



CASE STUDY

AI OPPORTUNITIES FOR THE BANKING INDUSTRIES



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Banking Industry position

Edgardo to develop an ice breaker towards Banking domain / architecture

Discuss current position banks and Fintech leveraging modern technologies such as cloud, modern architectures and AI, in order to automate process, become more effective, and automate to increase the efficiency of their operations

Discuss then the challenges such as the management and prioritization of project intake based on value (including the normalization and unbiased assessment of value to maximize its creation), the smart assignment of resources based on capacity planning, and putting the right dose of focus at the right timing. And expose opportunities such as CAPEX and OPEX management (contract management, renewals, tenders and bids, etc). And what sometimes becomes the elephant in the room, which is the area of incident management and help desk, and

what sometimes becomes the daunting task of keeping incidents and customer service at bay, with acceptable NPS ratings.

Creating and getting the right cadence on a virtuous cycle of continuous improvement, including the effective management of knowledge (i.e capturing the right recipes for issue mitigation and resolution so that new employees can have pre-written runbooks, can receive training, or some of these activities can be done by BOTs on a self-serve customer mode of operation, hence reducing the amount of resources performing repetitive tasks, and re targeting employes to fulfill more rewarding roles.



Unstructured data

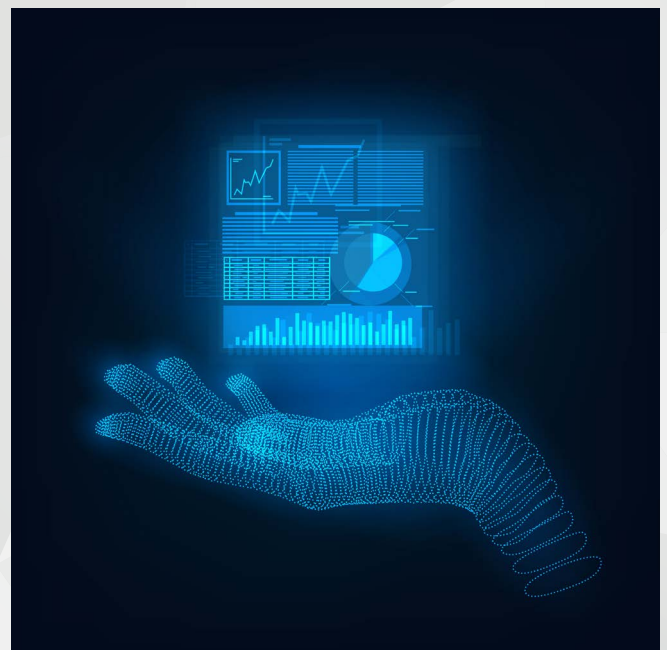
It is well known that most of the data volume in modern enterprises is unstructured ¹. These data come in multiple flavors, such as help desk tickets, messaging applications, social media, contracts, documentation and procedural information. While unstructured data also include video and other types of time-based signals, it is text the type of unstructured data that is ubiquitous in most organizations and companies, and where tacit value can be extracted from.

In the absence of any automated computational processes, managing and analyzing unstructured data requires domain experts' expensive time to go through text documents in order to identify potential issues, inconsistencies or points that a company needs to comply with. This is, however, a slow process that may introduce errors. In addition, this refrains the domain expert to use its valuable time to define strategic decisions for the company.

The opportunity

A key asset in modern industries comes from the possibility to transform unstructured data in actionable insights and avoid preventable errors. Natural language processing (NLP) allows harnessing large volumes of text data to:

- identify keywords that allow the automatic characterization and classification of recurring text documents;
- find similarities with previously processed text, and hence learn from or replicate past experiences;
- recommend action points that need to be carried out as a response to incoming regulations and contracts.



¹ <https://www.idc.com/getdoc.jsp?containerId=US46163920>

Knowledge Management

Knowledge is a valuable asset for any organization. While knowledge may be disjunctively held by individuals or informally documented, bank organizations can highly benefit from capturing, retaining, refining and sharing knowledge in a standardized form through appropriate structures and technological infrastructures. Benefits from the use of standardized knowledge are commonly associated with aspects of organizational innovation, organizational competitiveness and productivity. Most importantly, knowledge standardization has an important impact on automation. Hence, bank organizations should provide means for facilitating the process of capturing organizational knowledge in a standardized form and should offer incentives for their employees to share potentially valuable knowledge in this form.

Standardized knowledge can help analyze unstructured data, such as text documents, but it

can also facilitate the exploration of semi-structured and structured data. Standardized knowledge allows to transfer information across different processes, both within an organization and externally, and what is most important, it can facilitate understanding, effective planning and decision making.

The opportunity

A major limitation at the moment of dealing with large amounts of data in a bank organization is the absence of a flexible reference framework that allows to link pieces of text with concepts and identify relations among concepts. Ontologies offer a formal representation of concepts and relations that exist in a specific domain. By offering a standardized description of the domain, ontologies facilitate automated reasoning. Except for a few exceptions little work has addressed the problem of building ontologies for the banking domain ² or for financial organizations in general ³.



² <https://bankontology.com/>

³ <https://spec.edmcouncil.org/fibo/OWL>

Case Study

We describe a real case study with a large financial institution. In particular this institution reported major bottlenecks in different situations connected with the management of unstructured data and knowledge sharing:

- Support for decision making and knowledge management in the light of large volumes of unstructured and poorly organized data. The lack of standardized vocabularies that could make it possible to precisely identify concepts and constrain their relations imposes serious limitations for automatic processing large volumes of banking data. The absence of structure and the ambiguity inherent in the available data prevents automatic support for decision making and knowledge management processes. Also, expert knowledge is not captured in such a way that is reusable by others.

- Regulations from the central bank that need to be complied to urgently. These regulations need to be read and analyzed to detect what changes (if any) are necessary, and in such case, identify all the subsystems that need to modify their current behavior.

- Help desk data in the form of customer complaints, questions or requests for service upgrades. The financial institution acknowledged long delays in the time needed to address these customers and improve their satisfaction experience with the bank. The institution was aware that while there is a large degree of repetition in fulfilling customers' requests, this repetition was not being leveraged.

- Tenders and biddings that are necessary for major purchases and acquisitions. The information provided to trigger the purchase order is usually riddled with errors and inconsistencies that require several unnecessary back-and-forth iterations until the necessary information is provided thoroughly and consistently.

Proposed solutions

- The construction of a bank ontology requires knowledge acquisition and knowledge construction processes about the banking knowledge domain. Such a domain includes concepts and relations associated with different aspects, such as trading, operations, banking regulations, and corporate strategy, among others. This process involves domain experts, who must help to capture tacit and explicit knowledge in a standardized form. To aid the process of building a bank ontology, it is possible to take existing vocabularies associated with the bank domain, as well as keywords identified in documents collections from the bank system. The construction of such an ontology can be supported by tools that integrate existing ontology editors such as Protégé ⁴ with an intelligent system that generates suggestions for concepts and relations.

- Identification of key terms and entities in text can help in the characterization of documents and contracts that contain mandatory actions, such as required changes by central banks or internal areas in the organization. NLP provides the capability to carry out such tasks. This could help expedite the process of identifying stakeholders with interests and with responsibilities in such changes. Similarly, inconsistencies in a request can be identified in real time and avoiding unnecessary back-and-forths of documentation within and between organizations.

- NLP techniques can also provide the necessary support for classifying a document into predefined categories. In this way, previously processed documents, such as help desk tickets, serve as the basis for training machine learning algorithms so that they can learn salient features in the text that determine how a new document should be automatically categorized. This leads to major savings in time, human resources and potential human errors due to large hours of tedious work. In addition this savings can be used by domain experts in improving the operation workflow rather than applying multiple patches in the system.

- Keyword-based search allows finding documents in large volumes of text. However, this can lead to problematic situations due to vocabulary mismatch. To address the problem of semantic search, domain knowledge can be usefully incorporated into the search processes. Ontologies offer a useful vehicle to guide semantic retrieval and filtering by concepts and their relations in a specific domain. An ontology-based approach to semantic search can be achieved by taking advantage of the concepts and relations encoded in the ontology to constrain the query-result matching process, by making it more precise, and to semantically augment it, by making the answer set more complete.

⁴ <https://www.idc.com/getdoc.jsp?containerId=US46163920>