SQUARE STATISTICAL TEST FOR ASSOCIATION BETWEEN BUSINESS PROCESS OUTSOURCING (BPO) AND PRODUCTIVITY | | | |
|---|---------------------|----|-----------------------------------|
| | Value | Df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 14.796 ^a | 4 | .005 |
| Likelihood Ratio | 14.190 | 4 | .007 |
| Linear-by-Linear Association | 1.416 | 1 | .234 |
| N of Valid Cases | 210 | | |
| a. 3 cells (30.0%) have an expected count of less than 5. The minimum expected count is 2.29. Source: Author, (2023) | | | |

Table 4 above reflects a statistically, [p-value (.005) < (0.05a)]. Since the p-value of (.005) is less than the significance level of (0.05). This means that statistically, a significant association exists between implementing business process outsourcing (BPO) and increasing productivity. The findings of both the descriptive statistics and chi-square tests of the current research reflect that the majority of the participants alluded that there is an increase in productivity after BPO, thereby improving the operational performance of mobile telecom operators. This justifies the need for BPO implementation.

THE NEW COST And PRODUCTIVITY (CP) BUSINESS PROCESS OUTSOURCING PERFORMANCE MEASUREMENT FRAMEWORK

Below is the proposed new framework, which includes the quantitative performance metrics to provide more objective evaluations of BPO on mobile operators cost and productivity dimensions. The framework extends the contribution of the work on frameworks done by various authors like Prajapati, Kant & Tripathi, (2020); Taponen & Kauppi ,(2020); McIvor, (2016) and Sandhu et al., (2017), who did not include quantitative performance measurements in their frameworks.

| TABLE 5 | | | |
|--|--------------|-----------|--|
| CHI-SQUARE TESTS ON THE RELATIONSHIP BETWEEN BPO & COST EFFICIENCY | | | |
| | Value | Df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 22.326 | 4 | 0.001 |
| Likelihood Ratio | 23.195 | 4 | 0.001 |
| Linear-by-Linear Association | 7.113 | 1 | 0.008 |
| N of Valid Cases | 210 | | |
| a. one cell (10.0%) have an expected count of less than 5. The minimum expected count is 3.54. | | | |

| TABLE 6 | | | |
|---|--------------|-----------|--|
| CHI-SQUARE TESTS ON THE RELATIONSHIP BETWEEN BPO & PRODUCTIVITY | | | |
| | Value | Df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 14.796a | 4 | 0.007 |
| Likelihood Ratio | 14.19 | 4 | 0.007 |
| Linear-by-Linear Association | 1.416 | 1 | 0.234 |
| N of Valid Cases | 210 | | |
| b. three cells (30.0%) have an expected count of less than 5. The minimum expected count is 2.29. | | | |

The primary purpose of this quantitative research is to empirically investigate the impact of business process outsourcing on the operational performance of the South African mobile telecommunications industry using cost efficiency and productivity as the performance measurements. Table 5 & 6 above results led to the development of the new CP framework to be used by the telecom operators in evaluating the impact of BPO on the operational performance of the South African telecom operators. The chi-square test results illustrate a statistically significant relationship (correlation) between BPO and cost and productivity, as depicted in the new CP framework below. The new CP framework shows the variables' positive relationship (See framework below). This research redressed the existing knowledge gap by suggesting a new framework to be adopted in quantitatively evaluating the effects of BPO on the operational performance of network companies. Below is the new developed CP framework. (see Figure 2 below depicting the new developed Cost and Productivity(CP) business process outsourcing performance measurement framework).

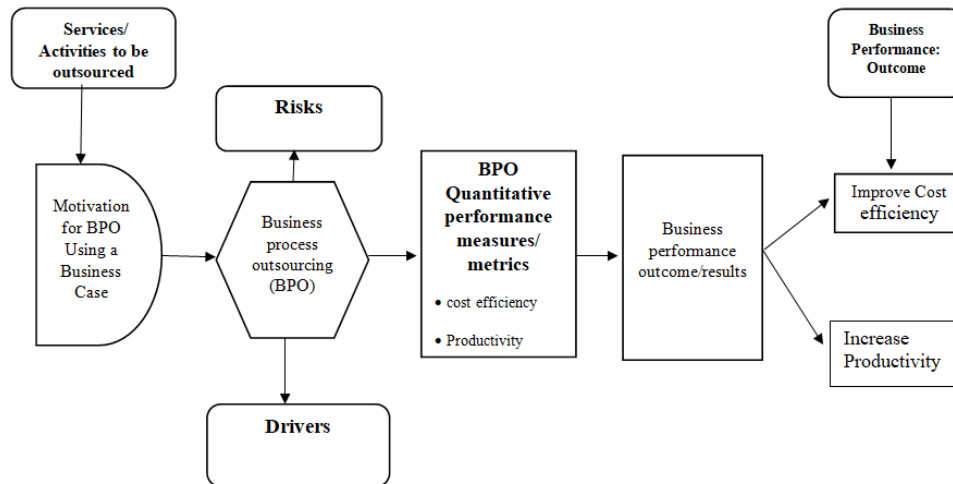


FIGURE 2

**THE NEW CP FRAMEWORK: COST AND PRODUCTIVITY (CP) BUSINESS PROCESS
OUTSOURCING PERFORMANCE MEASUREMENT FRAMEWORK**

DISCUSSION OF RESULTS

Below are the discussions of the current study's results based on the study's research objectives/questions.

Relationship between business processing outsourcing and cost efficiency

The results from the descriptive statistics and chi-square tests of the present study reflect that most participants alluded that there is an improvement in cost efficiency after BPO, thereby improving the operational performance of the mobile telecom operators. This justifies the need for BPO implementation. The results confirm that there is a correlation or statistically significant relationship between the implementation of BPO and improvement in cost efficiency, thereby improving the operational performance of the telecom operators. Statistically, [p -value (.001) < (0.05a)].

Consistent with the above results is the study by Pia Ellimaki, Aragon-Correa & Hurtado-Torres, (2021), whose results suggested that effective customers can bring transaction costs under control when accessing, assimilating and exploiting the knowledge rooted in an expanded set of services provided by external service provider. These results complement previous research by Bhushan, (2018); Hanafizadeh & Zare Ravasan, (2018), whose results indicated that reducing payroll costs, the minimization of cost was one of the key driving forces, moving domestic and offshoring ITO decisions. In terms of ITO, costs entail a total cost of ownership, expenses involved in the excess capacity of resources, future service innovation costs, integration costs, labour costs related to maintenance of service, cost of potential future service provision changes, etc.

The findings are also in agreement with the studies conducted by Cai et al., (2020); Liu & Tyagi, (2017), whose results showed that when production, services and most economic activities are outsourced, this practice has the economic benefit of allowing the outsourcing organization to experience a reduction in its fixed costs which include expenditures on equipment, IT, fixed salaries of employees, etc". However the study by Espino-Rodríguez & Rodríguez-Díaz, (2017) conflicts with the above results.

Relationship between business processing outsourcing and productivity

The results of the descriptive statistics of the present study reflect that most of the participants alluded that there is an improvement in productivity after BPO, thereby improving the operational performance of the mobile telecom operators. This justifies the need for BPO implementation. These results are similar to the chi-square tests, which confirm that there is a correlation or statistically significant relationship between the implementation of BPO and an increase in productivity, thereby improving the operational performance of the telecom operators. Statistically, [p-value (.005) < (0.05a)].

The above results of BPO improving productivity has been supported by the work of Prajapati, Kant & Tripathi, (2020) and Hoseini& Nikabadi,(2021) in which they indicated a positive relationship between BPO implementation and productivity. The above results also complement the study conducted by Kaur & Dutta, (2018); Maziarczyk, (2020), whose results showed that the link between "outsourcing and productivity will only give positive results when taking into account the externalization of high value-added activities". The results are also in agreement with the study by Wu, Anyu, Ivanov & Xu, (2023), whose results indicated that contract manufacturing or outsourcing improves productivity when suppliers' productivity growth is above average and the focal industry's competition is at a medium level. The above results are compatible with the study by Sandhu et al.,(2017 whose findings also agree that BPO allows external service manufacturing organizations to improve their production quality processes by concentrating more on the things they do best.

However, the above results conflict with the study by Lee et al., (2019) and Mazzola, Bruccoleri & Perrone, (2019), in which the results confirmed a negative relationship between BPO implementation and productivity. A study by Wu, Anyu, Ivanov & Xu, (2023) on Contract manufacturing, market competition, and labour productivity in US manufacturing industries, results have conflicting findings in that outsourcing could be positive, negative or not significant. Capolupo, Amendolagine & Ferri, (2017) found no statistically significant relationship.

CONCLUSION

The results of the descriptive and chi-square tests, managed to draw two conclusions on answering the research question does "BPO improve cost efficiency and productivity of the mobile telecommunication companies"?

The overall conclusion of the current research from the descriptive statistics and chi-square test reflects that most participants alluded to an improvement in cost efficiency and productivity after implementing BPO, thereby improving the operational performance of the mobile telecom operators. This justifies the need for BPO implementation.

Results from the descriptive statistics and chi-square tests concluded or confirm a statistically significant relationship between BPO implementation and cost efficiency and productivity, thereby improving the operational performance of telecom operators.

The conclusion of the research bridged the knowledge gap through the development of a CP framework that can be used to evaluate the impact of BPO on the operational performance of the mobile telecommunications industry using cost efficiency and productivity as the performance measurements. The framework bridged the knowledge gap and the limited body of knowledge. The conclusion reflected a statistically significant relationship between the implementation of BPO and cost efficiency and productivity. Hence, answering the research question, “does BPO improve mobile telecom operators' cost efficiency and productivity”? (see Figure 2 above for the Proposed new Cost and Productivity (CP) business process outsourcing performance measurement framework).

IMPLICATION OF THE STUDY

This study offers theoretical and practical perspectives to support future research utilizing a research framework as a baseline to guide telecom operators in understanding the implications of BPO on organizational performance using cost efficiency and productivity as the metrics. The current research has academic and business (practical) significance that contributes to current trends in the field of BPO in the context of Southern African emerging countries, especially South Africa.

Theoretical Implications

The examination of the research findings provided insight into the nature and magnitude of the relationship between various BPO practices and firms' cost efficiency and productivity.

In relation to the implications for theory, there is a limited body of knowledge available on literature relating to evaluating the impact of BPO on mobile operators quantitatively (using cost and productivity) as performance measurements. As a result, the findings of this research will be useful to mobile telecom operators in South Africa and other readers, especially students investigating similar topics as part of secondary data.

The research redressed the existing knowledge gap by developing the CP framework. The research findings add to the body of knowledge and extend the literature concerning BPO by evaluating its impact quantitatively on mobile telecom operators. The results will assist management in developing BPO policies.

Managerial Implications

The study has practical implications for service and industrial practitioners, managers, scholars, and government policymakers in that they can strategically plan their BPO practices and link those practices to the organizations' financial, cost and productivity performance.

From a business standpoint, this research contributed to the body of knowledge by developing a CP framework that assisted the mobile telecommunications industry in evaluating the impact of BPO on operational performance using quantitative measures, hence assist them in making a decision on whether to insource or outsource.

RECOMMENDATIONS

Before deciding on outsourcing, supply chain practitioners should consider using the developed CP conceptual framework, which will guide supply chain practitioners in deciding whether to insource or outsource.

Outsourced service providers of mobile operators should embrace lean manufacturing to increase sustainable efficiency and reduce waste, thereby reducing cost and increase productivity.

The study recommended that BPO implementors should put in place a service level agreement(SLA) to evaluate the operational performance of service providers of the requirements of mobile telecommunications operators.

Mobile telecom operators should invest in supplier development programs for their service providers(suppliers) of outsourced services on the Toyota production system (TPS) and value engineering to improve cost efficiency production.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The research was limited to cost and productivity as the constructs, another avenue for further research is to include more factors that affect the relationships between BPO practices and cost efficiency and productivity of firms, such as corporate sustainable growth and corporate size to reach a significant relationship between dependent and independent variables.

The cost and productivity(CP) framework is extensively used in the literature. It seems largely neglected in the world of practice. The current study suggests that it would be interesting to apply and test the developed theoretical CP framework to other sectors in similar contexts, such as banks, the cement industry, the mining industry, car assembling, banks, hospitals, and learning institutions, are also important BPO hubs and worthy of further examination.

ACKNOWLEDGEMENTS

Competing Interests

The authors declare that they have no financial interests that induced them to carry out the research, and no competing interests exist.

Authors'contribution

The article is based on the PhD thesis of S.M., the primary researcher. Conceptualization, methodology, Data Collection, formal analysis, writing—original draft preparation, writing—review and editing by author. The author has read and agreed to publish the final version of the manuscript.

Funding Information

The research did not receive any specific grant from any funding agencies in the public, commercial or non-profit organizations.

Data availability

Data relevant to the results are available from the author and stored by the institution.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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Received: 30-Sep-2025, Manuscript No. ASMJ-24-14359; **Editor assigned:** 03-Oct-2025, PreQC No. ASMJ-24-14359 (PQ); **Reviewed:** 18-Oct-2025, QC No. ASMJ-24-14359; **Revised:** 21-Oct-2025, Manuscript No. ASMJ-24-14359 (R); **Published:** 28-Oct-2025