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Invigorating Business Driven Info Systems at CTCC

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Caterpillar Tunneling Canada Corporation (CTCC) is a Canadian organization that manufactures tunnel boring machines (TBM) that are used for creating utility tunnels (Caterpillar Tunneling, 2014, p. 2). It also has been a subsidiary of the more commercially known Caterpillar Inc. since it was acquired in 2006 (Caterpillar Tunneling, 2014, pp. 1, 3). During the post-acquisition time, changes in management impacting the IT structure of CTCC have caused issues. These problems, as well as other organizational IT obstacles and dilemmas will be discussed below.

In regards to the managerial impacts on CTCC since its acquisition by Caterpillar, there have been problematic areas of weakness growing in the usage and implementation of the IT infrastructure that CTCC has in place. CTCC was formerly selected by Caterpillar to undergo an information technology overhaul through a SAP system that had been successful with other subsidiary organizations (Caterpillar Tunneling, 2014, p. 2). Although this overhaul would have been beneficial for both the parent and subsidiary companies, the planned system integration failed to materialize due to how CTCC distinctively handled projects as unique entities (Caterpillar Tunneling, 2014, p. 2). The resources that Caterpillar had planned to use for this overhaul were eventually allocated to other subsidiaries due to the impediment of trying to figure out how to use the existing SAP system properly with CTCC’s existing workflow (Caterpillar Tunneling, 2014, p. 2). It was found that an SAP system would have to have been built from the ground up; this inherently was not an option for CTCC and Caterpillar as it would have been far out of their cost effective range for this type of project (Caterpillar Tunneling, 2014, p. 2). As a result, CTCC was left without a plan for the future of their IT systems and they had to fall back on their old Enterprise Resource Planning (ERP) system (Caterpillar Tunneling, 2014, p. 2). This SAP integration cancellation caused more than just technical problems for managers and CTCC; the employees were less willing to use the system due to resentment of the lack of progress made in implementing the new system and a lack of trust in managerial choices and actions (Caterpillar Tunneling, 2014, p. 2). Essentially, the BI system was poorly trusted by employees of CTCC, resulting in its usage being extremely poor throughout the overall company (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 2). The other result was that the existing business intelligence (BI) system that CTCC was tentatively using as a complimentary to the ERP system became even more critical to operations because of the lack of an integrated future plan for CTCC’s IT infrastructure (Caterpillar Tunneling, 2014, pp. 1, 2).

As CTCC was continually integrated more into Caterpillar, differences between the handling of information were found to be problematic and the need for streamlining of CTCC’s processes for manufacturing and how they were handled became apparent (Caterpillar Tunneling, 2014, p. 3). Throughout its history, CTCC acted as a family oriented business that functioned with a large amount of implicit tribal knowledge that needed to be known by its members, but it was not coherently or cohesively recorded at all (Caterpillar Tunneling, 2014, p. 3). This caused organizational and communication issues for CTCC as it was enveloped into Caterpillar, because Caterpillar is much more structured and organized (Caterpillar Tunneling, 2014, p. 3). This was essentially an incompatibility issue in regards to how governance was handled by each organization (Caterpillar Tunneling, 2014, p. 3). Caterpillar also found the structures and processes that CTCC used to complete its TBM projects to be largely different than their own manufacturing model, so all of the processes that Caterpillar wanted to integrate into CTCC’s manufacturing processes were not feasible (Caterpillar Tunneling, 2014, p. 3). This made it disorienting for CTCC managers and Caterpillar managers to adapt into a well working relationship due to the differences in IT project style and implementation (Caterpillar Tunneling, 2014, p. 3).

In CTCC there is a disparity of the various data sources among the internal IT infrastructure. CTCC’s business systems have been created in a piece-meal way over the lifetime of the organization instead of cohesively at one time like an SAP system would have been (Caterpillar Tunneling, 2014, pp. 1, 3). While the ERP captures all of the necessary transactional information typically needed and this system is the focal point of the current IT infrastructure that CTCC uses, there are also legacy systems used by a small amount of employees. This adds to the disjointedness of an already in-cohesive IT system (Caterpillar Tunneling, 2014, pp. 3, 4). The ERP system in production at CTCC is also not a great fit for the organization, as the system itself was a software package designed for the European market that was taken as a tailored pilot for the Canadian market in conjunction with CTCC at the forefront (Caterpillar Tunneling, 2014, p. 4). Due to so much change to the inherent system design after it was market ready, there are many present issues with the QA system that still are causing problems for CTCC, making their business process that much harder to work with (Caterpillar Tunneling, 2014, p. 4). Adding into the negatives with CTCCs business process is the fact that the ERP system also does not support the other silo operations of other systems used by CTCC (Caterpillar Tunneling, 2014, p. 4).

In addition, CTCC has the Quality Assurance (QA) system that for keeping track of their non-conformance records (NCR) (Caterpillar Tunneling, 2014, p. 3). The QA system is being heavily under-utilized, and its potential as a valuable information source is not being maximized. In practice, this system should actually be used to sport trends and to forecast future possibilities related to QA services. It also should be used with a type of reporting functionality, but none currently exists, causing there to be little beneficial usage of the QA system (Caterpillar Tunneling, 2014). This plays directly into CTCCs mentality of solving issues as they arise instead of using a forward thinking outlook to try and minimize problems before they materialize.

The IT business unit itself is another aspect of the CTCC business landscape. As crucial as it is for the IT department to continue to run and maintain existing systems like ERP and QA, the IT department is not a strategic unit. Instead, it is simply complimentary to CTCCs actual strategic units (Caterpillar Tunneling, 2014, p. 4). This is a cause for major concern, because even though information records and everything related to that are vital to CTCC’s business processes, the information system is stalling the business landscape of CTCC from growing. The IT department has been lead by many different managers in a short span of time since CTCCs integration into Caterpillar, which has caused disorientation and confusion as to how the IT department should even be functioning (Caterpillar Tunneling, 2014, p. 4).

The IT department was eventually tied into Caterpillar’s Global Information Services (GIS) unit, which lead to multiple changes in who the department reported to. Again, this caused confusion among the IT employees regarding what the focus of their department actually was (Caterpillar Tunneling, 2014, p. 4). While the assimilation into GIS gave the IT sector more resources to work with and enhanced their business systems, and also provided them with improved website security, it hindered them in quickly taking action to changes in CTCC due to the differentiating views of managers (Caterpillar Tunneling, 2014, p. 4).

Business analytics and the sharing of information are a recurring issue that is still present at CTCC. As previously mentioned, the ERP system is lacking cohesiveness because it does not tie the different IT system together solidly (Caterpillar Tunneling, 2014, p. 5). It also needs much higher utilization throughout the organization in order to be highly beneficial and to entirely fulfill its purpose. To ensure that information can be shared more fully in all CTCC departments, more IT employees are needed, as there are currently only two permanent employees working on the ERP system for the entire organization (Caterpillar Tunneling, 2014, p. 5). CTCC needs to enhance the current systems they have if they are to develop as an organization, and the ERP and other IT systems also need to become the focal information points for CTCC if no other system (such as a custom SAP solution) is to be implemented by CTCC in the future. Things needed to enhance the current systems in place beyond unification would also include dashboards for the relevant systems that are beyond what is currently in place for some systems (Caterpillar Tunneling, 2014, p. 1). These dashboards should at a minimum offer basic reports that are accessible in authorization based limitations so that only permitted employees can access the information that is not general for all departments. All dashboards should also be able to be customized based off of user preference for data sorting and combining (Caterpillar Tunneling, 2014, p. 1). This is usually referred to by employees of CTCC as “slicing and dicing” the information, and it is useful for them to find more insightful results in the data, so this should be integrated into the ERP system (Caterpillar Tunneling, 2014, p. 1). The unified system should also be flexible enough that it can take in additional features and subsystems without the need for massive revisions. This would be needed to assist CTCC’s IT systems in being more adaptable to future needs of the organization. These dashboards and the data that they distribute also should be provided in real time so that project managers are able to track projects and their statistics such as budgetary amounts as needed (Caterpillar Tunneling, 2014, p. 3). This data that is shared should also be organized and viewable in such a way that trends may be spotted within the data (Caterpillar Tunneling, 2014, p. 3). This would relate most directly to the QA system, but it is applicable to all information sharing systems and dashboards in CTCC.

The ERP and BI systems are currently independent and disparate of each other, but they should be unified to work together as part of the previously discussed centralized system that CTCC should develop. This is due to it being much more straightforward for these separate systems to work in unison and in the same direction if they are technically and managerially linked. In turn, the unification of these systems would benefit CTCC by cutting out on confusion for employees in the IT department that comes from the differentiation of managers that control the department and their subsequent systems (Caterpillar Tunneling, 2014, p. 5).

Another major analytical need for CTCC is to have information that is queried from the system databases to be saved in a limited context online by users. This is due to CTCC wanting to cut down on the data duplication and security issues that they currently face in continually outputting query results into spreadsheet files that employees can share and copy at their own free will (Caterpillar Tunneling, 2014, p. 5). Commonly used data queries should also be made readily available within system dashboards to provide quick results for employees. Both of these query functions should be straightforward to use within the systems. Included in this unified system should also be further developed TBM project visibility statistics, critical paths for project timelines, project starter templates, cash flows, engineering hours required, reminders for NCRs, viewable expectations and general knowledge in CTCC, forums for project discussion, and other such similar features (Caterpillar Tunneling, 2014, pp. 7, 8). To ensure that this enhanced dashboard query system is utilized to its fullest potential, managers and CTCC itself will have to heavily promote the usage of these systems and prove their validity and benefits to ensure that they catch on with employees (Caterpillar Tunneling, 2014, pp. 1, 5).

All of these various future needs and changes for CTCC need to have buy-in from executives in order for the BI system to succeed and be revitalized. To have this happen, executives need to be made aware of the fact that the daily operations of CTCC are dependent on the BI system (Caterpillar Tunneling, 2014, p. 9). The BI system is no longer simply an interim solution for CTCC, and if this is made known to executives, then they would in theory be much more inclined and willing to meet the requirements needed to cause the BI system to be revamped as necessary for its success (Caterpillar Tunneling, 2014, p. 4). The executive members of CTCC do have a vested interest in the technological workings of the organization and hands on experience with these types of systems, as they had previously invested in the ERP system themselves (Caterpillar Tunneling, 2014, p. 4). Managers (specifically McEwan) need to demonstrate the benefits that the BI system offers for CTCC if it is enhanced and improved, showing executives that the BI system helps to provide the data the company now relies on. Future outlooks of the benefits of increased user utilization would also assist in convincing the executives that the BI system should be enhanced. To have the executives buy-in to advancing the BI system, employees should also be shown the benefits of what the system would be able to do with more enhanced features. The entire organization could benefit from having executives going forward and approving the enhancements for the BI system, and if enhancements are demonstrated, executives should be able to readily agree to developing it more.

The BI platform does require better training and communication amongst employees within CTCC to be more beneficial. Company-wide communication is critically needed, as it would assist is reducing many problems (Caterpillar Tunneling, 2014, p. 9). Users of the current BI system need to be familiar with the two types of interfaces if they are to be able to use the system effectively and efficiently. First, there is a web-based interface that lets users access the existing dashboards and view reports. Second, there is a client tool which allows users to build and tailor reports using datasets that are provided in a hands-on approach by the ERP team (Caterpillar Tunneling, 2014, p. 9). Users need to be good enough at using the system so that they can use the data given to them to make decisions that are driven by the statistics and trends (Caterpillar Tunneling, 2014, p. 9). Due to the business’s need for data analytics and business intelligence to be user-driven, it can be asserted that company-wide training with the BI system would be beneficial if the entire employee base was able to use the system accordingly (Caterpillar Tunneling, 2014, p. 9). The current fact that there are only two employees qualified to provide BI employee training is an issue though, as there is not enough man-power to get all untrained employees up to speed and familiar with the BI system very quickly (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 5).

Some of the communication needs in CTCC that exist are incomplete document management, duplication of information, information results lagging behind project completion, unclear managerial desires for IT, limited forums, tribal knowledge that is not readily available, and numerous other issues. Some initial adjustments could be applied so that many of these communication issues could be solved through having project correlated group emailing, news feeds for projects and their various subsets and activities, and tutorial classes and videos to assist in the training and communication processes for employees. Social networking has already been integrated into the BI system to try and meet communication needs, but low participation from employees has hindered this implementation’s success rate (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 10). Employees need to be told that they are expected to get on board with the advancements in the communication systems. A training minimum should be mandatory for all employees so that a basic level of understanding of BI is prevalent throughout CTCC. The benefits of clear and concise communication should be demonstrated to employees as well, so that they can see for themselves first hand that better communication and usage of the BI system will help them all and lead to a more efficient workplace. Managers should assist employees in all of this through leading as a united example. It is imperative that the BI system is integrated with the departments so that company-wide communication can actually happen. This is because BI is increasingly becoming one of the most important software tools used by CTCC and as a result it is necessary that the departments that make extensive use of data analytics should be aware and up-to-date through effective communication and usage of the BI system (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 10).

The BI platform is able to overcome some of the functionalities that the ERP and QA systems do not provide for CTCC. The BI system has been able to benefit the engineering department by covering some of the shortcoming of the initial ERP system. It did this by providing engineering supervisors and managers with an interactive dashboard system that was used to report the typically problematic engineering hours spent on projects (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 7). The system also helped users to identify other engineers that were working on the same project, which benefited communication, teamwork, and cohesiveness in project engineering (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 7). The BI platform has also been able to automate some of the workflow problems with the email system in the QA department. The BI system automated a report distribution process that was able to effectively mitigate the issue of lacking notifications for important project updates, which formerly were being delivered to employees through almost only word of mouth (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 8). These two examples should be enough to show CTCC and those in it who do not like the BI system that it actually is making a tangible difference and solving problems for the organization. The BI platform also has expedited many of the existing company processes and simultaneously provided additional features for CTCC such as greater data security (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 9). Prior to the implementation of BI, the existing systems in place forced users to use many different methods to distribute data and reports. Due to data residing in so many different locations, there were usually multiple inconsistencies and threats to the integrity of data that CTCC was using. This caused a host of problems, and CTCC needs to enforce the use of the BI system to have a centralized sourced for its data management and sharing. After the implementation of BI, CTCC was able to resolve many of these problems related to messy data (Caterpillar Tunneling: Revitalizing User Adoption of Business Intelligence, 2014, p. 9). The new features that the BI system has brought to the table for CTCC have been highly beneficial. If the company was to instead develop these functions into their internal ERP and QA systems as well, they would be wasting valuable time and resources. The BI system exists and is able to function in ways that the other systems cannot, all while being less expensive than internal development or external development via a third party developer that would customize the ERP and QA systems accordingly to overcome their weaknesses and lacking features. The BI option is the most viable and logical choice for CTCC to utilize as it goes forward and enhances its information systems.

References

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