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# Does the 'Process' of Process Capital Matter to Performance? Evidence from Kenyan Commercial Banks

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**ABSTRACT**

*Globalization, changing customer expectation and shrinking product life-cycle depict process capital as a key source of competitive advantage. Consequently, organizations are gradually becoming more process oriented to survive a dynamic environment. Scanty literature exists on the process capital-performance causality hence glaring misconception on measurement of process capital. Previous studies overlooked the process aspect of process capital; which apparently is the most important to performance. Therefore, this study argues that the "process" of process capital is what matters to performance. This hypothesis is tested using panel data for the years 2008-2017extracted from a sample of 31 commercial banks in Kenya. The findings show that process capital has a positive and significant effect on performance ($\beta = 0.275$, $\rho$-value 0.000<0.05). Consistent with the resource based view the study concludes that knowledge resources have an influence on organizational outcomes.*

***Keywords:*** *Process capital, firm performance, efficiency, Intellectual capital.*

## INTRODUCTION:

With the emergence of knowledge and information driven economies, knowledge resources are considered the main sources of competitive advantage as suggested by RBV theory (Bontis, 1998; Guthrie, 2001; Zhou & Fink, 2003). Resource based view conjectures that firm resources, tangible and intangible, drive superior performance and longevity (Wernerfelt, 1984; Prahalad and Hamel, 1990; Barney, 1991). Perhaps, intangible resources are gradually replacing traditional factors of production comprising of land, labour and financial capital (Drucker, 1993; Grant, 1996). Knowledge resources are particularly more important to service organizations such as banks which maintain minimal tangible assets for liquidity purposes (Iswatia, & Anshoria, 2007; Mondal & Ghosh, 2012; Joshi *et al.*, 2010; Owusu-Antwi *et al.*, 2015). Firm knowledge resources comprise of human capital, process capital, innovation capital and customer capital (Itami 1991; Sveiby, 1997; Edvinsson & Malone, 1997). Among other forms of knowledge capital, process capital has gained prominence due to unprecedented technological changing customer expectations and shortened product lifecycle thus forcing organizations to be more process-oriented (Quesada & Rado, 2007).

## LITERATURE REVIEW:

### Definition of Process Capital:

The term process capital was coined by (Edvinsson and Malone, 1997) who developed the conservative taxonomy of intellectual capital components. Process capital and innovation capital constitutes

organizational capital (Pulic, 2004). Studies argue that process capital represents the structural aspects of organizational capital (Bontis, 1998; Stewart, 1997; Sveiby, 1997). Previous studies have conceptualized process capital in different ways. An early definition of process capital was by (Luthy, 1998) who argued that process capital refers to technical knowledge of operations, procedures and employee programs aimed at expanding and improving efficiency in production or the delivery of products and services for competitive advantage and superior performance. According to (Fun and Lee, 2012) process capital denotes an organization's ability to transform tangible and intangible things to assets generating cash flows and competitiveness. Bchini (2015) states that process capital "is the operating process that improves the efficiency of production of a good or a service. It is the practical knowledge put at the service of the continuous value creation". Similarly, (Sue *et al.*, 2011) defines process capital as "is the knowledge resources concerning a business operation and the improvement of efficiency and quality". Moreover, (Castillo, 2016) states that process capital infers to procedures, practices, and activities that promote the delivery of value creation. Additionally, (Ordonez de Pablos, 2002) claims that process capital is an aggregate of value and non-value creating processes. Lu and Wang (2014) view process capital as workflows, production processes, technical knowledge, organizational core values and culture. Despite the diverse semantics, there seems to be a general consensus that process capital symbolizes vital organizational processes that create and deliver value to customers for competitive advantage.

According to (Armistead and Machin, 1998) the facets of process capital are broadly grouped into direction setting, operational, supporting and managerial. Consequently, development and management of process capital for sustained competitive advantage is the gist of business process management.

**Process capital and firm performance:**

The nexus between process capital and firm performance is scanty in literature; in particular the banking sector despite the importance of financial intermediation to macro-economic factors such as economic growth (Ayadi *et al.*, 2015; Caporale & Helmi, 2018), entrepreneurship (Ferdousi, 2015; Banerjee *et al.*, 2017), inflation (Korkmaz, 2015), education (Melguizo *et al.*, 2016) and health care (Hussain *et al.*, 2016) Zairi (1997) mentioned that flexible, effective and efficient processes lead to competitive advantage. Vantrappen (1992) noted that streamlining critical processes creates customer value and thus improved performance. In view of this, organizations are insistently making colossal investments on information technology, quality improvement, process designs and business integration systems to achieve business excellence through customer satisfaction (Shang & Wu, 2013). A process oriented firm concentrates on critical processes such as production technologies and customer relationship management for competitive advantage (Kohlbacher, 2010). According to (Zairi, 1997) value creating activities comprise of production, communication, marketing and distribution.

Investment in process capital creates a unique organizational architecture that supports value generation capability of the other elements of intellectual capital (Wang & Chang, 2005). As stated by (Moustaghfir, 2009) process capital is an enabler of operational and strategic goals. Some of the pillars of process capital discussed in extant literature include business process engineering (Hammer, 1990), total quality management (Oakland, 1993), statistical quality control (Deming, 2000), bench marking and continuous improvement (Zairi, 1997). Clearly, process capital is centered on core business processes that convert resources (inputs) into goods and services (outputs) for competitive advantage. Amusingly, few studies, if any, have conceptualized the process of process capital thus its value remain largely unknown. In fact, a significant number of previous studies measured process capital as either process inputs or process outputs thus ignoring the value of the conversion processes, which is the province of process capital (Chen *et al.*, 2004; Bontis *et al.*, 2002; Wang and Chang, 2005). In the words of (Drucker, 1954) "what gets measured, gets managed". Evidently, there is need to empirically investigate the influence of process capital on firm performance.

## FRAMEWORK AND HYPOTHESES DEVELOPMENT:

The study focused on a service industry specifically the Kenyan banking sector which is considered as the most vibrant and innovative in Sub-Saharan Africa (Wachira & Ondigo, 2016; Blechman, 2016; Murinde *et al.*, 2016). Process capital is critical to service organizations where competition is based on innovation, quality management and customer service (Gokus, 2015; Bai *et al.*, 2016; Taghizadeh, 2015). Most of the previous

studies focused on manufacturing firms in developed and emerging countries (Huang & Kung, 2011; Martín-de Castro & Verd, 2012; Sharabati *et al.*, 2010; St-Pierre & Audet, 2011; Maji, & Goswami, 2016).

Few studies have examined the independent effect of process capital on firm performance. Studies tend to pool components of intellectual capital into a single model which conceals the individual influence of construct. Studies claim that components of intellectual capital are interrelated and complementary (Izvercian *et al.*, 2013; Kamukama *et al.*, 2011; Ramírez, 2010; Chang & Hsieh, 2011). Thus a strong association between the components is likely to cancel out their individual effect in explaining performance. For instance a study by (Wang and Chang, 2005) observed that human capital has an indirect effect on performance through innovation and process capital. Further, the study also suggests that the effect of innovation capital is transmitted through process capital which in turn stimulates customer capital ultimately firm performance. Consequently this study sought to examine the exact effect of process capital on firm performance.

Firm knowledge resources are considered as vital determinants of organizational outcomes as extensively discussed in literature and supported by theory (Barney, 1991, Khan *et al.*, 2019; Martinez-Martinez *et al.*, 2019, Kohlbacher 2010; Mahdi *et al.*, 2019). In modern economies characterized by technological revolution, shifting customer expectation and shortened product lifecycle the focus is on process capital as a source of competitive advantage and superior performance particularly to service organizations. Organizations are no-longer viewed as an amalgamation of functional units but an integrated system of processes (McCormack 2001). In the context of a service industry process capital is associated with service quality, service efficiency, speedy delivery of services and customer satisfaction which have a positive influence on firm performance (Fellmann & Leyer, 2018; Brenner *et al.*, 2015). Consistent with the aforesaid discussion this study offers the following hypothesis.

**Hypothesis**: Process capital positively affects firm performance

## METHOD:

### Sample and data collection:

The population consisted of all the 42 commercial banks in Kenya but due to incompleteness and inconsistency of data only 31 banks were examined. Some of the bank were not in operation in the entire study period either because they had not commenced operations or were under statutory management. Data was for years 2008-2017 and it was extracted from annual financial reports and annual supervisory reports prepared by the Central Bank of Kenya.

### Measurement of variables:

The study had four variables namely the dependent variable (financial performance), the independent variable (process capital) and two control variables (firm size and firm age). Financial performance was measured by ROA which is the ratio of firm's net earnings to total assets. ROA shows the extent to which a firm is utilizing its assets. A high ROA means that the firm is utilizing its assets efficiently and for value (Tabash, 2019; Shet *et al.*, 2019; Ongere & Kusa, 2013). Process capital is an organization's backbone comprising of key technologies, core processes and systems that create and deliver value to customers. Process capital is conceptualized as critical internal processes that improve efficiency comprising of quality management, managerial capabilities, strategy execution, response and process improvement (Shang and Wu, 2013; Wang & Chang, 2005; Hung, 2006; Bukh *et al.*,2001).

Yildirim & Allen (2017) and Namvar (2010) operationalized process capital as managerial capability which was computed as capitalized total executive compensations. Liebowitz and Suen, (2000) measured process capital as administrative expenses/employees, administrative expenses/total revenue and IT expenses/ administrative expenses. Logically, some of the measures of process capital overlap or conflict with proxies of other components of intellectual capital. For example, (Wang & Chang, 2005) productivity per employee, managerial capabilities and value added per employee have been used elsewhere as proxies of human capital (Bontis and Fitz-Enz, 2002; Liebowitz and Suen, 2000). Wang & Chang (2005) IT expenses was used by (Huang and Liu, 2005) as a proxy of innovation capital. Chen *et al.*, (2008) and (Wang & Chang, 2005) measured process capital as plant assets turnover measured as net sales/average plant assets. Perhaps the endless debate on the process capital and performance puzzle is premised on how researchers conceptualize and measure process capital. A study (Shang and Wu, 2013) show that a number of previous

studies conceptualized process capital as an investment on information technology. Quantifying process capital as an investment on IT not only narrows the line between process capital and innovation capital but also obscures the actual value of process capital. Logically, IT or R & D expenses and assets are the conventional measures of innovation capital (Jen Huang & Liu, 2005; Koroglu and Eceral, 2015; Romijn & Albaladejo, 2002; Gamal *et al.*, 2011). A further misperception is apparent in the study by (Wang and Chang, 2005) where process capital is measured as productivity per employee and value added per employee. Both in practice and theory the two proxies should be considered as measures of human capital (Liebowitz & Suen, 2000; Firer & William, 2003). Other than the glaring overlaps and misconceptions on how to measure process capital, a significant number of the proxies are basically investments on process capital with no specific reference to the output (Chen *et al.*, 2004; Bontis *et al.*, 2002; Wang and Chang, 2005; Van den berg, 2002). For that reason, most of the previous studies ignored the process through which process capital generates value. That is, "how organizational resources (inputs) are converted into valuable goods and services (outputs) which is the heart of process capital". Zairi (1997) defines a process as "way in which resources of an organization are used in a reliable, repeatable and consistent way to achieve its goals". To that extent, Bullet point (1996) suggests that the features of a process include defined inputs, logical sequence of activities, defined task and pre-determined outcomes. In the same perspective, (Van den berg, 2002) contends that the value of process capital is manifested by efficiency, effectiveness, utilization of key success factors and distribution efficiency. The important of business processes to performance was also mentioned by (Frei *et al.*, 1999). Moreover (Rochmadhona *et al.*, 2018) process capital denotes the combined value of a company's value creation process.

Unlike previous researches, we argue that efficiency in production of goods or provision of services is the ideal measure of the intrinsic value of process capital. For clarity, the chosen measure of efficiency should be based on core processes and allow for the uniqueness of production models among different forms of organizations.

Van den Berg (2002) contends that the focus of process capital is efficiency, effectiveness, optimal utilization strategic resources and distribution. In the context of a banking institution, the most significant business process is liquidity creation through intermediation. This process encompasses mobilizing savings from household and firms as deposits, repackaging them and then advancing them as loans and other forms of advance to investors. Thus, efficiency in liquidity creation is a key measure of process capital for a lending institution.

In this study process capital was be measured as efficiency is liquidity creation denoted by loan- deposit ratio. The study controlled for firm age and firm size. Firm age was measured as the number of years since incorporation of the firm (Vu *et al.*, 2019; Chakravarty & Hegde, 2019; Ilaboya and Ohiokha, 2016). Firm size measured as natural logarithm of total bank assets (Mitra, 2019; Ayuba *et al.*, 2019; Zhou *et al.*, 2019).

The model specification for the study is illustrated below

$FP_{it} = \beta_0 + \beta_1 PC_{it} + \beta_2 FA_{it+} \beta_3 FS_{it} + \varepsilon_{it}$

Where

FP= Financial Performance
PC= Process Capital
FA= Firm Age
FS= Firm Size

Eit= error term

**ANALYSIS:**

The data was analyzed through descriptive and inferential statistics using STATA. Data was summarized in summary descriptive statistics comprising of mean, maximum and minimum values as well as standard deviation. Pairwise correlation was used to establish the magnitude and direction of relationship between the research variables. Several diagnostic tests were conducted to check the suitability of the data for regression analysis as the basis of testing the hypothesis. Breusch – Godfrey / Wooldridge tested autocorrelation and reported a ρ-value=0.3478 that failed to reject the null hypothesis. Unit root was tested using ADF test and reported $p<0.05$ for all the variables. No multi – collinearity was detected as indicated since the variable had VIF less than 10. Random effect regression was chosen considering the results of Hausman test (Prob>chi2= 0.064>0.05).

## RESULTS AND DISCUSSION:

### Results:

Table I illustrate summary statistics for the data collected. Table II shows pairwise correlation analysis while Table III shows the results of the random regression effect.

**Table I: Summary Statistics for the variables**

| Variable | Obs | Mean | Min | Max | Std. Dev | skewness | kurtosis |
|---|---|---|---|---|---|---|---|
| ROA | 310 | 0.03 | 0.00 | 0.10 | 0.018354 | 0.41 | 2.84 |
| PC | 310 | 0.82 | 0.02 | 8.72 | 0.5003136 | 12.86 | 202.77 |
| FLS | 310 | 0.57 | 0.02 | 0.86 | 0.1216674 | -0.82 | 4.55 |
| FS | 310 | 76600000000 | 2289000000 | 556000000000 | 96200000000 | 1.96 | 7.19 |
| FA | 310 | 34.82 | 1.00 | 121.00 | 29.22061 | 1.27 | 3.92 |

**Table II: Correlation Analysis**

| | ROA | PC | FA | FS |
|---|---|---|---|---|
| ROA | 1 | | | |
| PC | .472** | 1 | | |
| FA | .294** | 0.093 | 1 | |
| FS | .372** | 0.05 | .542** | 1 |
| ** Correlation is significant at the 0.01 level (2-tailed). | | | | |
| * Correlation is significant at the 0.05 level (2-tailed). | | | | |

**Table III: Random Regression output**

| ROA | Coef. | Std. Err. | Z | P>z | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| PC | 0.275 | 0.028 | 9.58 | 0.000 | 0.219 | 0.331 |
| FA | -0.004 | 0.078 | -0.05 | 0.962 | -0.157 | 0.149 |
| FS | 0.133 | 0.055 | 2.41 | 0.016 | 0.025 | 0.241 |
| _cons | -2.547 | 0.365 | -6.97 | 0.000 | -3.263 | -1.831 |
| $R^2$ | 0.5816 | | | | | |

Table I illustrate the summary descriptive statistics of the research variables. The table shows that the average industry return on asset for the period 2008-2017 was 3%. In addition the table shows that average bank age is 34 years while the mean bank size is Ksh 76.6 billion. The table further shows that the mean process capital was 0.82 signifying a substantially high level of efficiency in liquidity creation.

The results of the pairwise correlation are shown in Table II. The table indicates that the relationship between process capital and performance is positive and significant ($r=0.472$, $\rho<0.01$). The correlation between firm age and financial performance and significant ($r=0.294$, $\rho<0.01$); same case to firm size and financial performance ($r=0.372$, $\rho<0.01$) as well as firm size and firm age ($r=0.542$ $\rho<0.01$). However the correlation of the two control variables, firm size and firm age, with process capital was positive though non-significant at 1% and 5%.

The output of the random effect regression is tabulated in Table III. The results confirms that process capital has a positive and significant effect on performance ($\beta = 0.275$, $\rho$-value $0.000<0.05$). Therefore out hypothesis, process capital positively affects firm performance, is accepted. We can empirically predict that one percent change in process capital leads to 27.5% change in firm performance. The study further found that firm size had a positive though insignificant effect on performance ($\beta = 0.133$, $\rho$-value $0.016<0.05$). However our results show that firm age had a negative though insignificant effect of performance ($\beta = -0.004$, $\rho$-value $0.962 >0.05$).

## DISCUSSION:

These findings confirm that process capital has a significant influence on bank performance thus a source of competitive advantage. These findings are consistent with previous studies despite the deviation in measurement of process capital raised in the previous section (Shang & Wu, 2013; Wang & Chang, 2005). Conversely, our results contradict those reported by (Ting and Lean, 2009; Yeng and Chan, 1998; Balakrishnan *et al.*, 1996) which found no relationship and (Chen *et al.*, 2008) who reported a negative relationship. Some probable explanations for the divergent results include variance in measurement of process capital, nature of data and contextual issues. As earlier discussed our study conceptualized process capital as process efficiency and the focus was a service industry in a developing country. Additionally, this study was longitudinal and the secondary data therefore fairly objective. Seemingly, our results are reasonably convincing, reliable and superior. Our results are consistent with resource based view that intangible resources are a source of competitive advantage. Banks should therefore focus on building and managing internal processes that create and deliver value to customers to outdo competitors and survive environmental dynamics.

## CONCLUSION AND IMPLICATION:

As the world gradually transits from production to knowledge based economies the importance of process capital to organizational performance, particularly service organizations, has attracted unparalleled attention from consultants, scholars, business managers and regulator. This has further been intensified by unprecedented technology innovations, cross border competition and more enlightened customers which have forced firms to focus more on internal processes for competitive advantage. Unfortunately no relevant study has examined the effect of process capital on firm performance from a process approach, excluding the other components of intellectual capital and focusing on a service organization in a developing country. This study therefore sought to fill that gap. Using data drawn from commercial banks in Kenya, the study empirically examined the relationship between process capital and performance. The study conceptualized process capital as the efficiency of core business processes. The results demonstrate that process capital has a significant effect on firm performance.

Through our study, we have provided further evidence that intangible assets have an influence on firm performance as claimed by resource based view. Our study contributes to the existing body of knowledge by arguing that the value of process capital is embedded on the efficiency of production processes; in the case of manufacturing concern- efficiency in production of goods (converting raw materials into finished good), while for service organizations- the efficiency in delivery of services and for value. The study further argues that business processes are heterogeneous across firms and industries thus measures of process capital should be customized to reflect an organization's unique production model. This study focused on the banking industry therefore future researchers can consider other sectors of the economy such as education and manufacturing. We conclude that the process of process capital matters to performance.

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