



BUSINESS INTELLIGENCE
SYSTEM IN SUPPORT OF RETAIL
INDUSTRY

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ABSTRACT

This report is designed to give a general overview; the report gives specific examples of how popular retail companies develop their business intelligence methods in order to make more profitable and efficient decisions for their customers and stakeholders. The in-depth BI topic that this paper covers is online analytical processing, data mining, and predictive analytics.

This research paper answers the following research questions:

- How are big-box retail chains designing their business intelligence strategies?
- How can retailers use predictive analytics (such as customer trends and needs) to improve decision making for the future?
- What kind of data is being collected from consumers and stores to be used in data warehouse?

INTRODUCTION OF TOPIC

Many large big-box retail companies are using Business Intelligence to allow for better decision-making for the markets that they serve. Retailers such as Walmart, Amazon and Target are businesses that serve the needs of billions of customers every day. Technology has given new advantages to retail outlets throughout the world, which they did not have in earlier years. The business world has become addicted to data over the past few decades, in all forms in order to take advantage of unseen relationships and correlations between customers, products and many other demographics.

Business Intelligence (BI) is a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information which can be used to enable more effective strategic, tactical, and operational insights and decision making. Its end result should be to transform the way information is used to assist the industry in moving forward. Within this are included a variety of technologies, including data quality and master data management.

BI can be applied to the following purposes

- Benchmarking both within and outwith the industry
- Data Visualisation (enhancing data quality with decision making and knowledge)
- Analytics that enable optimal decision making and business knowledge discovery including data mining, statistical analysis, and predictive analytics and modeling

Currently the retail industry is in an extremely weak position compared with our competitors in the business sectors and the commercial world in terms of understanding where we are, how we got here and the impact of where we want to go in the future. Consultation with a range has reinforced the widespread support for BI. They see access to enhanced management information and advanced analytics as essential and the logical next step in our desire to be more competitive.

Literature Review

This literature review is an overview of a BI and retail, which was done by a company called Microstrategy. One of the products that Microstrategy sells to retail companies is Business Intelligence software, to allow these organizations to make decisions from their data sets. Microstrategy gives these organizations an easily integratable product, including the consulting services to help any business implement these specific kinds of BI software in a web interface.. This report outlines the different needs of retailers and illustrates how Business Intelligence software can help the organization. Some of the areas where Microstrategy's product can help retailers include Sales and Profitability Analysis, Store Operations Analysis, Customer Analysis, Merchandise Management, Inventory Management, Market Basket Analysis, Category Management, and Loss Prevention. All of these areas are extremely useful to store managers in each store and also the CEO of the retail store company.

Body

The business world has become addicted to data over the past few decades, in all forms in order to take advantage of unseen relationships and correlations between customers, products and many other demographics. In this day and age, data equals power. Corporations and small business alike are desperate to acquire as much data as possible about their customers, because the more you know about them, the easier it is to sell them goods and services through directed advertising and marketing. It is amazing the wealth of information that can be pulled out of customer demographics and if you are able to take advantage of this, your company will reap the benefits. These business intelligence tools are crucial to taking businesses to the next level, not only with the business/consumer relationship but also internally, allowing companies to be more efficient, cost effective, and productive with their time and resources. This topic covers all portions of retail from conceptualizing the product, to creating the product, to selling it to the consumer, making it imperative for business to take advantage of.

Business Intelligence in the Supply Chain:

Having a firm grasp on all aspects of your business from what happens behind the scenes to customer relations is very important. When shipments are delayed, it throws off all timelines going forward and puts you behind the ball, playing catch up as **competitors'** pickup market share that you were not able to capture. BI provides the tools to drill down into data to find the root cause of problems rather than knowing a general idea of what is possibly going wrong. With this level of granularity, solving problems becomes much more about making decisions rather than searching for information. A great tool for Supply Chain Management is benchmarking. By comparing your performance to other companies you can see if you are outperforming or underperforming and where you need to improve. Not only is it a good tool to compare externally but it allows you to see how your company is doing internally as well. While having all of this data is important, it then comes down to management to act on it. An organization can have all the information in the world, however if you don't do anything about it, it is useless. Building off of that, dashboards are a fantastic way to quickly see relevant facts and information if constructed correctly. Too much color, too many numbers and too many graphics can cause them to become overwhelming and hard to interpret.

Business Intelligence for Internal Use:

BI offers a slew of different software options to help optimize your business internally, allowing you to make appropriate decisions when it comes to managing employees and general operations. By effectively utilizing these tools they can save money, time and resources, which can then be used for other purposes. Employees are a company's most valuable asset. Without employees, work does not get completed, products are not created and companies do not

advance. Business Intelligence can help them to efficiently perform their job while simultaneously monitoring them. More time by data entry can also hinder their performance in the retail industry; storing unsold inventory is an additional expense the company must face. Keeping a constant watch on inventory metrics will help reduce costs in the long run. Additionally, by identifying your top and bottom supplier performance, you can identify who consistently delivers products at a fair price and on time, while removing or replacing the underperformers altogether. Lastly, by keeping track of employee internet traffic, you are able to save your company money through internet bills and smaller bandwidth connections, while also forcing employees to work while they are at work rather than check Facebook, watch Netflix, or spend time on Twitter.

Business Intelligence with the Consumers:

Many stores offer loyalty cards in which you sign up and use whenever you make purchases in return for exclusive coupons, deals and promotions. The more a customer uses this card the more, the retailer learns about the customer and their spending habits. They are able to learn when consumers typically shop, what they buy, and how much they spend. With this data, retail companies are able to target you with specific ads for items you may be interested in purchasing, or coupons for items you typically buy to entice you to return to the store to purchase additional items. Brick and Mortar stores aren't the only places companies use your data. Mostly customers would prefer to shop online, while only 37 percent interested in shopping in store. With this massive shift companies who aren't tracking customers are losing out on valuable sales and retail information. Online retailers can see how long you spend looking at products, what type of products you prefer, and your spending habits. All of this information leads to a better experience for customers who are more likely to spend money, and become a loyal and consistent customer.

Future scope:

Companies are constantly on the lookout for the new way to collect information on their customers, and the future is here. This type of data will allow stores to track where customers go, how much time they spend in front of specific items, and what path they generally take. With this sort of information they will be able to better set up their stores to promote specific items also charging more for items positioned in certain locations.

CONCLUSION

Included in this project is a working model of the Microsoft Contoso Database: “The Contoso BI Demo dataset is used to demonstrate DW/BI functionalities across the entire Microsoft Office product family. This dataset includes C-level, sales/marketing, IT, and common finance scenarios for the retail industry and support map integration. In addition, this dataset offers large volumes of transactions from OLTP and well-structured aggregations from OLAP, along with reference and dimension data. The data warehouse is used to demonstrate the capabilities of all of Microsoft’s analytics software. Our prototype includes Excel reports that were generated by the cubes to make decision from revenue/sales of the retail Store Company, inventory, and store information. Using the built-in Excel Power Pivot functionality, it allowed for detailed reports to be completed. As technological innovation continues to evolve for both the software vendors and retail companies, it is evident that the business environment will make better decisions using this data. In short without the use of a data warehouse and some of the analytics technologies, the modern retail company wouldn’t be able to make smarter decisions for their consumers and suppliers.

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