

Business Intelligence Project Implementation: A Retail Company Case Study in C-and-A

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Biographical Notes

Paul Hawking is an Associate Professor in the College of Business at Victoria University in Melbourne, Australia. Paul has published extensively on topics associated with enterprise resource planning systems, and business intelligence related to SAP solutions. His knowledge and experience in these areas is widely acknowledged by both academia and industry. Paul was the first academic to become a SAP Mentor. Further details about Paul can be found at <http://www.business.vu.edu.au/staff/paulhawking/>

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ABSTRACT

Although Business Intelligence is seen as priority by many companies, the level of benefits achieved varies significantly between firms. Researchers have indicated that not having an effective Business Intelligence strategy is a significant issue in regards to trying to realize organizational benefits. This paper adopting a case study method investigates a retail company's Business Intelligence adoption and the development of a Business Intelligence strategy that directly informed the firm's information needs. The important elements of this strategy included using a set of guiding principles to ensure that there was a close alignment of Business Intelligence outcomes with the company's needs. The paper provides insights for researchers and practitioners on the important factors need to be considered to achieve effective Business Intelligence.

KEYWORDS

Business Intelligence, Maturity Model, Business Intelligence Strategy, SAP

INTRODUCTION

Companies today have come to realize the importance of providing accurate, relevant and timely information— information that allows their organisational personnel to engage in effective decision-making practices (Isik et al, 2013). Indeed, early work by Evans and Wurster (1997, pp.72) in their paper on Information Economics stated that "... information is the glue that holds business together". Companies have developed and implemented information systems to facilitate the collection, processing and dissemination of information. One such system, Enterprise Resource Planning (ERP) system, has enabled companies to gain efficiencies in their business processes and associated transactions through the high degree of integration of their company-wide business processes, and the standardisation of the associated data (Davenport et al, 2003). ERP systems are an essential element of the corporate information systems infrastructure allowing businesses to be competitive in today's world, as well as providing foundation for future growth (Chou et al, 2005). Many companies have implemented Business Intelligence solutions as an extension of their ERP Systems in order to gain greater insight into their business processes and associated transactions. Notably, business-related information that is subsequently analysed is stored in the firm's ERP system and other inter-linked legacy systems. Business Intelligence can be used to extract this information and transform it into a format to facilitate analysis. Golfarelli et al (2004, p.1) defined Business Intelligence "...as information systems which processes data into information and then into knowledge to facilitate decision making". Indeed, the effective use of Business Intelligence is considered an essential factor in the competitiveness of a company especially in changing markets (Luftman and Ben-Tvi, 2010; Watson and Wixom, 2007).

One industry experiencing considerable change is the electrical utilities industry sector. This sector has been impacted by increased competition, changing regulatory frameworks, renewable retail and the introduction of new technologies. This dynamic environment has increased the needs for firm's to have cohesive decision-making processes to respond to these competitive pressures (Nasir et al, 2013). There has been limited research on the adoption and use of Business Intelligence in this industry sector, particularly in regards to having a strategy to support organisational decision making. Hence, the research contribution of this paper centres on the documenting of the Business Intelligence use and strategy development by a large retail company. The strategic approach reported could be usefully adopted by of companies in the retail sector or even other industry groups.

LITERATURE REVIEW

Davenport et al (2003) focused on 163 executives working in large enterprises around the world to identify how companies were using Enterprise Resource Planning (ERP) systems to improve business performance and the specific practices that resulted in sustained value creation. They identified that the implementation of an ERP system resulted in sustained value creation however, some corporations realized far more comparable benefits than others. These benefits were directly related to the actions of management in regards to the on-going development and evolution of their ERP system. Furthermore, Davenport et al (2003) identified three major evolutionary stages in regards to grouping the types of benefits that could be realized through the adoption of ERP systems. These stages related to the firm's processes being integrated and optimized, which in turn facilitated the information flows across the various functional areas of the business. The premise underling of each stage was for firms to:

Integrate: This stage reflects the unification and standardisation of data and processes. ERP systems can be used to better integrate business processes and the associated organizational units.

Optimize: Reflects a stage that aligns the business processes to the overall corporate strategy through the utilisation of embedded "best practice" processes which are enacted when an ERP system is adopted.

Informate: Reflects a stage were the information generated by the ERP system is used to transform work practices. This involves transforming the ERP systems data into context rich information to support effective decision making.

These stages tend to be evolutionary and are reflective of a company's ERP systems maturity level. The concept of maturity is often used to describe the advancement of both people and organisations. Implicit in this notion is that with increasing maturity there are improvements in quantitative or qualitative firm capabilities. Accordingly the more mature a company is in regard to their ERP system the more value they realize from the system. Notably, in recent times, the use of Business Intelligence has been an important aspect of underpinned organisational decision making activities (Hawking and Sellitto, 2010).

Harris and Davenport (2006) in a study of 450 executives across 370 globally located companies identified the factors that underpinned the value of ERP systems, as well as how companies used

these systems to enhance their competitiveness and differentiation. One of the key findings from this study was that improved decision making was the most sought out and realized benefit. While most ERP systems were originally justified on the basis of Information Technology (IT) and operational cost savings, senior management's underlying objective was to improve the quality and transparency of information. Top performing companies were able to achieve this by implementing their ERP systems extensively throughout their organizations across a broad range of business functions. This provided an increased level of integration. Harris and Davenport (2006) also found that top performing companies were more likely to integrate their business processes across organizational boundaries with suppliers and customers.

Related to the desired benefit of improved decision making, top performing companies aggressively used information and analytics to improve decision making (Harris and Davenport, 2006; Hawking and Sellitto, 2010). These findings are supported by Gartner, a leading business analyst firm, who conducted a worldwide survey of 2,000 Chief Information Officers and identified Business Intelligence as the number one technology priority for companies (Gartner, 2013). It is estimated that the worldwide revenue for Business Intelligence software will reach \$US17.1 billion by 2017 (Gartner, 2012). Arguably, the increased expenditure on Business Intelligence applications reflects the level of impact these systems can potentially have on a company's performance.

Williams and Williams (2006) identified a number of companies that gained a significant return on investment (ROI) from their Business Intelligence initiatives. The Data Warehousing Institute (TDWI, 2005) reported that the use of Business Intelligence in a number of organisations such as Hewlett Packard and the US Army had a significantly positive impact on their performance. Hewlett Packard's Business Intelligence initiative resulted in an increase in the value of worker productivity of approximately USD\$10.6 million, whilst the company's reporting costs were reduced by some USD\$8.6 million. The US Army found that as a result of their Business Intelligence implementation, 10 trained analysts could complete as much work as 200 traditional analysts. In another example of the value of Business Intelligence, Harrah's, a major hotel and casino owner in the US, found that Business Intelligence contributed to their improve business performance which was associated with a significant increase in their annual profits. Harrah's spent USD\$10 million building a 30 terabyte data warehouse (Lyons, 2004) and used Business Intelligence to better understand their customers and their gambling habits (Williams and Williams, 2006). The IDC group collected data from forty three companies in North America and Europe that had implemented a Business Intelligence and found that twenty companies achieved a ROI of less than 100 percent, fifteen achieved an ROI between 101 and 1000 percent, whilst eight achieved an ROI greater than 1000 percent (Morris, 2003).

Although Business Intelligence is seen as a priority for many companies to survive in a competitive market there is uncertainty as to the path to follow. Researchers have identified that companies utilise Business Intelligence in different ways, with varying levels of success. A review of the literature indicates that companies often fail to realize the expected benefits associated with Business Intelligence and sometimes consider the project to be a failure in itself (Chenoweth et. al., 2006; Hwang et al., 2004; Johnson, 2004; Arte 2003; Adelman and Moss 2002). Some have noted that in Business Intelligence projects the information that is generated is inaccurate or irrelevant to the user's needs or indeed, delivered too late to be useful. Indeed, a high proportional of top global companies tend to not make appropriate decisions in response to

major competitive changes (Biere, 2011). Researchers have attempted to map Business Intelligence usage and best practices to provide a roadmap for companies to move forward and maximise the benefits of their Business Intelligence initiatives (Grublješič and Jaklič, 2014). A common approach by researchers to improve the effectiveness of Business Intelligence is the identification of Critical Success Factors (Harrison, 2012; Hawking and Sellitto, 2010; Yeoh et al., 2008). An alternative approach has been the development of Business Intelligence Maturity Models (Watson et al, 2001; McDonald, 2004; Hamer, 2005; Eckerson, 2007, ASUG, 2007; Hewlett Packard, 2007, Gartner cited Hostmann, 2007). The purpose of these models is to provide companies with directives to improve the management of their corporate data, as well as maximise the benefits obtained from Business Intelligence.

Raber et al (2013) analysed different Business Intelligence Maturity Models and found that a Business Intelligence strategy that focuses on the organization's processes and technology was an important indicator of more mature companies. Lahrman et al (2011) highlighted the importance of an effective Business Intelligence strategy however, were surprised that many of the maturity models examined did not actually include a Business Intelligence strategy. A Business Intelligence strategy should focus on formalising business needs, aligning business partners and then implementing a comprehensive Business Intelligence solution with defined processes for the collection, integration, processing and analysis of information to facilitate effective enterprise wide decision making (Boyer et al, 2010; Pant, 2009). For many companies, a contributing factor to their Business Intelligence initiatives not achieving the goals can be a lack of an effective Business Intelligence strategy (Boyer et al 2010).

In examining the literature there is a lack of reporting of how different companies develop and implement their Business Intelligence strategies. It is important that different approaches are documented enabling researchers and practitioners to gain a better understanding of the factors that need to be considered to achieve effective Business Intelligence.

RESEARCH METHOD

This research investigated the development and implementation of a Business Intelligence strategy by a large retail firm using a case study approach. Meyers (2013: p. 78) defines case study research as one that "...uses empirical evidence from one or more organisations where an attempt is made to study the subject matter in context. Multiple sources of evidence are used, although most of the evidence comes from interviews and documents". Yin (1994) suggests the importance of studying information systems in "real life" contexts to better understand them. Irani and Love (2008) strongly support the use of case studies to investigate different aspects of information systems. A number of researchers have used the case study approach to investigate different aspects of Business Intelligence adoption, implementation and subsequent use (McBride, 2014; Spruit et al, 2014; Alekh et al, 2013; Vuksic, 2013; Sammon and Finnegan; 2000).

The data collection for this research draws from multiple sources and included the examination of existing documents, content analysis of industry presentations and interviews of company stakeholders. The inclusion of a diverse range of data sources in research has been referred to as meaningful matter by allowing researchers to draw conclusions or inferences about a particular phenomenon (Krippendorf, 2004). The conducting of interviews with company stakeholders

used the responsive interview (Rubin and Rubin, 2005) approach. This approach involved people being selected to be interviewed due their specialised knowledge about the research issue or problem. The interviewer adopted a semi-structured interview style and then developed further questions based on the interviewee's answers. This continued until the interviewer had gained deep responses to questions posed and also understood the issues raised from interviewee's point of view. This approach allowed the conversations to flow and move from one topic to the next. This gave the interviewee some ability to direct the conversation. The questions enabled the researcher to seek certain information if it had not been covered in the conversation. As such, the case study is presented as a summary of interview highlighting the important aspects of the research issue being investigated.

CASE STUDY

C&A is an international Dutch chain of fashion retail clothing stores, with its European head offices in Vilvoorde, Belgium, and Düsseldorf, Germany. It has retail stores in many countries in Europe, Central America and South America. Its brands include Angelo Litrico, Canda, Clockhouse, Here+There, Palomino, Rodeo (ski and snowboard clothes), Westbury, Yessica, Yessica Pure, and Your Sixth Sense.

The company was founded by brothers Clemens and August Brenninkmeijer in 1841 as a Dutch textile company, taking its company name from their initials. In 1906 Clemen's son, Bernard Joseph, started discounting in Amsterdam (Rekenen in Centen, in plaats van Procenten) and by 1910 there were ten stores in the Netherlands. They were from the German Brenninkmeyer family which traded in linen and textiles since the 17th century from its hometown of Mettingen, Germany.

For many years, C&A retail clothing stores were a major presence on high streets throughout the United Kingdom. C&A also opened stores in a number of out-of-town locations, most notably its store at the Merry Hill Shopping Centre in the West Midlands, which opened in November 1989. The company's strategy of selling budget clothes from high-rent city-centre retail stores made it vulnerable to a new breed of competitors operating in cheaper, out-of-town locations, including Matalan and the rapidly expanding clothing operations of supermarket food chains such as Tesco and Asda, and to expanding high street names such as H&M, Zara, and Topshop.

Background

In the late 1990s, the decision was made to implement SAP's ERP system's Enterprise Asset Management (EAM) functionality to address many of the issues. To further support the company's needs, additional functionality was subsequently introduced through the expansion of the ERP system with modules that included Works and Asset Management, Resource Planning and Scheduling, Logistics, Accounting and Human Resources. Furthermore, the SAP ERP system was configured to best support the requirements of the electricity utility business. Significant benefits were identified in terms of employee productivity improvements, reductions in inventory and enhanced management decision making. Another unexpected benefit was the

ability to sell the SAP “best practice” template (Works and Asset Management) which the firm created, and were subsequently adopted by other utility companies. Indeed, the firm’s template has been successfully deployed to three electricity utilities and a gas distribution utility in the United Kingdom.

Even though the company had implemented the SAP ERP system they were still finding it difficult to retrieve information for reporting to support decision making. The reason for this was that the ERP system had not replaced all of their existing systems. The information from the remaining legacy systems was required to be integrated with the information from the ERP system for reporting purposes. Hence, the company invested in two different Business Intelligence environments, SAP and Business Warehouse (BW) to address this problem.

These two systems, although providing some improvements, also caused a number of issues. One manager elaborates on the initial investment:

“We wanted Business Warehouse (BW) to provide the reporting layer of our Business Intelligence. But we purchased Business Warehouse (BW) before SAP subsequently purchased the company— so the systems were not easily integrated” (Business Intelligence Manager)

Another issue related to employees needing to retrieve reports from both Business Intelligence environments where there was limited integration of information between the two. This resulted in monthly key performance indicator reports being developed and reported via spread sheets. It soon became evident that many of the Business Intelligence reports were not strategically aligned to support executive decision making.

The Development of an Information Management Strategy

In 2008 the company decided to develop what they termed was an Information Management Strategy which was directly underpinned by Business Intelligence. The main goals of the strategy were to:

- Implement a single Enterprise Data Warehouse to facilitate the storage and analysis of both operational and strategic operations. This would enable a “single version of the truth” to be achieved.
- Strategically align reporting to ensure that only relevant and intelligent data was reported.
- Improve financial information and data to support consolidation, planning and forecasting.
- Ensure that the right information was provided to the right people at the right time through web-based portals.
- Retire Business Warehouse (BW) to consolidate report environments and reduce IT costs.

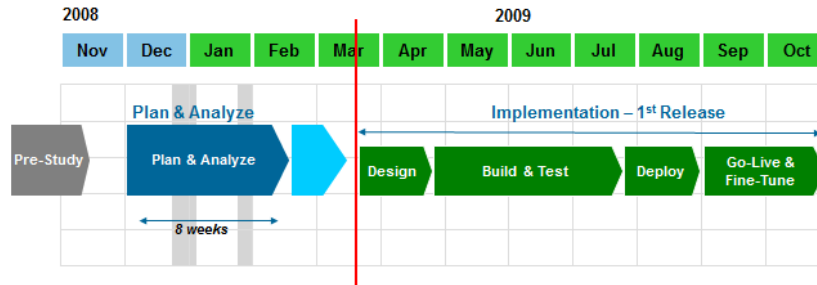


Figure 1. Project plan of the implementation

The Information Management Strategy had six key components that accommodated important inter-related elements and included information hierarchy; strategies that addressed reporting, technology and application level issues; a governance model and the Business Intelligence architecture itself. The components and issues associated with the company's Information Management Strategy are now further described.

Information Hierarchy

The Information Hierarchy was designed to determine the information requirements of the organisational stakeholders. This was achieved through a top-down approach where the information required was strategically aligned with a person's level of management and included performance measures. The identified performance measures would enhance visibility and accountability, subsequently influencing and changing behaviour. There were two aspects to the information definitions requirements; Performance Management information (Grow the Business) and Decision and Operation Support information (Manage the Business). The Performance Management information related to performance measures supporting value-based management that utilised a Balance Scorecard approach. Accordingly, the key performance measures were related to financial and non-financial performance (Financial, Assets, Customers, Processes and People). Notably, the information required was aggregated information used to support high-level management decision making.

The Decision and Operation Support information was focussed on operational efficiency. This information reflected business processes and was associated with transactions. These transactions were supported by SAP and non-SAP systems. The Business Intelligence Manager indicated that:

“There was an important requirement for the information to be real time and detailed.”

One of the expected benefits from the identification of these informational requirements was the creation of a shared common data source. This provided more efficient access to information and reports, which in turn facilitated effective decision making.

The company identified a number of dependent factors that were associated with Information Hierarchy requirements. These factors were concerned with gaining buy-in or support from people at the performance management and operations management level. It was considered

essential that all levels of management were supportive of the proposed information hierarchy to ensure its adoption across the company.

Another factor was the use of the performance measures, which were dependent on the availability and reliability of data used to calculate these measures. This was to be achieved by the creation of a central repository that stored organizational data by subject area. To ensure there was a change in corporate behaviour, business processes and supporting technology needed to be aligned to the firm's strategic objectives. A change management process was implemented to ensure staff understood these expectations, an issue that was reinforced through staff appraisal and compensation schemes.

Reporting Strategy

The Reporting Strategy provided guiding principles and processes for the development and delivery of information to end users. The strategy had three aspects: Enterprise Requirements, Efficiency and Preferences, and Technical Requirements. The Enterprise Requirements provided guidelines for the priority/criteria associated with report development. Criteria were aligned with business justification and the relationship to performance measures. A pertinent comment on this issue by Business Intelligence personnel was that:

“It was important that the reports developed were not clones of the reports in the old system.”

It was perceived important to manage the information requirements of users in an endeavour to promote the new reporting system. The Efficiency and Preference aspect of the Reporting Strategy was related to report design and distribution. This involved the level of information detail in each report and the level of interactivity required for analysis. Report design and visualisation guidelines were developed to assist with standardisation and facilitated end user learning. The frequency of when the information was required was also determined. This influenced how the report was distributed and when the information needed to be updated. The Technical Requirements were related identifying and defining the technical infrastructure needed to support the Reporting Strategy.

A key requirement of the Reporting Strategy was the development and distribution of strategically aligned reports to the appropriate decision makers. By using the Information Hierarchy as a reference, the performance measures were able to be identified for the different end users. This initially required a combination of information technology and business staff to be involved in the project:

“The business people on the team were seen as the reporting experts.”
(Business Intelligence Manager)

The involvement of end users in the report design process was crucial to the implementation of the new reports and the resultant business process changes.

There are around 250 reports which were implemented in the business intelligence project. The followings are some sample reports.

Number	Report Name	Report Objective
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Number	Report Name	Report Objective
Q001_01	Weekly Commercial Situation Report vs. Target & Plan - Sub Division	Understand the current business for all main commercial parameters against target and plan at Sub Division level
Q001_02	Weekly Commercial Situation Report vs. Target & Plan - Class	Understand the current business for all main commercial parameters against target and plan at Class level
Q002_01	Weekly Store Sub Division Act/Tgt Outlook Report - Qty	Analyze the Qty performance of Sub Divisions at store level against plan and target
Q002_02	Weekly Store Sub Division Act/Tgt Outlook Report - Qty	Analyze the Qty performance of Classes at store level against plan and target
Q002_03	Weekly Store Sub Division Act/Tgt Outlook Report - Value	Analyze the Value performance of Sub Divisions at store level against plan and target
Q002_04	Weekly Store Class Act/Tgt Outlook Report - Value	Analyze the Value performance of Classes at store level against plan and target
Q003_01	Weekly Commercial Store Situation vs. Target & LY - Division	Understand the current Divisional performance of all main commercial parameters vs. Target and LY of each store
Q003_02	Weekly Commercial Store Situation vs. Target & LY - Subdivision	Understand the current Sub Divisional performance of all main commercial parameters vs. Target and LY of one store or group of stores
Q003_03	Commercial Store Situation vs. Target & LY - Class	Understand the current Classes' performance of all main commercial parameters vs. Target and LY of one store or group of stores
Q006_01	Store Daily Traffic and Conversion Rate Report vs. LY	Understand the development of traffic and conversion rate per store vs. LY and within the month
Q007_01	Sub Division Weekend Comparison (Thurs - Sun)	Analyze at Sub Division level last weekend's performance vs. the weekend before to identify sales trend
Q007_02	Class Weekend Comparison (Thurs - Sun)	Analyze at Class level last weekend's performance vs. the weekend before to identify sales trend
Q008_01	Weekly Comp Store Report vs. LY	Understand the performance at Sub Division level of Comp stores and the performance of each Comp store vs. LY for the week, month as well as year to date

Number	Report Name	Report Objective
Q009_01	Weekly Store Sales Sub Division Overview - Value Share	Identify the differences in Sales Value Share between the stores at Sub Division level to support space management and store customer profile as well as identify opportunities for pushing sales in the short term
Q009_02	Weekly Store Sales Class Overview - Value Share	Identify the differences in Sales Value Share between the stores at Class level to support space management and store customer profile as well as identify opportunities for pushing sales in the short term
Q010_01	Trend Report	Understand the development of all main commercial parameters for each Sub Division as well as provide support to improve the accuracy of coming weeks' targeting
Q011_01	OTB Report	The main business tool within the commercial department that shows future targets, stock projections, commitments as well as show whether additional merchandise can be bought (Open to buy), the OTB also provides an outlook for the month, Season and year end to determine the achievement of the commercial objectives
Q012_01	Weekly Class OTB Overview	An overview at Class level to show OTB or CTB (Closed to Buy) in order to better control stock and delivery management
Q012_02	Weekly Sub Division OTB Overview	An overview at Division level to show OTB or CTB (Closed to Buy) in order to better control stock and delivery management
Q013_01	Sub Division Week Cover Report	Understand at Sub Division level the current Sell Through of seasonal merchandise as well as identify the need for Markdown or opportunity to increase the Sales
Q013_02	Class Week Cover Report	Understand at Class level the current Sell Through of seasonal merchandise as well as identify the need for Markdown or opportunity to increase the Sales
Q014_01	Monthly Commercial Profitability	Maximize turnover and profit per M2

Number	Report Name	Report Objective
	and Density Report	by comparing space to results per store
Q015_01	Monthly Store Historical Performance Report	Understand a store or store group's trend over the last two years at TALL, Division or Class level to identify opportunities for growth
Q016_01	Weekly Stock Aging Report	Understand the average age of merchandise at Sub Division level to identify MKD as well as ensure freshness
Q017_01	Weekly Store MKD / Non MKD Sales Report	Identify the Sales share and Stock Share of markdown and non markdown merchandise across stores to identify need for transfers or additional markdown
Q018_01	Seasonal Class Targeting Accuracy Report - Qty	Monitor accuracy of targeting for Qty week and month
Q018_02	Seasonal Class Targeting Accuracy Report - Value	Monitor accuracy of targeting for Val week and month
Q019_01	Weekly Class Targeting Report	Highlight targeting accuracy at Class level and need for retargeting
Q019_02	Weekly Sub Division Targeting Report	Highlight targeting accuracy at Sub Division level and need for retargeting
Q020_01	Monthly Attribute Report – Season 1	Highlight the Sales performance of the relevant attribute to assist collection building and planning for the future
Q020_02	Monthly Attribute Report – Season 2 and YTD	Highlight the Sales performance of the relevant attribute to assist collection building and planning for the future
Q021_01	Monthly Supplier Profitability Report - TALL	Understand supplier performance at company level to determine optimal supplier selection
Q021_02	Monthly Supplier Profitability Report - Division	Understand supplier performance at Division level to determine optimal supplier selection
Q021_03	Monthly Supplier Profitability Report - Sub Division	Understand supplier performance at Sub Division level to determine optimal supplier selection
Q021_04	Monthly Supplier Profitability Report - Class	Understand supplier performance at Sub Class level to determine optimal supplier selection
Q022_01	Report of Stock and Sales by Size	Ensure orders are written with optimum size bowl
Q022_02	Report of Stock and Sales by Color	Identify best color for repeats and color trends

Number	Report Name	Report Objective
Q023_01	Best Seller Slow Mover Report	Main product selling report that shows best sellers and slow movers and allows for timely commercial decisions regarding actions to be taken, i.e., MKD repeat
Q023_02	Best Seller Slow Mover Report – Color level	Main product selling report that shows best sellers and slow movers at color level and allows for timely commercial decisions regarding actions to be taken, i.e., MKD repeat
Q024_01	Store Style Week Cover Report	Identify products’ selling at store level in order to facilitate store transfers as well as identify store customer profile
Q025_01	Class level price point report	Historical price point information at Class level to help plan future price architecture
Q030_01	Daily Results	Daily results for main parameters (Sales / BCP / MKD) of stores and total and comparison of comp stores versus non comp stores per day
Q031_01	Weekly Performance of Seasonal Stock	Identify Sales to Stock Ratio at Sub Division level of seasonal merchandise to help intake planning as well as timing of seasonal markdowns
Q033_01	Daily Figure Outlook Week	Daily sales and projection for end of week
Q035_01	Monthly Sales Flash Report	Sales report that shows effect of retargeting during the month
Q036_01	Monthly Stock Flash Report	Monthly Stock report that shows stock position outlooks as well as the healthily of stock
Q039_01	Daily Figure Outlook Month - Class	Daily Sales and projection for month at Class level to ensure targets are achieved or drive actions to close gap to target
Q039_02	Daily Figure Outlook Month – Sub Division	Sales projection for month at Sub Division level to validate we will achieve target (ensures action if target may not be achieved)

Governance Model

The Governance Model identified the information governance roles and responsibilities within the company. It tended to further enhance the link between business units and information

technology. The roles within the Governance Model included; Business Process Champions, SAP Business Intelligence Technicians, Business Analysts and external Implementation Partners when required.

The company identified the need for a formal structure to ensure the success of the Governance model:

“The Business Intelligence Steering Committee is responsible for the data governance process and associated business rules”.
(Business Analyst)

It was also considered important to provide training for users in Business Intelligence analysis processes. One of the responsibilities of the governance team was to develop a process to evaluate the reports needed by end users and management. This required extensive user involvement.

To act as reference for the evaluation of reports an information template that reflected end user needs was deemed essential. Alternatively, it was also deemed important to document when reporting was not undertaken, and the reasons for this shortcoming. These shortcomings were considered in the design of future reports.

Application Strategy

The Application Strategy was responsible for providing the Business Intelligence environment so as to deliver consistent and high quality data to IT applications and the subsequent information to users. This included the implementation of an Enterprise Data Warehouse (EDW) to store data that supported the various business units. This ensured information integrity across the various data repositories that could be accessed by user friendly reporting tools. The repository environment ensured consistency of information and data quality across the reporting tools. All these reporting tools could be accessed through a single common environment:

“We decided to that to provide this single environment we stopped using Business Warehouse (BW) reporting tools.” (Business Intelligence Manager)

Furthermore, executive information access through dashboards enabled users to drill down to greater levels of business detail. The EDW provided a standardised Business Intelligence environment which reduced duplicate processes while minimising the handling of data and improved overall data integrity. It enabled those previously responsible for collecting and transforming the data to spend more time on data analysis. There was also a reduction in costs associated with only needing to use a reporting system with a standardised interface environment. Part of this standardisation was achieved through the use of SAP’s pre-configured Business Content function.

Business Intelligence Architecture

The Business Intelligence architecture was designed on the principles of scalability and reusable architecture to facilitate future business needs such as mergers and acquisitions. It was considered essential to avoid future performance issues.

The implementation of the architecture was designed from a top down perspective and adopted a phased incremental approach. Although there were long term goals, there were also a number of “quick wins” identified. The company acknowledged that unknown reporting requirements existed and these would evolve over time. An initial priority was the establishment of the Subject Area Repositories to provide a “single version of the truth”. A longer term priority was the implementation financial budgeting, planning and consolidation functionality.

The company now has a Business Intelligence environment that stores 5 terabytes of data which is extracted from 14 sources systems and it accessed by 630 users. The company is also concerned about the growth of their Business Intelligence environment especially with the upcoming additional load of storing data from smart meters. They have recently purchased an in-memory data processing solution to provide a Business intelligence environment to allow them to accommodate the vast amount of data being collected from smart meters and new infrastructure installations.

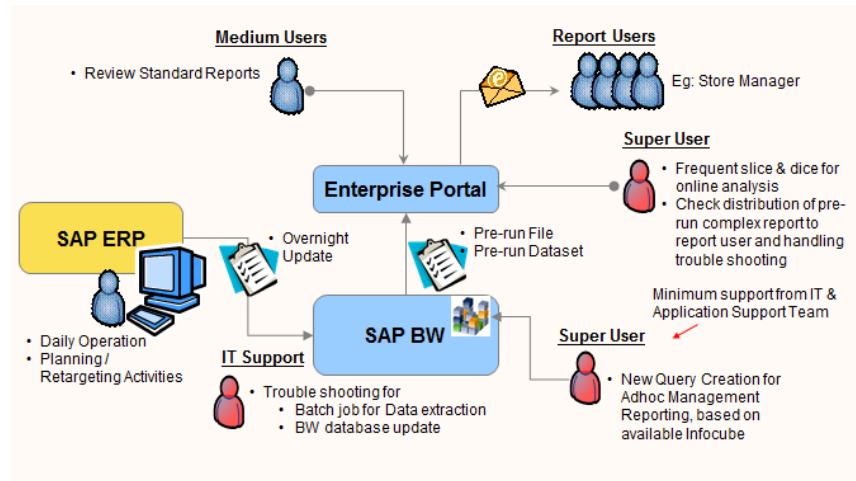


Figure 2. System Architecture

CASE STUDY SUMMARY

The company had initially implemented an ERP system to standardize data structures and integrate its business processes. Over a period of time they refined their business processes and the supporting functionality with the assistance of their ERP system. This reflects the integrate and optimize stages that companies undertake in regard to their Enterprise Systems as proposed by Davenport et al (2003). The last stage of the journey reflects an Informate stage. In the case study, the Informate stage is associated with the company implementing Business Intelligence to improve information delivery and analysis in an endeavour to support decision making.

The company has been using Business Intelligence for more than a decade. Originally, the ad hoc approach to Business Intelligence resulted in limited benefits. Key performance indicators (KPI's) were identified but not well used, and there was a slow effort to formalise standards and processes. Indeed, many of the Business Intelligence maturity models suggest that companies start with an ad hoc approach to Business Intelligence. This is characterised by a range of different Business Intelligence solutions, poor data quality, departmental rather than firm-wide

approach, a lack of standards, and poorly defined key metrics (ASUG, 2007; Hewlett Packard, 2007). These issues tend to contribute to companies not achieving their expected benefits from their initially Business Intelligence initiatives as reflected in the case study. The lack of benefit realization often results in companies revisiting their Business Intelligence initiatives (Hawking and Rowley, 2012).

The company, in identifying the short-comings of their initial Business Intelligence implementation, developed an Information Management Strategy to provide some overarching guiding principles for the implementation and use of Business Intelligence to ensure a closer alignment with company's needs. The Information Management Strategy was multi-faceted when conceptualised and applied, reflecting an understanding of the different aspects of Business intelligence that needed to be considered when wishing to successfully implement such a system. The strategy included;

1. The required information to support decision making with the company (Information Hierarchy)
2. The presentation and delivery of information to support decision making (Reporting Strategy)
3. The software solutions and underlying technologies to sourcing, storage, analysis and presentation of information (Application Strategy/Business Intelligence Architecture)
4. The implementation and management of effective Business Intelligence (Governance Model)

One important component of the strategy was to adopt an enterprise approach to the use of Business Intelligence. Initially this was achieved through the consolidation of existing Business Intelligence technologies and the implementation of an Enterprise Data Warehouse (EDW). The desire to move to a single environment by the discontinuance of the Business Warehouse (BW) environment was facilitated by SAP acquiring Business Warehouse (BW) in 2007.

Another aspect of the strategy was a Business Intelligence Steering Committee that was established to ensure that reporting requirements were aligned with the strategic needs of the company. Accordingly all stakeholders were represented on the committee. This assisted in building linkages between the IT area and other functions of the business.

CONCLUSION

The case study documented in this paper provides an example of a Business Intelligence strategy developed for a utilities company. This strategic approach could be equally applied to companies in other industry sectors. The Business Intelligence history of the company demonstrates the iterative approach companies experience as they mature and identify the short comings of their existing Business Intelligence approaches.

Since conducting the initial interviews there have been further developments on the requirements of the company's Business Intelligence needs to support. These requirements are associated with the storage and analysis of large disparate data sets (Big Data). Victoria in 2011 introduced smart metering to households throughout the state. The implication of this is that the case study company collects readings for approximately 800,000 metres every half hour. This data needs to be stored, analysed and made available to consumers. The company is implementing SAP's in-memory database (HANA) to assist with this analysis.

As a result of the Victorian Government Bushfire Royal Commission recommended that the transmission infrastructure is monitored and maintained. To document this maintenance photographic evidence is required to be collected and stored on a regular basis for all rural infrastructure. The company is investigating how they can effectively store and analyse these large volume photographic data.

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