

ISDS 577
CASE STUDY ANALYSIS 2

CATERPILLAR TUNNELLING BUSINESS
ANALYTICS

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Introduction

This case examines the changes management of Caterpillar Tunneling Canada Corporation (CTCC) after their acquisition by Caterpillar Inc. and the problems they face with adoption of their BI platform. It is very important to have a data driven culture for the business analytical system to be well adopted by all the departments of the company. For this case analysis, questions about change management, need for a business analytical solution, importance of executives' buy-in, and how to revitalize the adoption of BI platform at CTCC are investigated in the report.

Post-Acquisition Change Management at CTCC

Lovat Inc. was a privately-owned company before its acquisition by Caterpillar Inc. in 2008. After the deal went through, the name of Lovat Inc. was changed to Caterpillar Tunneling Canada Corporation (CTCC). Apart from the name change a host of other changes took place at CTCC. One of such changes included a different management style.

Prior to the acquisition Lovat Inc. operated as a family business which lacked proper organizational governance. A lot of decision making was done based on domain knowledge and experience only rather than following a well-documented and methodical procedure that everyone can adhere to and follow. However, after the acquisition CTCC followed the pathway of its parent company and developed standardized procedures for some of its existing processes. But only some processes were standardized because CTCC did not have a repetitive manufacturing model like Caterpillar. CTCC, instead, has a project based model where equipment is made based on project specification and hence cannot be standardized.

Despite having a project based model, Lovat Inc. lacked consistency and regular status reporting for project management. The lack of proper status reporting led some of the project to run over budget. This had negative effects on the company's profits. However, after the acquisition, Caterpillar provided resources to CTCC to get its project managers trained on project duration planning and control, resource and cost management, team communication and

dynamics, and project risk management. Caterpillar also provided resources to build a proprietary web update system for fast and reliable updates from employees on their assigned tasks. The training and web update system brought marked improvements in the delivery times and team communication.

Impact on IT Infrastructure and Management of IT Resources

There were several changes that occurred in the IT infrastructure and management of IT resources after the Lovat Inc. acquisition by Caterpillar Inc. One of the biggest change was the shift in role of IT department. Prior to the acquisition, IT department was used as a supportive unit to the business rather than a strategic business unit. The department reported to the operations manager and the typical IT activities included setup and maintenance of computer hardware and peripherals, web and network administration, software installations and upgrades, etc.

However, after the acquisition, the IT department was reorganized and became part of Caterpillar's Global Information Services (GIS) unit. The department remained in Toronto but was under the supervision of IT manager from GIS located in Peoria, Illinois. The IT department's responsibility was expanded to support many facilities of Caterpillar. This meant that the department could no longer respond to the needs of the local facilities promptly but rather respond to the needs of all the facilities that they support on a priority basis. The IT department was relieved of their duty to support the local ERP department.

The reorganization also exposed the IT department to the vast resources of Caterpillar. However, the employees in the department had to adjust to the standard operating procedures established by GIS. The integration of CTCC with Caterpillar brought CTCC's network behind Caterpillar's corporate firewall, which meant that the flow of incoming and outgoing network traffic was secured.

Why does CTCC need a business analytical solution? Can they simply use their existing system?

A business analytical system is needed to address the needs of various departments at CTCC to gain insights from data. The insights can be used for decision making. The system is supposed to have features that are lacking in the current system. The existing system at CTCC is the Enterprise Resource Planning (ERP) system which was completed in 2005 with the help of a software company that was expanding its business in North America. Lovat requested parts of the ERP system to be customized to conform to its business processes. The system consisted of several modules including project management, sales order processing, item master data, material purchasing, etc. However, the extensive customization led to unpredictable system behaviors that the users and support team had to bear. It became the cause of wide dissatisfaction and complaints among the users and support team.

The ERP system was not robust enough to integrate data from various data sources. Not all the historical data from the older system was migrated to the ERP system. As such CTCC had to keep the older system for retrieval purposes. The lack of adequate support of the ERP system to allow integration of new processes led to the creation of silo applications or utilities that were developed and used by departments for their own internal processes. For example, the tunnel boring machines (TBM) sales department created its own quotation tools for TBM contracts.

The reports generated from the ERP system were pre-defined, static, and not formatted to make the information immediately useful to users. This led to many requests to create custom queries to generate aggregated results. The lack of a secured way of storing or sharing these queries resulted in requests to create similar queries and hence redundant work. The BI system eliminated the problems of data security, content management, version control and information sharing.

The need for a business analytical solution also stems from the lack of ERP system to offer customizable reports that can address the needs of various departments within a reasonable amount of time. For example, the ERP system lacks support for performing a market segmentation analysis needed by the sales department. The raw data can be obtained from the ERP system but it would take several hours to perform data analysis and gain insights from the

data. However, the BI system is flexible enough to allow the integration of these types of analysis into its system. Considerable amount of time need to be spent to create sets of reports and dashboards that can meet the needs of the department. However, once the dashboards and reports are created it is very fast to perform the analysis.

Does using business analytics tools largely justify the cost?

Business analytics tools help organizations understand data that they collect and help maintain a competitive advantage by providing insights that can potentially improve various business metrics. Developing or buying business analytics tools can be very costly. However, the tools provide decision makers insights on various business-related questions. The value that this adds to the decision-making process largely justifies its high cost.

Decision makers in the company would normally want to make decisions that are right at any given situation. However, it is difficult to make right decisions when one does not have complete knowledge of the situation. Managers and executives almost always make decisions in these types of scenarios but they reduce the risks of making the wrong decision by gaining as much knowledge as they can. The business analytics tools provide the decision makers with additional insights or knowledge that help reduce the risk of making a wrong decision.

Data is gold in today's highly competitive markets. Businesses normally get huge amounts of data from multiple sources. To make sense of the data it is important to somehow merge data from multiple sources. BI tools can provide businesses the ability to integrate data from multiple sources and make sense of the data. Analysts can spend a lot of time in gathering and preparing the data, from various sources, that is necessary to find answers to critical questions. However, with the help of BI tools businesses can save considerable amount of business resources and employee time. The insights obtained from the data can be a source of competitive advantage as decisions can be made to gain market share.

The most important justification of using business analytics tools is that one can make decisions based on some facts rather than intuition or hunch. Stakeholders of the company can be

easily persuaded with facts rather than gut feelings. BI tools can also enable making predictions by storing historical data.

The major disadvantage of having a BI tool is the cost. It can be a waste of time and money if the implementation is done wrong. There are hardware, software, implementation, and maintenance costs associated with the BI tools. The advantages of business analytical tool outweigh its high cost due to vastly recognized intangible benefits. It might be difficult to check the tangible benefits by calculating the return on investment (ROI). However, NUCLEUS Research, a Boston-based company, conducted surveys in 2011 and 2014 that revealed that in 2011 and average return on every analytics dollar invested was \$10.66. In 2014 the return increase to \$13.01 (McDonald, 2015). This shows that if the BI tool is implemented properly there are many tangible and intangible benefits that justify the cost of business analytics tool.

Why is it important to get executives' buy-in on making BI a priority and setting a vision of outcome?

Active and visible executive sponsorship has ranked consistently as the top contributing factor to project success according to the change management consultancy Prosci (Dykes, 2016). As such, the executive buy-in on making BI a priority and setting a vision of outcome is a critical success factor. An executive who is a sponsor of the BI project and one of the primary beneficiary, has a vision for the project, and is well known and well respected within the company can keep the BI team motivated and focused in reaching its goals.

The executive understands the importance of the BI project and the value it can bring to the company provided the project is a success. They also understand how the BI can help drive business decision making. Hence, they can guide and steer the BI project into becoming a useful tool for effective decision making.

The executives' buy-in means continuous support for the project. This support includes helping the BI team maneuver through the political hurdles of the company. The company typically consists of many departments whose leaders are looking for resources for their own department. A strong sponsor can help get the necessary resources by using his influence. The

resource can range from getting the budget approved or getting necessary equipment to getting an informational interview from a higher executive to understand the business needs.

The executives' reputation of supporting strong and successful projects can help users of the BI system gain confidence in the BI project itself. It could be possible that the potential system users might not have confidence in this type of project and do not show support initially. But the executive's belief in the project can help users gain the trust in the BI system and users might start showing their support to the BI team.

The commitment of the executive is extremely important especially when the project has some setbacks. The executive with experience in such type of project understands that setbacks can happen but with good support and proper guidance it can be brought back on track. The executive who is fully committed also helps in setting up realistic expectation from the project. The change management consultancy Prosci found that 72% of the projects met or exceeded objectives when led by an effective sponsor (Dykes, 2016). Hence, without executives' buy-in and proper vision it would be very difficult for a BI project to be successful.

Was it proper usage of the BI platform at CTCC as a means to overcome some of the functionalities that the ERP and quality assurance (QA) system ought to provide?

The usage of the BI platform at CTCC as a means to overcome some of the functionalities that the ERP and quality assurance (QA) system out to provide is not the ideal way of utilizing the BI platform. The BI solution at CTCC caters to the needs of individual users and departments and provides solutions and reports accordingly. It serves the purpose of gaining insights and providing answers to critical questions. However, this seems like an intermediate solution to the long-term data driven needs at CTCC.

The main goal of the BI system is to help decision makers make better and informed business decisions. This can be attained efficiently by integrating data from all the sources and providing conformed dimensions to the business processes to make aggregations. The conformed dimensions can be formed only by considering the needs of all the departments and coming to a

singular fact. The needs of different departments should also be considered when generating reports using these conformed dimensions. This way more generalized reports can be made and shared by different departments. This will also reduce the amount of customized reports needed by users.

Despite the failure of BI platform to integrate requirements of all the departments of the company, it did fulfill some of the features of the BI platform. It provided a web based interface for users with granted access to retrieve reports or dashboards and also provided a client tool to allow the users to create interactive reports with the available data sets. The BI platform also provides data security in the sense that only individuals with security clearance can view reports with sensitive information. However, CTCC can make a proper utilization of the BI platform if direction is provided from a single authority to provide an enterprise wide reporting rather than building customized reports resulting in a potential for conflict.

What would be your advice (as a consultant) to CTCC and specifically McEwan for revitalizing the adoption of BI at CTCC?

After the failure of integrating CTCC's ERP system with Caterpillar's SAP system, many employees lost faith in the BI platform. It is important to get them to trust BI platform. However, in order to make it a success, the culture within the company needs to change. The upper management need to emphasize on a data driven culture. Management needs to pick a model department that has successfully used the BI platform to solve their problems. They need to encourage users to share the success stories with everyone including the non-users and non-believers.

Along with the spread of good words for the BI platform, the management needs to consider how to fix the existing problems within the BI platform. McEwan needs to assign a team of individuals to consider the negatives of the BI platform and look for ways to solve the problems. McEwan needs to find a well reputed executive leader who can sponsor and commit to the success of BI platform. The sponsor of the BI platform in conjunction with the assigned team need to make a proposal plan with scope, initial timeline, and initial budget and submit for approval from the committee.

The following are the summarized steps that McEwan can take in order to revitalize the adoption of BI at CTCC:

- Convince the executives at CTCC to encourage and enforce data driven culture.
- Pick an exemplary department that has reaped the rewards of using the BI platform. Ask happy users from that department to talk about the effectiveness of BI platform with non-users.
- Find a strong executive to sponsor, support and propagate the BI platform.
- Make a proposal plan in coordination with the executive sponsor to fix the BI platform to incorporate enterprise wide solution.

These steps will help propagate the goodwill of the BI platform and simultaneously help in improving the BI platform. In the case that the project does not get approved McEwan can ask Faith Lang to work towards finding a solution to fixing the BI platform. This will mean spending more time on requirements gathering from various departments. It will take a long time to integrate requirements from various departments and look at all the reports for potential conflicts. However, if the project is approved then additional resources will be provided to finish the task within an appropriate time.

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