The influence of business process outsourcing on the productivity of the mobile telecommunication companies

Samson Mbanje (a) *

(a) Ph.D., Faculty of Management Sciences, Vaal University of Technology, Vanderbijlpark, South Africa

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A B S T R A C T

Economics of business and increased focus on operating efficiencies are leading mobile telecom service providers to outsource non-core business process elements, infrastructure systems, and customer service, although the trade-off on the influence of business process outsourcing (BPO) on the firm’s productivity is still inconclusive. Few empirical studies or research have been conducted to analyze the influence of BPO on the firm’s productivity levels in the mobile telecom operators of Southern African developing countries. This research tries to redress the existing knowledge gap and the limited body of literature by providing both descriptive and empirical evidence on the influence of BPO on the firm’s productivity levels of mobile telecom operators. 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 firm’s productivity levels. The results reflect a statistically significant relationship between the implementation of BPO and the firm’s productivity. 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’ productivity performance. Further research can be conducted in other industries in order to do comparison studies confirming lessons gained across industries on the effect of BPO on a firm’s productivity levels.

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Introduction

In the ever-increasing turbulent business environment, and in today’s world of increasing competition, organizations are forced to identify new ways to generate value and are continuously searching for enhanced ways of gaining competitive advantage (Mohamend & Ngui, 2019; Hoseini & Nikabadi, 2020; Espino-Rodriguez & Rodriguez-Diaz, 2021). This phenomenon is also common in mobile telecom operators. By partnering with the right BPO provider and ensuring adherence to security and compliance standards, telecom companies can embark on a journey of sustained success and growth. Strategic BPO alliances not only optimize business operations but also pave the way for unparalleled service experiences, setting telecom companies apart as industry leaders (Mohamend & Ngui, 2019). In recent years outsourcing in general and business process outsourcing in particular has become an important phenomenon that offers significant value to firms through lowered costs, increased ability to scale, enhanced flexibility, better access to knowledge and technological resources and reducing production cost, thereby creating a new competitive advantage (Dube et al., 2021; Eldenburg et al., 2019).

Many service companies including South Africa mobile telecom operators use outsourcing as one of the most effective forms of business process organisation to respond quickly to market changes (Trushchenko, Samoshkina & Vikulina, 2021; Zhang et al., 2018). Organisations are increasingly focusing on core activities and are looking for specialised service providers to provide other services that are not part of the core competencies, not related to the competitive advantage and this include the mobile telecom operators (Patel et al., 2019; Trushchenko et al., 2021; World Bank: World Development Report, 2020). However, there are only a few empirical studies investigating the effects and relationships between business process outsourcing and firm productivity levels in...
developed countries (Christiansson & Rentzhog, 2019; Wu et al., 2023) and the Southern African developing countries including South Africa mobile telecom operators are not spared to this predicament, hence need for the current study. The literature derived from the study will assist policy implementors in both private and public companies to decide on whether to insource or outsource certain activities and the effect on the productivity levels of telecom operators.

There is an increasing body of literature on BPO, but there is insufficient information on performance measurement using quantitative indicators in Southern African countries because most studies have been conducted in affluent nations, evident by various studies by Hoseini & Nikabadi, (2020) in Iran; Christiansson & Rentzhog, (2019) in Sweden; Espino-Rodríguez & Rodríguez-Diaz, (2021) in Spain; Wu et al., (2023) in US; Kulembayeva et al., (2022) in Russia, Cai et al., (2020) in China; Ge at el., (2021) US; Lahiri, (2016) in USA as examples. Some studies were conducted in Kenya, Ghana and Nigeria, but not much was done on linking BPO and firm’s productivity. However, the adoption of BPO practices and their influence on firm performance is still in its early stages in developing countries (Christiansson & Rentzhog, 2019). Researchers have suggested that BPO implication on firm’s 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 through analysing the influence of BPO on the firms’ productivity of South African mobile operators.

More manufacturers are outsourcing some of their value chain activities and logistics operations to third-party logistics (3PL) to improve their logistics performance. In this way, organizations can focus on core competencies such as improving customer service, saving logistics costs and strengthening the company’s competitiveness (Yuan et al., 2020; Hoseini & Nikabadi, 2020). The overall importance of services as an input into the production process of firms is undisputed. Firms can choose between two different forms of acquiring those inputs: they can produce services themselves or they can contract out the services to an external service provider. Due to high levels of competition among southern African mobile telecom operators, it’s vital for them to remain competitive in an ever-evolving marketplace. By leveraging external expertise and services from external service BPO providers, organisations have direct access to a large, highly skilled talent pool with experience in the latest technologies and trends, which enables businesses to not only save money but also gain access to industry-leading solutions more quickly than ever before (Cai et al., 2020; Yuan et al., 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, Seitkazyieva & Yelshibayev 2021; Ge, Wang & Yang, 2021). Despite its prominence in companies, including mobile telecom operators, the result on its influence on the firm’s productivity is still inconclusive and an unexplained puzzle (Mozzala et al., 2019; Lee et al., 2019; Lahiri, 2016; Wu et al., 2023) and emerging economies are not also immune to this predicament hence need for the current study.

The outsourcing of manufacturing, services and other economic operations is a common occurrence in most industries. It is a widespread phenomenon in modern business, including the Southern African mobile telecommunications industry, although the trade-off on the effect of BPO on the company’s operational performance using productivity as the underpinning performance measure is still inconclusive (Wu et al., 2023; mozza et al., 2019; Laureani & Antony, 2019; Motiani & Kulkarni, 2020). Several studies have analysed the effect 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-Diaz, 2021; Sandhu, Shamsuzzoha & Helo, 2017). Nevertheless, none of these has used quantitative metrics to analyse the effect of BPO on the organization’s performance, especially in the mobile telecom operators. This gives the researcher room to bring in new knowledge of establishing the influence of BPO on the firm’s productivity thereby providing management metrics on the actual results relating to the relationship between BPO and the firms’ productivity levels.

Despite many efforts within organizations toward business process outsourcing (BPO), research on real-world experiences remains in its infancy. Empirical evidence on whether or not outsourcing is beneficial with reference to improving productivity lacks in the mobile telecom operators, particularly the southern Africa, with special reference to South Africa (Christiansson & Rentzhog, 2019); hence the need for current study to analyse its effect on the firms’ productivity so as to bridge the gap. This study aims to bridge or redress the existing knowledge gap by providing both the descriptive and empirical evidence by analysing the effects of BPO on firm’s productivity levels of the South African mobile telecom operators; hence answering the research question does BPO improves the productivity levels of the mobile telecom operators?

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 telecommunication 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 analyse the effect of BPO on the company’s operational performance using productivity as the quantitative measurements (Christiansson & Rentzhog, 2019; Anwar & Graham, 2019).
The current situation in South Africa is that intense competition in the mobile telecom industry of southern developing countries, including South African mobile telecom operators has forced all operators to look for ways to reduce costs of operations, improve productivity and profitability by outsourcing functions such as tower infrastructure management, billing, 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) spare parts management, 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’s productivity levels have yielded mixed results (Wu et al., 2023; Lahiri, 2016). The Southern African developing countries especially the telecom mobile telecom operators are also not spared from this notion. This research aims to reconcile these conflicting findings in the literature by analysing the effect of BPO on the firm’s productivity in Southern Africa special reference to South Africa mobile operators. This research also tested the statistically significant relationship between BPO and firm productivity to redress the existing knowledge gap.

The research objective of this paper can be summarized as follows:

i. To ascertain whether business process outsourcing increases productivity of the mobile telecom operators.

This research addressed the research question:

i. Does business process outsourcing increase productivity of the mobile telecom operators?

This research uses the words company, organization, business and firm interchangeably. The study is divided into five parts. The first part is the introduction or the rationale of the study that explains the background of the study. The second part is the literature review which describes the theoretical and empirical studies that discuss the theories of the study. The third part is the research methodology which explains the research method and procedures for conducting the study. The fourth part is the data presentation and analysis, followed by the discussion of results and finally, the study concludes with recommendations, future research directions and Limitations.

Literature Review

Theoretical and Conceptual Background

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). Mbane & 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 improves company productivity (Lahiri, 2016). This discrepancy prompted the author to conduct a research to analyse the effects of BPO on the firm’s productivity to bridge the gap, especially in developing countries, with a special reference to the South African mobile telecommunication operators.

Underpinning theories

This section highlighted the various theories that build the understanding between BPO 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)

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,Khan,& Yan, 2017:269-270). 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 capacity is weak are candidates for outsourcing (Yu et al., 2020).

Resource-based view indicates that a "firm is a bundle of assets and resources that, if employed in distinctive ways, can create competitive advantage"(Yuan et al., 2020:54-55). 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). 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, 1991:99). 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 adopted this theory as the mobile operators can tap competency from the market to reduce cost and improve productivity, since these mobile operators do not have all the resources to develop a competitive advantage and so they need resources obtained externally (Yuan et al., 2020).

**Transaction cost economies (TCE) / (Transaction cost theory)**

According to Yuan, Chu, Lai & Wu, (2020:54-55) and Williamson, (1991), 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" (Roecka, Sternberg & Hofmann, 2020:13-14; Lacity et al., 2017:269-270).

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. 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**

This section briefly reviews the performance metrics to understand the relationship between BPO and productivity from an organizational perspective.

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, Chen & Lin, (2016:103-104), alluded that 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, Betis, Gopala & Milbourn, (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 analyzing the effects of BPO (independent variable) on the operational performance of the mobile telecommunications industry, the researcher adopted the direct measures in the form of productivity (dependent variable) as the underpinning performance metrics. The BPO metric adopted by the research is presented below.

**Productivity as a measure/metric to analyse the effect of business process outsourcing**

Notable researchers or Scholars like Wu et al., 2023; Kar & Dutta, 2018 explained productivity to be a measure of the efficiency of a firm's production process, it is calculated by measuring the number of units produced relative to employee labor hours or by measuring a company's net sales relative to employee labor hours. In economics, productivity refers to how much output can be produced with a given set of inputs. Productivity increases when more output is produced with the same amount of inputs or when the same amount of output is produced with less inputs. 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, Ellrammond & 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 (Maziarczyk, 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 (HR),” and, more broadly, the so-called “Knowledge Intensive Business Services” (KIBS) could have a positive productivity impact” (Kar & Dutta, 2018:1-3; Antonioli et al., 2015:292-293).

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 in mobile telecom operators. These sub-constructs were included in the research instrument (questionnaire) (see Table1). Productivity is the dimensions underpinning the current research in evaluating business performance. This sub-constructs assisted the researcher in establishing the relationship between BPO and productivity.

**Empirical review and research question development**

The research objective of this paper can be summarized as follows:

i. To ascertain whether business process outsourcing increases productivity of the mobile telecom operators

This research addressed the research question:

ii. Does business process outsourcing increase productivity of the mobile telecom operators?

**Relationship between BPO and firm productivity**

This section explains the effect of BPO on the firm productivity using both the existing theoretical and empirical studies from different authors. Scholars argued that outsourcing decisions affect productivity, but empirical findings in this strand are inconclusive (Mazzola et al., 2019; Maziarzczyk, 2020; Kar & Dutta, 2019). The theoretical evidence of BPO improving productivity has been supported by the work of Prajapati, Kant & Tripathi, (2020); Maziarzczyk, (2020), Hoscin& Nikabadi,(2020; Kar & 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 empirical studies have conflicting results on the relationship between BPO and firm’s productivity. This research aims to reconcile these conflicting findings in the literature by reviewing the research question: Does BPO improve the firm’s productivity especially in the mobile telecom operators? with a view of advising management on BPO decisions.

Assembling operations in many countries are also outsourced to low-wage countries because it leads to lower production costs and improving productivity. In addition to cost reduction, the outsourcing strategy has many other benefits, including more flexibility, reducing managerial responsibilities, optimizing services, efficient use of resources, reducing employees’ working activity, innovation and creativity (Sanusi, 2019). Therefore, by reducing production costs, a new competitive advantage can be achieved for companies (Eldenberg et al., 2019). Researchers have not quantified the exact influence of BPO on an organization’s operational performance (Christiansson & Rentzhog, 2019; Lahiri, 2016). In addition to the above conflicting evidence, the frameworks developed by Prajapati, Kant & Tripathi (2020), Taponen & Kauppi, (2020) and Sandhu, Shamsazzoha & Helo, (2017) as examples have the limitation of failing to address the effect of BPO on the firm’s performance using quantifiable performance metrics like productivity levels and at the same time the frameworks do not indicate the outcome measurements of the BPO and its effect on business performance. The greatest limitation of these frameworks is that they do not address the relationship between BOP (independent variable) and firm’s productivity (dependent variable), hence the need for this research to bridge the gap, especially in developing countries with special reference to the South African mobile telecom operators. This current research will bridge gap and the lack of body of knowledge by providing results-based evidence on data collection and analysis from both descriptive statistics and chi-square statistical tests on the effects of BPO on the firm’s productivity in South African mobile telecom operators.

The primary purpose of this quantitative study is to analyse the effects of BPO on the firm’s productivity levels with reference to the South African mobile telecommunications operators. This research added a new body of knowledge resulting from the lack of researchers by analyzing the effect of BPO on the firm’s productivity levels especially in developing countries, particularly Southern Africa and special reference to South Africa mobile telecom operators. The methodology adopted by the research is presented in the next section.

**Research and Methodology**

**Research design and approach**

The positivist research paradigm informs the research, which explains the cause-and-effect relationship leading to outcomes (Bryman & Bell, 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
adopted descriptive research design involves collection of quantitative data such as production figures; profitability, sales figures and establish the correlation relationships between BPO and mobile telecom firm performance (Sekaran and Bougie, 2019). Descriptive research was used to "collect information about the existing state of the phenomenon and identify what exists in terms of conditions or variables inside a situation" (Babbie, 2016). By summarizing and graphically showing the data, descriptive statistics assisted the researcher in making sense of it (McKenzie, 2014).

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 quantitative research methodology is associated with deductive approach in which data are collected and analyzed to test theory (Saunders et al., 2019) and also to yield an exact outcome that was translated into generalizable statistical findings. The quantitative research was adopted since it is a method for testing objective theories by focusing at the relationship between variables. Data was gathered and transformed to numerical form so that statistical computations could be made and conclusions obtained.

Target population and sampling strategy

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.

Data collection process

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 instrument sought to collect information on the following sub constructs / variables: 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 in mobile telecom operators and their effect on BPO. With the support of the management of the target institutions; the researcher was accountable for distributing, gathering and protecting the research data, which was collected from each respondent. The questionnaire was a method/ instrument of data collection in which each person was asked to respond to the same set of questions in a predetermined order without the researcher being present (Ekinci, 2015).

Data analysis

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 firm’s productivity (dependent variables), an inferential statistic in the form of a chi-square test was carried out.

Reliability and validity

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. Babie(2020) supports this procedure, defining "validity" as "the degree to which a research effectively measures what it claims to measure."
Ethical considerations

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.

Findings 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 productivity (dependent variables) among mobile telecom operators.

Descriptive Statistics results on performance metrics

Performance metrics on Productivity perceptions

The research objective 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 effect of BPO on productivity. The results are illustrated in Table 1 below.

Table 1: Performance dimension/metrics – Perceptions on the influence of BPO on productivity

<table>
<thead>
<tr>
<th>Performance Metric</th>
<th>Percentage on the Likert scale</th>
<th>Sample size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is an improvement in total revenue/Sales(output) after outsourcing</td>
<td>Strongly agree 99.52</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Agree 0.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total 100.00</strong></td>
<td></td>
</tr>
<tr>
<td>There is an improvement in asset turnover after outsourcing</td>
<td>Strongly agree 0.00</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Agree 100.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 0.00</td>
<td></td>
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<tr>
<td></td>
<td>Disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total 100.00</strong></td>
<td></td>
</tr>
<tr>
<td>There is an improvement in inventory turnover after outsourcing</td>
<td>Strongly agree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agree 100.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 0.00</td>
<td></td>
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<tr>
<td></td>
<td>Disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total 100.00</strong></td>
<td></td>
</tr>
<tr>
<td>There is an improvement in investing more in new technology after outsourcing</td>
<td>Strongly agree 0.00</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Agree 99.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 0.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total 100.00</strong></td>
<td></td>
</tr>
<tr>
<td>There is an improvement in economies of skill after outsourcing</td>
<td>Strongly agree 99.52</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Agree 0.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total 100.00</strong></td>
<td></td>
</tr>
<tr>
<td>There is a reduction in customer response cycle time after outsourcing</td>
<td>Strongly agree 10.00</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Agree 8.57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't know 44.29</td>
<td></td>
</tr>
</tbody>
</table>
Concerning the above Table 1. 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 1, 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. Results revealed that BPO improves firm’s productivity.

**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 firm’s productivity (dependent variable). The results are depicted in Table 2 below.

**Table 2:** Showing chi Square statistical test for association between business process outsourcing (BPO) and productivity.

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is an increase in market share after outsourcing.</td>
<td>37.14</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>8.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>91.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't know</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Don't know</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is an improvement in process and employee productivity.</td>
<td>26.67</td>
<td>73.33</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>210</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Don't know</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, business process outsourcing increases productivity</td>
<td>22.86</td>
<td>77.14</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>210</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Author (2023)

Statistically, [p-value (.005) < (.05)] Since the p-value of (.005) is less than the significance level of (.05). This means that statistically, a significant association exists between implementing business process outsourcing (BPO) and increasing productivity. According to Saunders et al (2019) when the p-value is less than the significance level (.05) shows enough evidence for a statistical significance. 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.

The chi-square test results illustrate a statistically significant relationship (correlation) between BPO and productivity. This justifies the need for BPO implementation. The results agree and complement previous research conducted by Wu et al.,(2023); Hoseini & Nikabada,(2020); Eldenburg et al., (2019); Kar & Dutta, (2018); Maziarczyk, (2020) and Sandhu, Shamsuzzoha & Helo, (2017) who alluded that outsourcing results to increase in productivity and reduction in production costs. Capolupo, Amendolagine & Ferri (2017) found no statistically significant relationship. The primary purpose of this quantitative research is to empirically analyse the effects of business process outsourcing on the operational performance of the South African mobile telecommunications operators using productivity as the performance measurement. This research redressed the existing knowledge gap by providing the executives the true reflection on the relationship between BPO and productivity.

Table 3 below show, a range of percentages of realization of improvement in productivity after BPO, were provided and subjects had to select from the range. The ranges of 6 to 10% dominated as 80% of the subjects alluded 6 to 10% is the range which the mobile telecom operators realize an improvement in productivity.

<table>
<thead>
<tr>
<th>Range</th>
<th>Percentage frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1%</td>
<td>0.00</td>
</tr>
<tr>
<td>1 - 5%</td>
<td>0.00</td>
</tr>
<tr>
<td>6 - 10%</td>
<td>88.10</td>
</tr>
<tr>
<td>11 - 15%</td>
<td>0.00</td>
</tr>
<tr>
<td>16 - 20%</td>
<td>0.00</td>
</tr>
<tr>
<td>21 - 25%</td>
<td>3.81</td>
</tr>
<tr>
<td>&gt; 25%</td>
<td>8.10</td>
</tr>
</tbody>
</table>

Source: Author (2023)

Table 3 above illustrates the range which the mobile telecom operators start to realize the improvement in productivity after adopting BPO. Most of the subjects (88%) indicated that improvements in productivity after adopting BPO ranges from 6-10% and 3.81% indicated the range of 21-25% and lastly 8.10% indicated improvements of productivity to range above 25%. The results suggest that the mobile telecom companies experience an improvement in productivity within the range between 6-10% after adopting BPO. The results are supported by table 3. Given that 88% of the subjects indicated that the mobile telecom operators/companies will improve productivity within the range of 6% to 10% after adopting BPO. There is justification for the organization to adopt BPO. Results revealed that mobile telecom operators experience improvement in productivity within the range of 6-10%.

Table 4: Period after which the organization realized turnover due to BPO

<table>
<thead>
<tr>
<th>Time period</th>
<th>Percentage frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 6 months</td>
<td>0.00</td>
</tr>
<tr>
<td>7 - 12 months</td>
<td>19.05</td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>80.95</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: Author (2023)

Table 4 above illustrates the period in which the mobile telecom operators starts to realize an improvement in productivity after BPO. Most of the subjects (81%) indicated an improvement in productivity after adopting BPO and ranges from period 1-2 years and 19.05% indicated a period ranging from 7-12 months. The results suggest that the mobile telecom operators/companies experience an improvement in productivity within 1-2 years after adopting BPO. The adoption of BPO is justified because the productivity improvements are realized starting from the range of 7-12 months. The results are supported by table 4 above.

Given that 81% of the subjects indicated that the mobile telecom operators/companies improve productivity within the period ranging from 1-2 years after adopting BPO. Table 4 above also support that these improvement in productivity. The improvements in productivity are realized after a period of 1-2 years which signifies a long period of time. The results suggest that although there are improvements in productivity after BPO but are realized after a period of 1-2 years which signifies a long period of time but improvement in productivity would have been realized already between 7-12 months hence justifies the adoption of BPO. This results indicates that mobile telecommunication operators realize an improvement of productivity after 1 year.
Discussion of Results

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

Relationship between business processing outsourcing and firm 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 mobile telecom operators. Statistically, \[ p\text{-value} < 0.05 \]. This answers the research question “does BPO improves firm productivity”. The results also revealed that although there are improvements in productivity after BPO but are realized after a period of 1-2 years which signifies a long period of time but improvement in productivity would have been realized already between 7-12 months.

The above results complement the study conducted by Kar & 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 et al., (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. The results are supported by the study of Eldenburg et al., (2019); whose results indicated a improvement in productivity and reduction in production costs after outsourcing.

The above results are aligned with the study by Prajapati, Kant & Tripathi, (2020) on an integrated framework for considering the results of contracting out service performance. The results indicated that there is improved dominance in core activity, capabilities to increase or decrease capacity, improved financial performance, optimized resource exploitation and improved market share are the top five performance outcomes because of the implementation of outsourcing. Hoseini and Nikabadi, 2020 also supported the notion that organizations can benefit from advantages such as reducing costs, increasing productivity and increasing quality after outsourcing. However, the above results conflict with the study by Lee et al., (2019) and Mazzaola, Brucoleri & 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.

The results 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 mobile telecom operators.

Conclusions

Finally, our empirical results reconciled the conflicting findings in the literature of positive, negative, and no impacts regarding how outsourcing affects productivity. The conclusions answered the research question “does BPO improves the productivity of the mobile telecommunication operators”.

The overall conclusion of the current research from the descriptive statistics and chi-square revealed that there is an improvement and increase in 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 productivity, thereby improving the operational performance of mobile telecom operators. This answers the research question Does BPO improves productivity.

The results also concluded that the mobile telecom operators experience an improvement in productivity within the range between 6-10% after adopting BPO. The improvements in productivity are realized after a period of 1-2 years which signifies a long period of time. The research concluded that although there are improvements in productivity after BPO but are realized after a period of 1-2 years which signifies a long period of time but improvement in productivity would have been realized already between 7-12 months.

Finally, the conclusion of the research bridged the knowledge gap by providing the exact results on the relationship between BPO implementation and operational performance of the mobile telecom operators using productivity as the underpinning performance measurement and a statistically significant relationship was established hence answering the research question “does BPO improves the firm’s productivity”. 
Contribution and implication of the Study

This study offers theoretical and practical perspectives to support future research utilizing productivity as a baseline or measure to guide telecom operators in understanding the implications of BPO on firm’s productivity in the context of Southern African emerging countries, especially South Africa.

In relation to the implications for theory, there is a limited body of knowledge available on literature relating to analysis of the effects of BPO on mobile operators quantitatively using 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 providing both theoretical and empirical evidence of the effect of BPO on the firm productivity of the mobile telecom operator, thereby assisting decision makers on BPO implementation decisions. 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’ productivity performance. From a business standpoint, this research contributed to the body of knowledge by providing the true reflection on the effect of BPO on productivity and this assisted the mobile telecommunications operators in making decisions on whether to outsource or insource activities or services with aim of improving productivity.

Recommendations

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. Outsourced service providers of mobile operators should embrace lean manufacturing to increase sustainable efficiency and reduce waste, thereby reducing cost and increase productivity. Before deciding on outsourcing, supply chain practitioners should consider analysing the effect of BPO on productivity using secondary literature. 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 production.

Limitations and suggestions for further research

The research was limited to productivity as the construct, another avenue for further research is to include more factors that affect the relationships between BPO practices and other variables such as quality, greening, corporate sustainable growth and corporate size to reach a significant relationship between dependent and independent variables. The current study was limited to the mobile telecom operators hence, it would be interesting to apply and test the relationship between BPO and productivity to other sectors in similar contexts, such as the cement industry, the mining industry and car assembling.

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Author 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.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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

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

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