

Collective intelligence in commercial banking, an approach to add value for IT department in commercial banking.

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Abstract:

The need for Knowledge Management (KM) has been drastically growth so organizations may meet the high level of complex business change, dynamics and uncertainty. This research aims to understand the way the KM and collective intelligence (CI) influence, or not, towards value added generation for Information Technology (IT) departments in banking industry.

Mexico has a consolidated banking system; for commercial banking has a large influence from European banks in terms of business approach, and most of this banks has been part of acquisitions and merges, other cluster is composed by small banks are part of the new generation banks raised from retailers.

The IT departments in Mexico, has suffered many changes: From mainframe operations to open systems operation, from manual process to highly automated processes, from local policies to global policies, and they move for tacit to explicit knowledge when possible.

The ageing in managerial positions is growing, and there is a age divide not only in regards experience from IT management, but also for corporate culture, tradition, business alignment and even regional culture. Highly experience people are leaving their position to new or foreign managers.

Mexico's major banks have origin in Spain, England, USA, Canada, so relocation for business purposes in foreign related banks is a policy, mainly for managerial positions, and IT departments are not the exception; which turns into a functional, authority-status hierarchies, time availability barriers to interact in short term with collaborators, and share knowledge.

Merges and acquisitions, as a context, has generated a high rotation level in mid IT department positions, with the effect of constant changes, and not all involved workers document, or explicit their knowledge, in a tide effect the knowledge come and gone in those area.

Collective work it is important within this area, actual banks in Mexico outsource part of their operation to third parties, and this third parties may or may not rotate its personal, with the effect of constant change in culture, leadership style, process or task arrangement, due trust to share knowledge with others who may turn into a competitor.

Knowledge management and collective intelligence without the proper technological infrastructure that allows groups, teams, areas or regions to share the knowledge is a difficult task; the fact to be part of IT department does not ensure the availability or desire to share the knowledge and work collectively to solve all issues using technology to make it explicit.

This research aims to analyze relationships within IT departments are influenced by cultural contexts, social or structural, which determines the strength of collective intelligence commitment to add value for their department, a internal knowledge bonding, and perhaps its perception, as result, is adding more value for external than internal customer. The research include Mexico's top seven banks, which holds 68% commercial bank market share

Keywords: Knowledge management, collective intelligence, knowledge outsourcing.

Introduction

The collective work towards a knowledge sharing institution in which know how and know about has been promoted by the challenge to manage organizational culture, knowledge management and how to add value from the IT department to commercial banking, or GRANT(1996) mention its tacit and explicit knowledge.

As DeLONG (2004, p. 21-27) mention the knowledge lost, either due retirement caused by personnel ageing, which may produce a remarkable impact due unanticipated or not planned knowledge loss and the decreased capacity for effective action or decision making in a specific organizational context may affect organizational changes, today turnover for the IT department employees within the banks increases, and some of the new financial institutions face.

Mexico has move from private owned institutions, to run by the government operation, and then go back to a private international and open banking institution through the last thirty years with different profitability result (RODRIGUEZ & VENEGAS, 2010).

When a group of people remains working as team the partial loss of team member and knowledge can be minimized; the operational IT departments, as a group or team, have a knowledge that a single person would not develop alone, one source is collaboration (STAHL, 2006).

The changes for Mexican banking also brought new management styles for IT departments, the new bank owners align senior management IT positions to trusted aligned philosophy employees who came from the head quarters country, which culture and context influence not only in organizational knowledge but also learning (PEREZ & MONTES, 2004), in some cases with an effective learning and execution.

HAAK (2004, p. 14) argued that “*The multinational company pursues a multinational or country-specific strategy rather than an international strategy dominated by a headquarters or the home-country*”, but in IT banking not all follow the same rule, cultural, legal, social context influence the strategy.

The process to add value using a collective approach using the knowledge should be constant, more in a competitive environment, as LOGAN & STOKES (2004) states: “*competition is inevitable, but enterprises – public and private- that do not master the art (and science) of collaboration are destined to extinction*”, in the knowledge age, data and information is not enough, collaborative knowledge persuading collective intelligence may help.

Research methodology

The research involves two areas one qualitative and quantifiable data, sourced in the BODER (2006) proposition in regards how the collective intelligence put together: competences (specific domain knowledge), goals (strategic market knowledge) and mechanics (culture

norms) add value to IT departments in the commercial banking, and is structured in three sections: research design, data collection and data analysis.

Research design

STAKE (1995) have noted that case study generates insightful stories more than statistical information, which allows better understanding for organizational complexity; the research executed exploratory interviews from February to March 2011, initially aimed to cover the top ten banks, but not all provided full answers to semi structured interview, in which the research may validate the approach of certain assumptions or generalizations within real world (PESHKIN, 1993).

The context for the interviews was planned to gather information in how the collective intelligence supports the value creation to IT operation departments for the knowledge management and collective intelligence usage and application to IT for commercial banking.

Also the interview includes questions to gather data to get qualitative analysis following also the PARKER (1994) proposal. The sample includes the banks who manage 75% countrywide banking operations, through the process a pair of institutions announce a merge process, and by the time we finished the research the merge was about to be confirmed by regulatory institution. For this research the information used was as independent banks.

Data collection and analysis

Face to face semi-structured interviews were the primary source of data, focused in the management position for IT departments, the operational areas, per the analyzed sample, the IT divides in two functional roles: product development aligned with marketing or the operational area which maintains the bank up and running.

For this research purpose, the objective was the operational departments, those whose supports and keeps systems up and running, facing different issues in the IT platform they use, and how they create solutions to solve it.

Eight formal interviews meetings were observed and include two different staff members per bank analyzed and two meetings were informal. Six interviews includes site visit to the place were bank team members and other organizational members were interacting.

The documents collected include questionnaires, taped interviews and information from intranet in some cases when was available to share with outsiders.

CURADO (2008, p. 144-148) previous research was a key initial point for present analysis, adds value to initial interviews in regards vision for inventory and recognition for knowledge management.

Most of gathered information is non structured and some structured, due this all data was electronically coded using the ATLAS.TI® software version 6.0 software, small part of the banks sample provide performance data based in knowledge investment ratios for knowledge

development, the rest are in the process to provide this knowledge development results which may be used for future research and analysis.

Background

Knowledge based economy now in most of the organization has two key elements which can influence positively or not to its performance, the know how and the knowledge itself, both are created and stored in the most important asset they have, people as described by REED (2000).

The fast evolution of information technology and telecommunications allowed organizations to achieve continuous operation, better and faster response to its requirements (TEECE, 2000).

The way they interact within relationships, organizational process or information technology systems supports the development of a company, as EDVINSSON & MALONE (1997) propose, this three components allows an organization to create and sustain competitive advantage (STEWART, 1997) .

Financial institutions have been in economical crises in different levels, for several reasons and in several times in the last century, technology is moving forward to provide better data processing, but also for support knowledge management and provide a better collaboration schema, as MALONE (2005) mention with a particular North American vision. (SVEIBY, 1997).

For banking IT departments are alike to a service firm, where knowledge is a key element in competitive differentiation, sometimes even with more impact than money based investments (GRATTON & GHOSHAL, 2003), since a higher profiled and knowledge experience owner person may solve faster a situation, saving bigger amount of operational people.

The flat world (FRIEDMAN, 2005) or global environment for business, has influenced in the banking industry also, and move forward to look for better product and services in order to improve their competitiveness (CHATZOGLOU, 2009).

The WORLD BANK INSTITUTE -WBI-, (2007, p. 6) refers the knowledge as a key influence for competitiveness, economic growth, and development as long as it finds concrete applications.

The global and local “*glocal*” (WBI, 2007 p. 14) perspective for banking in Mexico is result from several fusion, acquisition and merges from different banks and foreign investors, in which the knowledge economy impulse productive interaction among people and groups inside banks with foreign vision are now deployed locally (WBI, 2007).

In the last census held in march 2011, the COMISION NACIONAL BANCARIA Y DE VALORES (CNBV), the Mexican government ruling commission institution for banks, reports in México forty one bank institutions, six of them controls and own 90% of the

country's deposits (CNBV, 2011), for this six the uptime operation, and the way the solve their operational IT situations is business critical.

To share knowledge, according to NDELA & Du TOIT (2001), organization needs first to solve people related issues like their unwillingness to share their individual knowledge, have leadership commitment and enough resources and time to deploy it.

Not only in finance but also in other areas the knowledge management strategy must be aligned with the business strategy as many authors refers TIWANA (2000), ZACK (1999), also must have an interdependency for the results to be generated.

The big six mentioned above, face several issues not only in competence among themselves (BATIZ & DOUGLAS, 2003), but also some personal turnover due either ageing retirement, jump out to a new ventures or just laid off.

The banks use the technology as a basic support for the asset management of their customers (ASOCIACION DE BANCOS DE MEXICO, ABM, 2011), but such areas are not involved into create new knowledge as part of the daily basis task.

The possible lost of knowledge, using DeLONG (2004, p. 21) definition, decreased capacity for effective action or decision making in a specific organizational context, as previously mentioned, may be caused by people departure or not to involve of the proper resource at the time of decision making.

Traditional benefits banks expect from their IT departments rely on save capital or operational expenses through a wise use of technology, but technology with no experience may produce poor results (OGUNLADE, 2009 p. 154), so they way the IT departments collaborate each other and generate faster and better answers or solutions to the feasible issues they have turns into plausible and monetary benefit for the bank.

The IT department in the commercial bank in Mexico, due different acquisition process from third parties, impulse a people turnover and early retirement route, in some cases causing a loss of specialized knowledge, in effect some of the move to outsourcing process, looking out to improve quality or specialized resources (DIBBERN et al, 2004).

IT outsourcing using KERN approach (1997) is a business operation which involves hiring or selling an organization's IT resources, people and activities to a third party supplier, in this case the bank.

This mixture of new managers, outsourced services, people working long time with the banks creates a new environment along with performance metrics set by the new bank management, in which this shared knowledge, acting as a collective intelligence pursued a better perform

SQUIER & SNYMAN (2004) mentions financial organizations are aware of the importance of knowledge management and sharing, but also the traditional expectation from saving money or get better and faster results with outsourced resources and transfer knowledge to the bank is not necessary a safe investment (GEWALD, 2010).

Also, sometime the banks has no all needed knowledge, then the bank may use an external entity that grant a denominated knowledge outsourcing (LAM & CHUA, 2009), to solve any requirement of experience or knowledge.

Collective intelligence concept for this research is considered (MALONE et al, 2009 p. 2) as a group of individuals doing things collectively that seem intelligent.

The knowledge management portion along with collective intelligence inside the banks IT operation department, must be supported by the ability to facilitating team collaboration, promoting inspiration, innovation and managing the change (HALL 1993, 2002), which in a cross-cultural banking sector turns important to achieve results.

Data and analysis

The information generated from data collected in the interview are summarized and expressed in the following tables.

Data in Table I includes the initial demographic information, for all banks interviewed, as mentioned before, not all the banks provide full information, and only six complete the questionnaire, and from this six, five are part of the top six dominant institutions in the market.

Almost half of the managers for the IT came from outside Mexico, expressed as foreign in the table, and an additional data in two banks his period to be in the position is two to three years before he moves to another country.

The average time working at the institution is 8.8 years, none of them was working at the present bank when the bank was owned and run by the government or in early stages after re privatization (from public to private owners), early 1990`s.

The experience from all the interviewed people goes beyond 15 years in the banking industry, in different positions, some of the interviewed do not remember /do not share its experience, but most are senior executives.

Most of the foreign managers has a vision to spend two to three years in the country, and then move to either another country, horizontal position in same country, which gave them a better view of the business as a whole entity.

For the research purpose, the IT department institutional knowledge management concept it is important, since makes an alignment between vision and execution, all interviewed people consider and agreed that knowledge is an important element for daily basis decision making.

Nevertheless they do not have or do not know to have a formal position Chief Knowledge Officer (CKO) in any case; they have clear the difference between tacit, explicit and collaborative knowledge (SMITH, 2008) and they are aware of the collaborative process to use and share knowledge (MILES et al, 1998).

Bank	Sex	Nationality	Years in position	Years in banking industry	Years in the Institution
1	M	Mex	3	25	10
2	M	Foreign	1	19	11
3	M	Foreign	3	21	9
4	M	Mex	2	20	15
5	M	Foreing	1	N/A	4
6	M	Mex	7	15	8
7	M	Foreing	2	N/A	7
8	M	Mex	1	N/A	10
9	M	Mex	2	17	8
10	M	Mex	5	N/A	6
Average			2.7		8.8

Table 1. Demographic profile for interview bank. Data from interviews, table adapted from (CURADO, 2008)

Only two banks acknowledge having a information technology tool that supports and helps the KM usage, such as repositories, collaborative software, search platform or others, but in opposite mention they have a high level of explicit documentation for IT operation, most in paper in isolated areas or departments. Some of them express the usage of wikis and intranets used as data and information repositories.

The approach to solve situations or contingencies is through team working efforts, using bank employees (insiders), or outsiders (contractors, outsourcers and providers), and most of the time is through outsiders when they obtain a new process or procedure, making it explicit through change control systems and printed paper, more as an evidence than a knowledge creation.

Almost all banks interviewed has and independent entity, part of the group which provides some IT services as outsourcing, from very specialized or knowledge outsourcing to general operation, mostly due financial and fiscal planning, opex and capex; this groups are not necessary considered outsiders, since are part of the financial group, unless they involved a third party in the service provider equation.

Also they do promote the culture to share ideas and solutions among IT departments, but operational personnel do not necessary share the solutions, in open responses most mention the fear from personnel to share all its knowledge and then turn into a easier an disposal employee, a cultural context. All related data is expressed in table 2.

Bank	Have a CKO formal position	Have a IT system for KM support	Level of explicit knowledge for IT operation	Team oriented solution approach	Culture to share ideas or solutions among IT department
1	No	Yes	High	Yes	Yes
2	No	No	High	Yes	Yes
3	No	Do not know	No response	Yes	Yes
4	No	Kind of	High	Yes	Yes
5	No	No response	No response	Yes	Yes
6	No	No	High	Yes	Yes
9	No	No	High	Yes	No response
10	No, yet	No response	High	Yes	Yes, average

Table 2. Institutional KM and team effort vision towards problem solving. Data from interviews, table adapted from (CURADO, 2008)

In his research author CURADO (2008, p. 150) mention that most of the innovation and KM efforts are oriented to commercial departments for banking industry; for this research, under the Mexican context for IT departments, and persuading the interaction for collective collaboration towards collective intelligence, the research pretend to analyze also the KM perception for knowledge exploration and exploitation

After review most of the public reports publish to the authority, at least in the 2009, and 2010 a KM, was not reported to stakeholders or stockholders at the periodic reports, in order to validate the institutionalism of the KM initiative; neither was reported at IT department point of view add value.

Also using CURADO (2008, p. 142,146) approach to strategies for KM in banking, exploration and exploitation, which sum must be 100; both are balanced with a small orientation to distribute knowledge more than created. We expect this, since they move to keep all systems up and running, not all the time have enough resources or free time for application or service tuning.

At this point of the interview, not all the banks wants to share more information, due either felt they were not available to share all its information or have no detailed data to respond.

As a relevant element for the research, the compensation based in knowledge creation was questioned; none of the areas has an economic retribution if the create new process or knowledge which is consistent with the exploitation approach to actual knowledge.

Most of the banks at the IT departments gets a compensation for uptime percentage operation in a yearly basis, also most of knowledge exploration came from the outsiders, but there is no a linear relation among the amount of outsiders and the amount of new knowledge creation. In table 3 below has the consolidated result.

Bank	Outsourcing level in IT	Periodic reports on KM	% bank results due to KM	Innovate and create new knowledge (exploration)	Leverage and distribute knowledge (exploitation)
1	Yes, average	No	80%	20	80
2	Yes, high	No	65%	15	85
3	Yes	Do not know	50%	50	50
4	Yes, average	No	70%	55	45
5	Yes	No	No response	No response	No response
6	Yes	No	60%	55	45
7	Yes	No response	No response	No response	No response

Table 3. Perception of KM within IT departments. Table source Curado (2008)

IT departments are oriented to solve problems within operation and serviceability uptime, its bonuses are also based in this levels, an average for uptime goes from 91% to 95%; the only benchmark within the bank is with other countries if the case of transnational institution, but no with local banks, so has no reference.

Since IT departments rely mostly on technology solutions, most of the source for innovations comes from outsiders and in the case of transnational banks from head quarters office or bigger operational countries; conferences and in some cases the adoption/ hiring from a new executive from a competitor bank.

The main concerns of personnel loss is, per the response, is not really an issue, they mostly loss operational level of people, very few mid management; and here is a key reason to outsource the low profiles for operation; the provider must replace level of service.

Mid management displacement is very few, since salaries are appropriate and benefits increments as years working for the bank they have.

It is clear for most of the banks interviewed that outsourcing is not necessary cheaper, but lowers the time to get personnel for repetitive functions or positions, also part of the innovation in technology and skilled resources came, in technology from providers and specialized outsourcing.

Bank	Oriented to customer satisfaction or system uptime	People turnover level	Source for innovation (internal or external) IT	The bank has a benchmark for IT operation
1	Uptime	Low	Mainly external	No
2	Uptime	Average	External	No
3	Uptime	Low	Internal	No
4	Uptime	Low	External	No
6	Uptime	Average	External	No
10	Uptime	Low	Internal	No

Table 4. IT department perception of KM. Data from interviews, table adapted from (CURADO, 2008)

Conclusion

The KM concept itself and collective intelligence is widely not known within this sample analyzed, part of interviewed banks identified it as part of the intellectual capital concept: Difference found between book and market value for the organization (SVEIBT, 1997; BONTIS, 1998; EDVINSSON, 2000; CURADO, 2008), other banks recognize it as memory executed towards obtain solutions.

Mexico banking industry has a variety of nationalities, the traditional structures for decision making remains almost the same; problem solving approach based in the experience, evidence or knowledge is not widely used or documented for IT departments; rely mostly on outsiders for new systems or products, and more internally for mature systems.

Mixed culture context has different benefits, in one side the approach to document every procedures and policies to be followed and executed; in other the simplicity for operation and products for technology usage, mainly Spanish ones, and the flexibility to market adoptions in local banks owners.

Banks tend to have different companies to outsource the employees or IT departments, the banks who has more people directly working for the bank, not necessarily has a better performance in knowledge sharing among the IT department; opposite occurs when bank operation is mainly outsourced to third parties, the banks gets more knowledge sharing and collective work.

Problem solving may include different support areas and providers, which collectively needs to find the solution, with the amount of more operational systems (data bases, core banking systems, telecommunication, storage, processors, security systems, and so on) a problem may be in different layers and team effort is necessary.

A better performance for collective intelligence approach to solve issues during operation problems in banks is more frequent when the company has local senior IT management with foreign mid management.

When senior IT management controls or pull for the knowledge execution and sharing, the results remains the same the operation. Almost all the IT banks gets bonuses and have performance for uptime metrics, it means banking services must be operative in an percentage of time through the day business hours.

A key component in the actual banking IT departments is the outsourcing, which is not necessary cheaper than direct hiring, but brings more fresh or specialized knowledge to operate or solve issues.

All the interviewed banks, responds positively to the question if they share the knowledge and collectively make decisions and document it, but only one fourth has a system or technological support to execute it, the rest use paperwork as evidence.

Only one of the interviewed banks claim to have a formal chief knowledge officer, but not as a long-term position, similar to SQUIER & SNYMAN (2004) findings.

The interviewed departments has no bonuses or benefits if they create knowledge or new procedures to solve problems inside their organization, all of them got a bonus if achieves uptime serviceability, but as a rule most of them works collectively to solve any issue.

The people turnover or ageing is not an issue, yet, for Mexican or North American owned banks, but it is for European owned banks in which IT departments have continuous turnover for operational positions every 28 months in average, and depend more from outsiders.

Per interviews evidence, cultural resistance is not necessary anymore an issue in the operation IT departments, at least in Mexican banks, but management style in the organization is important, and influence as NONAKA (1994) mention, in the interaction within the group/team in order to amplify and create new knowledge.

A new research thread should go around outsiders expertise and usage for the bank, per informal interviews most of outsiders at specialized positions used to be part of the bank and has relation with other banks, in that way the collaborative and collective interaction is broader.

Beyond traditional knowledge management, the Mexican banks are sharing the knowledge, in order to collectively solve issues, not always transferring into a explicit way the knowledge itself, but working among different actors, insiders outsiders .

Collective intelligence is executed naturally, in most actual banks, with or without knowledge of the concept, using individual's knowledge to solve situations, one recommendation is that this new generated knowledge should be used, and the information already owned actioned to generate more value.

The value added perceived by using the individual, insider or outsider knowledge, through collective intelligence the banks relies on faster time to solve any situation or issue during operation hours.

A finding is that most knowledge outsourcers, in the specialized IT banking solutions, provide a service to the same bank they used work for, offering a proper fit in cost-benefit; other outsiders (hardware and telecommunication mainly) suffers from lack of in-house operation reference.

The lower level in the organization chart has the employee more reluctant to share its knowledge, and this knowledge could be to solve a problem or to avoid a situation.

The teamwork is essential for collaborative solutions in collective intelligence approach, and is promoted by the executives interviewed, the outsiders while more close to hardware technology are more knowledge share and innovate inside the bank; while more close to software application are less specialized knowledge share, but solve any contingency, as a personal knowledge exploitation in benefit of the bank.

The main limitation associated with the present research is the number of responses gathered, the banks interviewed belongs to the top ten, and has 90% of the transactional deposits countrywide, there are two other layers, in a proposed classification: regional banks, retail oriented banks, those who are tight to a retailers itself or commercial institution.

Other limitation is the number of people interviewed, two per bank in the actual research, same department but different level in the organization chart, visit to operational site was not possible for all banks.

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