Abstract
Purpose – The purpose of this paper is to explore the development of a knowledge management (KM) strategy at the Central Bank of Nigeria (CBN) and how this was embedded in the business processes of the bank.
Design/methodology/approach – Literature research and a case study were used as the methodology of the paper.
Findings – The need to align KM strategy with business strategy was identified as critical to the success of KM. It was discovered that focusing KM on the Bank’s payments system process helped create value and drive business results. A combined approach of codification and personalization was adopted for the KM program of CBN. The strategy adopted involved using a two-pronged approach of communities of practice and a functional portal to drive knowledge management. The paper identifies that this strategy is adding value to the organization and increasing knowledge flows across a dispersed and distributed work environment.
Originality/value – Knowledge management in large public sector organizations in Africa is not common. Equally, KM in regulatory financial institutions like Central Banks in Africa is not very common. The paper highlights the challenges of implementing a KM program in a distributed, dispersed and networked public sector organization with 36 branches serving a population of 160 million people in sub-Saharan Africa.

Keywords Knowledge management, Knowledge management strategy, Public sector organizations, Nigeria, Corporate strategy, Financial institutions

Paper type Case study

Introduction
Knowledge management (KM) has generated considerable interest in management circles due to its capability to deliver to organizations, strategic results relating to profitability, competitiveness and capacity enhancement. Much of its attraction to management theorists stem from its positioning as a business strategy. This has led to the notion that KM is just another management fad that executives are eager to add to their assortment of boardroom lexicon to impress contemporaries and that with time, this will fade away. Research evidence however suggests otherwise. In the early days of KM when organizations began reporting the value of knowledge management in improving organizational processes, it was difficult to put objective measures to these claims. Today, however, we have KM maturity models (APQC, 2010), Intellectual Capital concepts (Edvinsson and Malone, 1997), the SECI model (Nonaka and Takeuchi, 1995), Tan et al.’s (2006) model, the CRAI Model (Oluikpe et al., 2010) and other KM processes that clarify the knowledge agenda and how these create value for organizations. Carrillo et al. (2003) linked knowledge management to business performance therefore providing a justification for organizations to adopt a KM strategy. A KM strategy should:

- create an understanding of the organization’s knowledge resources and where they reside;
articulate the role of knowledge in value creation; and

comprise a number of integrated projects or activities phased over time including quick wins as well as long term benefits (du Plessis, 2007).

This paper explores the development and adoption of a knowledge management strategy at the Central Bank of Nigeria (CBN) using the payments system function of the Bank. It develops and applies a KM strategy to a set of identified knowledge problems after a benchmark study had identified business challenges requiring KM intervention.

Literature review

Strategic management literature has shifted from a resource to a knowledge-based view of the firm, with propositions centered on knowledge enabling organizational capacity and leveraging competitive advantage (Kogut and Zander, 1992). This view has ceased to generate intense debate around business strategy circles. The question is no longer whether or not, knowledge is a critical organizational resource, as research and practice has effectively situated it as such (Carrillo et al., 2003; Tan et al., 2006), but current day issues tend to center on alignment of KM to corporate strategy, measurement of KM impact, KM maturity and driving business results (Greiner et al., 2007). The dominant perspective of current day KM literature borders on developing knowledge management strategies that effectively identify key strategic assets that drive business results and making these knowledge targets (du Plessis, 2007; Sharp, 2006). This viewpoint is not as simplistic as could be imagined. The complexity of the organization, knowledge factors, organizational context and institutional forces serve to compound KM implementation (Jonsson and Kalling, 2007) hence the need for a carefully articulated strategy for implementing knowledge management in the organization.

A strategy is a process of determining the mission, vision, major objectives, strategies and policies that govern the acquisition and allocation of resources to achieve organizational aims (Yang and Yeh, 2009). An effective strategic-planning system links long-range strategic goals with both mid-range plans and operational plans. A strategy could be decomposed through a strategy map which is a visual representation of the cause and effect relationships among the components of an organization’s strategy. This represents a logical and comprehensive architecture for specifying the critical elements and their linkages in an organisation’s strategy and serves as a communication tool for clarifying strategy.

The challenge of KM strategy

A KM strategy is crucial to the success of a knowledge management program (Kavindri, 2005; KPMG, 2000; Pariby and Taylor, 2000; Robertson, 2005; Yu, 1999). However, knowledge management strategy is faced with the same challenges of organizational strategy. One of the problems of strategic planning is the deployment of the overall vision, strategies and strategic objectives to the organization’s units or departments in order to link individual efforts and accomplishments to business objectives. Another problem is measurement using Key Performance Indicators (Clarke, 1997). This implies that organizations need to find a way to cascade high-level strategic objectives and interpret these to the lowest level units and job roles, and also find a way to measure their achievement (performance) relative to milestones. The foregoing implies that effective strategic planning plugs itself into the business process. In the same vein, knowledge in an organization should be aligned to its business process (Shaw and Edwards, 2005; Greiner et al., 2007). The argument is that business processes are tied to the organization’s business strategy, making it logical for KM Strategy to focus on business processes (du Plessis, 2007). Linking knowledge to business process is a segmented activity involving classification of knowledge into core, support and strategic knowledge (Osborne, 2004; core and ephemeral (Leseure and Brookes, 2004); and exploitative and exploratory (Curado, 2008; Earl, 2001). Knowledge alignment does not stop at classification, but goes further to focus core knowledge on core processes, support knowledge on support processes, and strategic knowledge on strategic processes (Shaw and Edwards, 2005).
The business process angle of KM is the most compelling value proposition for designing a KM Strategy from the beginning. Perhaps, it is also the most visible factor for the failure of KM initiatives. Some authors may disagree with this notion, given that culture has been oft touted as the most critical failure factor for KM (King, 2007). The reality is that a variety of factors such as culture, strategy, people and technology are critical to knowledge management (Jashapara, 2003) and they are categorized as dimensions of KM whereas business process is the context or basic unit of KM implementation. Lam and Chua (2009) provided seven problems attributable to KM implementation and four of these could be linked to the business process. The business process viewpoint of KM is derived from the strategic planning process where the business process is the centre of strategic initiatives implementation and measurement. It is at this level that objectives of the organization are measured. The meaning of performance, whether in terms of competitive advantage, profit orientation, competency building, capability, and capacity can be derived as outputs at the business process level. Pariby and Taylor (2000) suggest that knowledge creation, sharing, harvesting and leveraging can be encouraged by tying it to job evaluations and performance measurement. Knowledge sharing can only be done effectively by those working with the knowledge in specific contexts. This view is an extension of the paradigm of embedding KM in the business process (Wiig, 1997; Day and Wendler, 1998).

Classification of KM strategies in literature

Two perspectives of KM strategy have dominated knowledge management discourse considerably. The codification and personalization strategies are well known in the knowledge management community. The codification strategy of KM focuses on capture, codification, storage and dissemination of explicit knowledge and using them in forms compatible with organizational objectives. The personalization strategy is concerned with increasing knowledge flow in the organization through networks and interaction (Kwong and Kwok, 2009; Greiner et al., 2007; Osborne, 2004). Following Koenig (2001), authors have tended to categorize previous and current KM models and approaches as either codification or personalization. Hence, Nonaka and Takeuchi’s (1995) SECI model of internalization, externalization, combination and socialization dimensions of knowledge can be classified into codification and personalization strategies. The externalization and combination perspectives of the spiral focus more on codified knowledge whereas the internalization and socialization perspectives are concerned with personalization.

In Boisot’s (1998) scheme, knowledge assets can be located within a three dimensional space defined by axes from “uncodified” to “codified”, from “concrete” to “abstract” and from “undiffused” to “diffused” (Haggie and Kingston, 2003). These categorizations lend themselves to codification and personalization of knowledge. Haggie and Kingston (2003) highlighted Binney (2001) KM Spectrum and applications as: transactional; analytical; asset management; process; developmental; innovation and creation. This spectrum embodies two perspectives of KM:

1. the community view of knowledge (knowledge as socially constructed); and
2. the cognitive view of knowledge (knowledge as objective-expressed, captured and codified).

These two views are internally consistent with the concept of codification and personalization. Binney’s conceptualization gives more clarity to the idea of personalization strategy as a method that focuses on the social construction of knowledge and the codification approach as focusing on cognitive processes such as capturing and codification of knowledge. Haggie and Kingston (2003) assumption that “the set of approaches in the KM Spectrum is nearly or fully complete” is however questionable. Almost ten years after this assumption, a plethora of approaches have inundated KM literature. These may appear to recombine and reconstitute the earlier KM specter developed but essentially, they are new approaches.
The Central Bank of Nigeria

The Central Bank of Nigeria (CBN) was established in 1958 and is charged with the control and administration of the monetary and financial sector policies of the Federal Government. The objectives of the CBN are as follows:

- ensure monetary and price stability;
- issue legal tender currency in Nigeria;
- maintain external reserves to safeguard the international value of the legal tender currency;
- promote a sound financial system in Nigeria; and
- act as Banker and provide economic and financial advice to the Federal Government.

The Bank is charged with the responsibility of administering the Deposit Money Banks and Other Financial Institutions (BOFI) through the BOFI Act of 1991. The aim is to ensure high standards of banking practice and financial stability through its regulatory activities as well as the promotion of an efficient payments system. In addition to its core functions, the CBN has been performing major developmental functions focused on key sectors of the Nigerian economy (financial, agricultural and industrial sectors). Figure 1 below illustrates the mandates, strategic focus and objectives.

The Nigerian payments system

The CBN as the regulator of the Nigerian financial system undertakes many initiatives aimed at providing a safe and conducive economic environment. This paper selects and uses the

Figure 1  CBN's mandate, strategic focus and objectives

<table>
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<tr>
<th>CBN Statutory Mandate</th>
<th>Strategic Focus</th>
<th>Strategic Objectives</th>
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</table>
| **CBN Act, 2007**    | Financial System Stability | - Strengthen financial stability systems  
- Improve the quality of banks |
|                      | Monetary & Price Stability | - Improve the macro prudential response  
- Achieve single digit inflation rate |
|                      | Economic Growth | - Encourage the banking system to increase lending to the real sector |
|                      | Operational Excellence | - Establish operational excellence for the CBN and financial system  
- Transform CBN human capital |

Source: CBN Act (2007), CBN Board Study Tour (2011)
CBN’s Payments System initiative as a case study of how the organization deploys Knowledge Management Strategies in driving business results. The Nigerian payments system in 2009 compared to selected Central Banks in some countries was relatively undeveloped. Figure 2 illustrates the CBN’s focus on developing the retail payments system in Nigeria. The biggest challenges to the organization in leapfrogging to innovative technological solutions were infrastructure and know-how. An ageing work-force trained mostly in traditional retail payments system had kept the system running efficiently over the years, but an increasingly sophisticated, young, mobile phone-totting customer base presented opportunities and challenges equally.

Democratization of governance in 1999 opened up the country’s economy to foreign investors after a long interval of military rule. Foreign investment, tourism, mobile telephony, and economic growth increased as a result of a liberalized political and economic space. The sheer size of the Nigerian population was a reinforcing factor itself. The Central Bank of Nigeria, the steward of the economy, needed to keep pace with the increased demand for new and better financial and payments system services. In search of improving the payments system, the Central Bank of Nigeria undertook benchmarking studies, which compared the services in Nigeria to those of similar institutions in Chile, Brazil, Portugal and South Africa.

**Figure 2** The Nigerian Payments System before 2009

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"An effective strategic-planning system links long-range strategic goals with both mid-range plans and operational plans."

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Benchmarking

Figure 3 outlines the criteria used for selecting countries and institutions for the benchmark study. Three financial institutions were chosen from Brazil (Banco Centrale Do Brasil, Banco Bradesco and Caixa Federal Economica) due to their strong payments system. It was felt that the CBN would draw useful lessons that could be applied in the Nigerian context. The South African Reserve Bank (SARB) and Banco Central Do Portugal were selected mainly for their well-developed institutional capabilities and industry infrastructure and additionally, the SARB had a stable financial system, which was considered as having weathered the global financial crisis. The Bank of Chile was selected for its financial inclusion services. This aspect was relevant in order to understudy how to provide financial services to more than 50 million people in Nigeria who had no access to financial services.

The areas targeted for benchmark include Points of Sale (POS), Automated Teller Machine (ATMs), Branch networks, Internet, Mobile and Accounts services. One of the key performance indicators (KPIs) of the CBN’s payments system policy is the rate of development in infrastructure, services and use of these systems in the economy. Table I and Figure 4 below present the highlights of the benchmark studies.

Nigeria’s payments system benchmarked against the four countries (Brazil, Chile, Portugal and South Africa) was still in early developmental stages. A large segment of Nigeria’s population remained relatively unbanked (461 accounts per 100,000 adults). Automated Teller Machine usage in 2009 stood at 109 million transactions compared to Chile’s 390 million. Financial transactions on the web were in relative infancy (just over 2 million single transactions in 2009). Transactions using mobile phones were still developing and had no verifiable data available for comparison. The benchmark studies provided clues as to the direction of financial services of the future in Africa. It identified the trends likely to drive the provision and consumption of services. In addition, it shed some light on the set of factors likely to restrict market development (Figure 4). Against this backdrop, the Central Bank of Nigeria was faced with myriads of challenges bordering on stimulating growth in the payments system, providing a world-class, stable infrastructure and a policy environment conducive to growth.

![Figure 3 Criteria and selection of benchmarked countries and institutions](image-url)
### Table I: Benchmarking results

<table>
<thead>
<tr>
<th></th>
<th>POS</th>
<th>ATM</th>
<th>Branches</th>
<th>Internet</th>
<th>Mobile</th>
<th>Accounts</th>
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<tr>
<td><strong>Brazil</strong></td>
<td></td>
<td>The network of POS increased from 1 million in 2004 to 3.4 million in 2009. The total number of ATMs in public points has increased by 10 percent, which emphasizes the pursuit of banks in increasing convenience for their customers</td>
<td>ATMs increased from 22,000 in 2002 to 41,000 in 2009. Local banks are introducing new branch models in order to reduce distribution costs while improving commercial effectiveness (Itaú, Santander and Banco do Brasil)</td>
<td>Branches increased from 27,000 in 2002 to 32,000 in 2009.</td>
<td>The Internet is now the third most important channel representing 23 percent of total transactions (compared to less than 10 percent in 2003)</td>
<td>Personal mobile access in 2002 was 53 per 100 inhabitants whereas in 2009 it rose to 91 per 100 inhabitants</td>
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<td><strong>Portugal</strong></td>
<td></td>
<td>POS terminals have expanded rapidly. As at 2008 there were 226,118 terminals (2,127.7 per 100,000 people and 2,454.7 per 1,000 km²) – mainly installed in retail outlets and at filling stations – compared with 2,672 in 1990 (25.2 per 100,000 people and 29.0 per 1,000 km²)</td>
<td>ATMs operated by credit institutions, was 16,885 by end-2008 equating to 158.9 ATMs per 100,000 people, and 183.3 ATMs per 1,000 km², compared to 821 in 1990 – 7.7 and 8.9, respectively. The demographic ATM penetration is currently one of the highest in the world</td>
<td>N/A</td>
<td>Low internet usage. However the rising number of Portuguese households with at least one computer at home and access to broadband internet (35 percent) is likely to increase the use of home banking as an alternative to traditional banking outreach</td>
<td>In 2008, the number of mobile phone subscribers amounted to almost 15 million, corresponding to a market penetration rate of around 152 percent, one of the highest among the EU states</td>
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<tr>
<td><strong>Chile</strong></td>
<td></td>
<td>3.4 million transactions in 2008 through POS</td>
<td>390 million transactions made in 2008 through ATMs</td>
<td>Branch offices have increased by 33 percent in ten years</td>
<td>Internet penetration in Chile in 2008 stood at 17 percent</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>South Africa</strong></td>
<td></td>
<td>In ten years (2001 till 2010) POS penetration in SA grew from 987 to 89,887 per 100,000 people</td>
<td>Over five years (2004 till 2009) ATM penetration in South Africa has grown over 12 percent</td>
<td>The SA Financial sector model has moved away from branch model</td>
<td>From an average of 0.3 internet subscriptions in 1990, there are currently 9 internet subscriptions in every 100 South African</td>
<td>In 1990 there were only 5,680 mobile phone users. Currently, there are about 4.7 million registered mobile phone users</td>
</tr>
<tr>
<td><strong>Nigeria</strong></td>
<td></td>
<td>1,059,069 transactions in 2009</td>
<td>109,592,646 ATM transactions in 2009</td>
<td>6 branches per 100,000 adult population in 2009</td>
<td>2,703,516 transactions over the web in 2009</td>
<td>N/A</td>
</tr>
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</table>
Key knowledge challenges

The key knowledge challenges were derived from the benchmark studies (Table I and Figure 4). The benchmark studies indicated the need to either provide or improve four key elements of payments system infrastructure as follows.

**Real-Time Gross Settlement System (RTGS)**

The CBN in 2006-2007 commissioned a real-time gross settlement (RTGS) system it owns and operates. The RTGS system was implemented with the primary aim of reducing risk and enhancing efficiency in the payments system. A World Bank (2009) diagnostic study on the Nigerian payment system indicates that the system meets neither international standards for risk mitigation and efficiency nor the needs of users. The study identified key challenges as not just infrastructural but also knowledge-related. Non-automated processes often result in intraday credit spilling over into overnight lending. In addition, connectivity between the RTGS system and the banks’ internal systems still does not permit straight-through processing.

**Nigerian Central Switch**

In an effort to promote interoperability of the payments system, the CBN is working with all licensed switch operators to ensure they connect to the newly established Nigerian Central Switch (NCS), operated by Nigerian Inter-Bank Settlement System (NIBSS). It thus has a regulatory and supervisory role in this regard. This role is impeded by human capital readiness (HCR) issues. Staff of the Bank had knowledge challenges in critical areas of interoperability of the payments system and as such it was difficult to monitor conformity of the switch operators to policy and regulatory guidelines. The result is that despite the 2003 Guidelines on Electronic Banking in Nigeria, which encourage private switch operators to interconnect, 42 private switches are still not interoperable. This lack of interoperability...
results in cost inefficiencies as multiple ATMs and POS terminals are deployed to the same high-traffic areas (such as hotel lobbies and airports), while leaving other areas uncovered, and there are limits on the number of financial access points available to Nigerian consumers hence they are denied the use of access points that are not part of their bank’s network.

**ATM issues**

As at 2010, the processes for frequent replenishment of ATMs given the limited capacity of the machines and the low value of the highest denomination note, (NGN 1,000) were still not working efficiently. These were compounded by the difficulty and cost of sourcing adequate quantities of ATM-fit notes and monitoring machines for cash-outs and jams caused by the poor notes quality. There was also the unreliability of electricity supply and the need to maintain alternate sources of electricity at all ATMs. Added to this, the cost of physically securing the ATMs and their generators or other sources of electricity was huge. The CBN’s role is to provide the commercial banks with technical knowledge, expertise and the operating environment to serve the population especially as ATM services are still very new in the country. This role was fraught with many knowledge challenges. To understand the nature of the problems at issue and how to address these required a collaborative perspective. However, the commercial banks operating ATMs in the country worked in silos and had little or no concerns about sharing lessons learned from ATM operations processes.

**POS and mobile payments issues**

POS transactions in 2008 represented over 4 percent of the value of all electronic fund transfers in Nigeria and the penetration rate represents a ratio of less than 50 POS terminals per 1 million inhabitants – an extremely low penetration rate compared to other countries in Africa (130 POS terminals per 1 million inhabitants in Zimbabwe, 350 in Egypt, and 14,000 in South Africa). Low inter-operability also affects the POS network, as some merchants may be required to use several terminals. As at June 2010, Nigeria had four licensed mobile network operators with approximately 50 million mobile telephone subscriptions. In addition, four licensed Code Division Multiple Access (CDMA) mobile network operators have approximately 4.8 million subscriptions. CBN in November 2010 issued provisional licenses to a number of mobile payments operators but operations were yet to commence. The key knowledge challenge was the readiness of the infrastructure and staff knowledge capabilities to support a recent cashless initiative of the CBN aimed at reducing fraud, money laundering and incidents of robbery occasioned by moving large sums of money in cash. The POS and Mobile Payments systems are elements of this initiative.

**Knowledge management strategy**

The knowledge challenges facing the CBN’s payments system operations were both internal and external. The internal challenges relate to staff know-how and expertise and the external challenges bordered on leveraging collaboration between CBN-the regulator and the operators in order to increase knowledge transfer in the payments system knowledge domain. In Figure 5, the knowledge management framework proposed for addressing the challenges identified in the payments system was embedded in the business context, which is the operative environment. Four critical domain areas are relevant: Regulatory compliance, Infrastructure, Interoperability and Cost-effectiveness. Many guidelines exist in literature as to how to implement a KM framework. Shankar and Gupta (2005) posit that the framework should:

- categorize activities that constitute knowledge processes; and
- classify the processes according to the different domains of the organization.

The du Plessis (2007) approach recommends that a KM strategy should:

- create an understanding of the organization’s knowledge resources and where they reside;
articulate the role of knowledge in value creation; and

- comprise a number of integrated projects or activities phased over time including quick wins as well as long term benefits.

Another similar proposition is the articulating capability theory, which proposes the firms’ need to articulate a KM Strategy in line with corporate objectives (Zack, 1999; Sher and Lee, 2004). It is posited that the articulating capability positions organizations to create KM-enabled value. This research considered the approaches recommended by literature for contextual application. As carried out in this case, we have identified knowledge gaps in how the payments system currently functions. These gaps represent the deficit between the existing knowledge resources and the knowledge resources required to operate the payments system optimally and exploit future opportunities. A knowledge management framework for enabling value creation and appropriation is proposed in Figure 5 and operationalized in Figure 6.

The KM framework

The knowledge management framework proposed here utilizes the codification and personalization strategies. Four key knowledge areas (interoperability, cost efficiency, regulatory compliance and infrastructure) were identified and leveraged using two communities of practice (Payments system and FSS, 2020). The Payments system CoP is internal to CBN whereas the FSS2020 CoP is external and sector wide. These two CoPs facilitate boundary crossing (Wenger, 1998) and help solve the problem of knowledge stickiness. We considered Kogut and Zander (2003) proposition that knowledge that is difficult to codify or teach and is also complex will tend to be transferred within the firm. Since codifiability, teachability and complexity are factors considered to influence the transfer of knowledge, we created an interface for dissemination of internal knowledge to external stakeholders.

The external FSS 2020 CoP is linked with the internal Payments system CoP through the KM Portal. The KM Portal integrates the disparate IT systems in the Bank into one single interface. A variety of applications (ERP, Oracle BPM, Integrated Data Management System...
(IDMS), Temenos, RTGS, T24, Hyperion, and other applications) were interfaced with SharePoint 2007 as the front-end application. The result is a collocated applications interface that seamlessly pushes payments system information from a background of different sources. Collaborative working and knowledge transfer has been enabled through the community spaces on the portal moderated by domain content experts. Their role is to validate content and help identify useful contributions that add value to the community’s knowledge domain. The KM Team also created interactive blogs, expert locators, issue logs, profiles, lessons learned and risk logs based on the domain knowledge.

**Value creation and appropriation**

The value derived from implementing a KM Strategy combining the codification and personalization aspects were in two dimensions: knowledge outcomes and business outcomes.

**Knowledge outcomes**

The knowledge outcomes are immediate results of knowledge transfer within the payments system practitioners’ community. These were derived in the form of collective validation of what constitute best practices in the four target areas of payments system interaction (regulatory compliance, interoperability, infrastructure and cost-effectiveness). Knowledge and best practices were collectively created, evolved and validated. The KM strategy adopted enabled the aggregation of human and technology elements of payments systems in the country. This led to process improvements within CBN and improved stakeholder engagement. CBN Staff directly involved in the regulation of the payments system reported improved know-how, awareness and engagement with operators. The enabled knowledge space created mutual trust and helped CBN staff learn more about the operational aspects of the payments system infrastructure from the operators themselves. The Payments system staff also reported process improvements both in policy regulation and implementation. A KM maturity index deployed in 2011 was used to collect information on knowledge outcomes. The outcomes and improvements witnessed were mostly incremental.
Business outcomes

The business results derived from knowledge-enabled payments system processes are presented in Table II. Results were measured around the three business outcome areas targeted by the KM strategy. Three tools were used to collect data on the business results of the KM strategy:

1. SharePoint Business Intelligence reports from the KM Portal, which provided information relative to the rate of use (contributions, document sharing, collaborative document authoring and development, workflows and lessons learned) of the portal;
2. performance measurement reports of the payments system initiative for 2010 and 2011 (periods in which the KM Strategy for the payments system was implemented); and
3. stakeholders assessment workshop of the payments system held in November, 2011.

Table II is a combined and summarized business results outlook arising from these three measurement and evaluation sources.

Discussion

The knowledge management strategy offered here provides a framework for furthering understanding of the concept of KM. The framework focuses on key strategic assets that drive business results for the payments system of CBN. This is because KM is consistent with the resource-based view of the firm, which builds on unique capabilities that provide a competitive edge in the market (Earl, 2001). This underscores the point that to manage knowledge effectively, organizations need to evaluate them (Sharp, 2006). This evaluation led to categorization as illustrated in Figure 5. The aim of categorizing knowledge in domain areas is to ensure that the KM program focuses the right kind of knowledge on the right process. For example, an argument is that strategic processes are inherently more knowledge intensive than core processes. They are less structured and less routine whereas core and support processes are structured and routine (Earl, 2001). A good understanding of this notion will lead to a segmentation of the kind of knowledge delivered to the various levels of the organization and business process whether strategic, core or support. The KM strategy then provides an appropriate framework and tools for transferring knowledge relevant for delivering required outcomes. In our case we utilized CoPs and a KM Portal.

Communities of Practice were utilized as a knowledge management tool to ensure codifiable, teachable and complex knowledge are transferred not just within but outside the organization, especially in the payments system sector. The CoPs delivered expertise to operators in areas such as problem solving, policy issues, ATM deployment, shared services, POS terminals and a host of other areas. Members of the CoPs spanned boundaries. They were drawn from CBN (Payments system CoP), operators (Banks and financial services companies) and other stakeholders. Technical and policy information is currently easily available, and also interpreted using the CoP platform. Once a technical or policy issue is triggered in the community, the moderator particularly flags identifiable experts in the area. The issue then receives responses in the form of documents, manuals, policy statements, and physical visits to the site of the problem. Resolutions are often posted back to the CoP and stored in the form of lessons learned.

The KM Portal provided communities with a readily available outlet for collaboration. It integrated various sources of information on payments system and made them readily
## Table II  Business results of KM application

<table>
<thead>
<tr>
<th>POS</th>
<th>ATM</th>
<th>Mobile/Internet</th>
<th>Accounts</th>
<th>Policy</th>
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<tr>
<td><strong>Reduced cost</strong></td>
<td>Cost of transactions have been reduced by 30 percent due to increased interoperability of POS services. Major players are Switch, Visa and Master Card. COPs are helping validate cross-platform requirements</td>
<td>Interoperability has reduced the cost of ATM transactions. Most transactions are currently free of charge with the exception of few un-integrated services. COPs work on policy and compliance was critical. Expertise and technical assistance to operators was also critical</td>
<td>Cost of online transaction is free. Banks and other operators reported that the availability of COPs providing expert advice has driven down the cost of implementation especially those of engaging consultants. In-house IT staff currently have built-up capacity for problem-solving through help lines</td>
<td>Live Accounts Verification Service introduced. This reduced the cost of processing transactions and saved time. COPs driving the cashless-Lagos pilot initiative to reduce the cost of transactions. Initial results: Cost of cash management reduced; cheque clearing fast-tracked by 23 percent</td>
</tr>
<tr>
<td><strong>Integrated financial infrastructure</strong></td>
<td>Improved connectivity Most fully-integrated COPs crucial to expertise on policy and implementation</td>
<td>The COPs have reported helping with expertise on integration of ATM services across platforms. The rate of integration of ATMs has risen from 10 percent to 30 percent between 2009 and 2012</td>
<td>Technical experts among COPs are helping banks with mobile and internet banking expertise. Improvements in online transactions and integration with payments system gateways reported at 11 percent between 2010 and 2012</td>
<td>Initiated the Nigerian Uniform Bank Account Number (NUBAN). The internal and external COPs formulated the policy. This initiative took off successfully thus enabling integration and interoperability</td>
</tr>
<tr>
<td><strong>Improved access to financial services</strong></td>
<td>A 320,000 terminals in total have been deployed as at April 2012. A 30 percent increase in deployment was recorded. Technical expertise shared in the communities was crucial to accelerated deployment</td>
<td>CoPs at the driver seat for implementing POS in local shops in villages and towns to reach the un-banked. These include deposit and withdrawal services. Remote villages may not need physical branches but POS and ATM outlets would substitute branches</td>
<td>World Health Organization in collaboration with CBN is putting a framework for using the mobile payment platform to disburse funds to vaccinators in the rural and urban areas were they carry out their functions</td>
<td>Potential for savings through automated end-to-end handling of the cash flow from the point of sale (cash office) and on to the cash-in-transit operator for posting at the bank. CoPs exploring this model and recommending to operators</td>
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<td>Direct Debit Guidelines and Centralized Direct Debit Mandate system introduced. The COPs worked on the guidelines, validated these with the operators before issuance. COPs anchored a sensitization workshop in May, 2011 for the payments system operators. Online posts and responses on this were 5,236</td>
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available to community members. The role of the expert in the community is crucial to identifying and validating useful knowledge (APQC, 2000; Moran and Weimer, 2004) and motivating membership and participation (Zboralski, 2009). The experts in the community also help coach new members and support interaction among community members. The result in our case was a highly motivated membership interacting intensively across the CoP space and sometimes face to face.

Conclusion

This paper has contributed to the growing number of theoretical and practical insights into knowledge management strategy. It also provided a practical scenario for applying KM strategies of codification and personalization in a public sector organization such as the Central Bank of Nigeria. Understanding and applying KM to business strategy will increase knowledge flows that would leverage firm’s core capabilities. It is not enough for an organization to realize the need for KM to align with business strategy down to the business process, but it is important to have a logical and comprehensive architecture for specifying the various components of an organization’s knowledge domain and making these knowledge targets.

Delivering strategic knowledge will imply providing knowledge that is explorative in nature as opposed to exploitative. At the core and support level, knowledge has to be exploitative, in the sense that the performance of business processes can be enhanced by providing operational staff with knowledge relevant to their tasks. This does not preclude innovativeness and risk taking at the core and support levels, however, the idea is that since most business processes are already clearly defined, it is more beneficial focusing structured knowledge on these processes to drive the bottom-line. “Every time we drill another well, we do the next one better” captures the objectives of this line of thought that KM enables knowledge reuse and accelerated learning at the core and support levels.

Implications of the study for researchers and practitioners

Research into KM Strategies for public sector organizations are not as many as private sector researches. This work contributes to fill the gap. The KM framework proposed and operationalized here in a public sector organization would help researchers understand the context of KM activities especially as they relate to embedding knowledge processes in business processes. Although it is commonly accepted that KM should target business capabilities, it is necessary to keep building on this theoretical foundation and to empirically validate this by providing evidence relative to its operationalization. As such, this work helps towards the effort to close the gap between academia and industry. Researchers can extend this research and design, apply and contextualize researches that would serve the needs of industry in specific reference terms. For practitioners, the results linked to KM intervention in the business process of the payments system provide an effective business case for adopting and implementing a KM strategy. Decomposing the implications of this research further, researchers and practitioners in the financial sector would find the results of this work useful to extrapolate to their particular contexts.

Limitations of the study

This work has focused on one aspect of the many facets of operations of a multi-layered, dispersed, distributed and networked public sector organization. It therefore does not measure the enterprise-wide impact of KM. By isolating a single facet of operational activities (payments system), applying a KM strategy and measuring the impact, it is possible that a number of factors that would have provided justifications to arrive at entirely different sets of conclusions may have been missed. However, KM is as relevant to a single business process of an organization as it is to enterprise level processes. In reality, some researchers call for KM to be applied first at micro-levels as pilots once at a time as quick wins (du Plessis, 2007). Only then can the assumptions be justified for wider applicability across the enterprise. This approach provides opportunity to learn, adapt and fine-tune KM strategies and also helps gain top management support and budgetary commitment for KM projects.
“The KM Team also created interactive blogs, expert locators, issue logs, profiles, lessons learned and risk logs based on the domain knowledge.”

References

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Further reading


About the author

Paul Oluikpe is a Senior Manager, Knowledge Management at the Strategy and Performance Department of the Central Bank of Nigeria. He graduated from Loughborough University, United Kingdom with a PhD in Knowledge Management and an MSc in Information and Knowledge Management. He has 15 years’ experience in public and private sector organizations and has also consulted for companies and international organizations in leveraging intellectual capital. Prior to joining the Central Bank of Nigeria, he undertook Post-Doctoral Research at Loughborough University where he collaborated with two construction companies to capture and leverage knowledge extracted from post project reviews. Paul Oluikpe can be contacted at: pioluikpe@cbn.gov.ng