# THE VALUE OF SMART ANALYTICS

Like most industries, retail has been forced to evolve in a continuously changing market environment to meet unprecedented expectations from consumers and fend off staunch competition from rival firms. With topics such as 'Big Data' and the 'Smarter Consumer' trending, retailers are looking towards smarter, more innovative means of retaining and growing current business, whilst reducing ever increasing costs. This white paper places focus on the retail sector and the consumers who operate within this space. It also introduces several analytical techniques which can assist businesses seeking a competitive edge.

No longer can companies afford to take a laissez-faire approach; the strategy of 'one shoe fits all' is no longer applicable. Consumers have more choice than ever before; they are more demanding, informed and have unique needs. Ultimately, consumers are 'smarter' and expect a seamless shopping experience. In order to bridge the gap between the expectations of consumers and the current reality of retailers, firms have looked towards a new breed of scientists; the data scientist[1]. The data scientist has the ability to bridge the gap between the IT realm of Business Intelligence, the back office technical analyst who explores the stochastic component of analytics and other statistical models and, finally, the commercial-thinking, client-facing management consultant. The data scientist consolidates all of these key components though smart and creative analytics to breakdown and understand the Science of Revenue

In order to gain a competitive edge, retailers need to improve on how they engage the consumer. They need deeper more relevant insights into their base; they need the ability to target the correct individual at the best possible time with the optimal and most attractive offering. Furthermore,

key elements around targets and budgets are so often based on 'gut feel' and are forecasted with a linear, one dimensional approach, that time and money is often squandered, efforts are misplaced and, subsequently, returns are poor.

The evolutionary path of smart analytics begins with the consolidation and mining of organizational data. Once the data is extracted and manipulated into the correct format, smart analytics will be conducted. The analytical component will leverage powerful technologies as well as advanced statistical techniques to bring to light useful insights as well as infer predictive trends and likely outcomes. Subsequently, these results allow stakeholders to make informed decisions using actionable initiatives to add tangible value to the organization.

*"Our customers are asking us to know them, empower them, offer them and support them. We're inclined to listen."*
*– Speciality Retail, SVP & GM[2]*

## DATA: THE KEY COMPONENT

Data is unmistakably one of the most important assets that an organization has. Without this critical information, past trends cannot be analysed to understand how consumers have behaved and, hence, predicting and gaining meaningful and key insights becomes very difficult. One of the greatest challenges many firms face today is the centralization of random data silos. Data is stored in multiple systems and frequently in poorly managed sources such as ad hoc spreadsheets. The quality of data captured is

often questionable and the benefits of maintaining high data integrity standards are underplayed.

If a firm is serious about differentiating itself and ensuring it does not become irrelevant in this evolving industry, it needs to consolidate and manage its data accordingly, to ensure every detail of information from a transaction level is accurately stored and easily accessible by the appropriate parties using the correct technology.

## THE VALUE DRIVER

It is easy to have a view of the big picture; revenues in December 2012 for region A at store B increased YoY by 2.35%. Often senior executives and shareholders are only concerned about the bottom line; was there and increase or decrease in revenues? The bottom line often fails to answer the most important question; **why?**

Let us take a look at a very high level example. Revenues increased because there was an overall increase in sales. Why was there an increase in overall sales? An answer may be that customers visited the store in December this year more frequently than the previous. Why did the frequency of customer visits increase?

The causes we have described above are known as base value drivers. If we explore further, we discover that there were in fact multiple reasons for the YoY growth, i.e. we renegotiated prices on several popular goods, interest rates decreased and inflation remained stable, thereby increasing disposable income, there was a launch of a new gaming console which boosted sales etc. Understanding these base value drivers allows an organization to explain the bottom line result. However, where exactly should emphasis be placed in the future in order to foster this growth?

*"…we want more than just satisfied consumers. We want to delight them – to go beyond their expectations."*
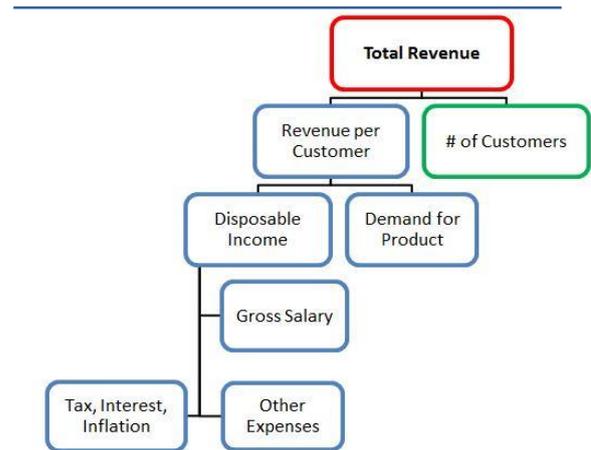*– Jose Gallo (CEOLojas Renner)[3]*

**FIGURE 1:** Value driver tree showing the decomposition of total revenue into its base value drivers.

## ATTRIBUTION ANALYSIS

It is at this point that the data scientist will interject. The data scientist will have the ability not only to source, slice and dice the appropriate data, but to model the value drivers in such a way as to create what is known as an attribution analysis. An attribution analysis has the ability to translate changes in base value drivers into absolute revenue terms. For example, the launch of the new gaming console was responsible for R3 250 000 worth of revenue, which resulted in an overall increase in revenues of 1.7% YoY. At the same time, drivers such as inefficient inventory levels may have resulted in a negative 0.59% revenue outflow.

The knowledge of this information is critical. The firm now understands exactly why overall revenues changed and, more importantly, where it should focus its efforts to sustain and increase this growth, while mitigating risk of further revenue dilution due to inefficient inventory levels.
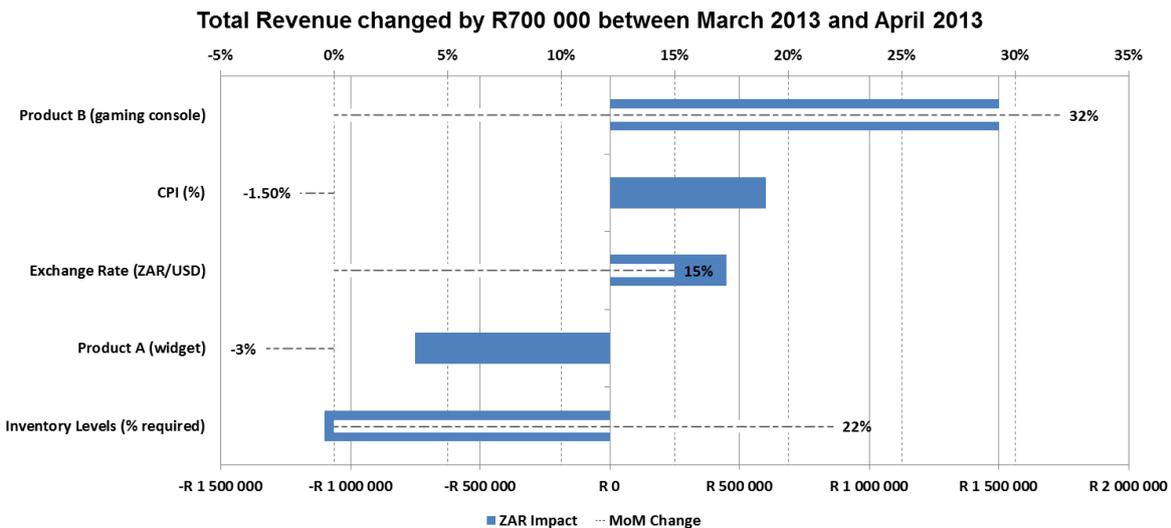
**FIGURE 2:** Attribution analysis showing MoM absolute revenue change and percentage change in revenue components.

## CUSTOMER PROFILING

The analysis described above is but one of many powerful and innovative techniques used in smart analytics and decision support. Profiling customers is another technique that spans multiple industries and is often headed up by an industry specialist with years' experience. Traditionally, the specialist relies on high level information and possible qualitative facts to draw conclusions. What if there was hidden information in the masses of data processed by an organization daily or information that cannot be identified by any high level report or data pivots? In reality, there are numerous underlying relationships between factors such as gender, region, spend, age, education, marital status, job occupancy, seasonality etc.

The data scientist aims to exploit these relationships, firstly, by gaining key insights into the base in question and, secondly, by using this information to make predictions and inferences about focus areas such as precision marketing, likelihood of churn, fraud prediction and optimal channel budgeting, to mention a few.

## EFFECTIVE BUDGETING

A key focus area of any organization is its budget. Often budgets are too rigid and prevent fast response. Evidence suggests that only 20 percent of firms change their budgets within the fiscal cycle[4]. Furthermore, budgets tend to be forecasted using simple linear methodologies which don't cater for exogenous events such as exchange rate shocks. With this in mind, having the ability to easily adjust a budget due to such factors could enable an organization to take advantage of these unexpected changes or alleviate some of the associated risks. Dynamic forecasting is a method which encompasses traditional regression techniques while having the ability to quickly adjust should the need arise.



### High End Consumer

The High End Spender is comprised primarily of single females over the age of 35 years, with employment within the household. They make up 24% of the base.

| | |
|---|---|
| **% of the base** | 24% |
| **Gender** | 65% Female |
| **Marital Status** | 35% Married |
| **Age** | 75%  > 35 years |
| **Household Job Occupancy** | 85% Employed |

**FIGURE 3:** Customer profile of a high end consumer.

Predictive modelling and optimal budgeting can also complement each other. An example of a high-risk factor that needs to be managed is churn. Having the ability to identify likely churners enables the organization to take preventative actions by understanding the underlying reason behind a customer's propensity to churn, thereby allowing for effective campaigning to reduce this risk and ultimately protect revenues.

Smart analytics can assist firms with their marketing budgets through informed and targeted campaigning. In many industries, acquisition and retention costs have a very significant impact on overall revenues. An example of a successful campaign would be one that is targeted at the correct customers but also in the optimal quantity so as to reduce costs. For example, if you were to campaign your entire base to attend the launch of a new product, you may have a 10% hit rate. The other 90% would not attend and hence marketing budget would have been wasted. The data scientist looks towards predictive modelling, whereby the point of diminishing returns, that is, the point where it is no longer beneficial to campaign additional customers, is identified. In our example, you may be able to achieve a 7% hit rate by campaigning only 30% of the base, as opposed to a 10% hit rate by campaigning 100% of the base. Although the hit rate is 3% lower, the marginal cost of campaigning an extra potential customer is higher than the marginal benefit associated with that customer, and therefore has a negative impact on overall revenue.

## BASKET ANALYSIS

Cross-selling and upselling is a technique that is employed by several global organizations, Amazon.com being amongst them. Although the concept is simple, making the appropriate recommendations or bundling certain items together is not. Once again, the power of smart analytics enables an organization to flag which items complement each other and assist in making real time recommendations based on individual preferences. For example, Amazon.com will recommend a range of books that customers with similar reading habits have purchased, in the hope that it will convert the recommendation into a future sale.



**FIGURE 5:** Basket analysis illustrating that consumers who purchase shirts have a high affinity to purchase cufflinks, ties and pants.
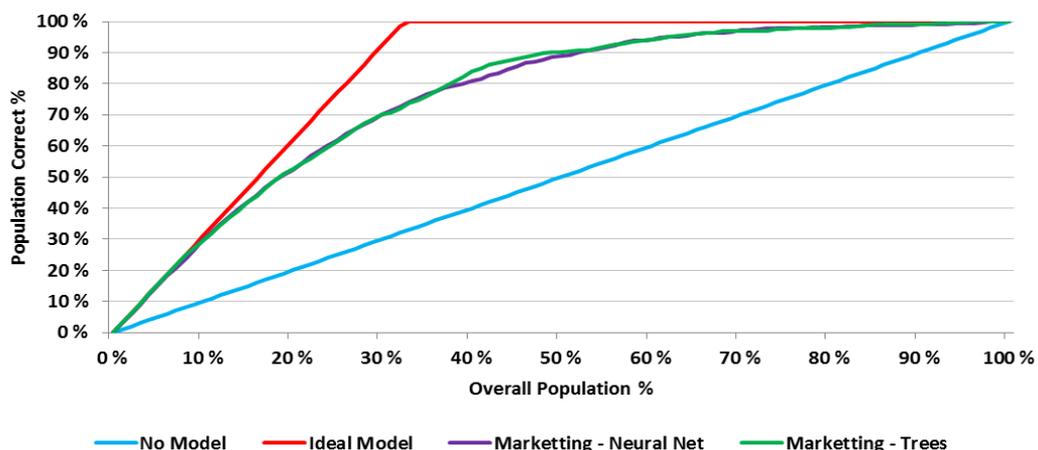


**FIGURE 4:** Lift chart demonstrating diminishing returns for different marketing models.

## Business Science Corporation (BSC)

BSC hires bright minds with a multitude of skills. Our staff complement includes the likes of engineers, mathematicians, actuaries, statisticians, economists and genetic scientists, to mention a few. We operate within multiple industries and have a proven track record of providing tangible value to our clients. We pride ourselves in the quality of our workmanship and strive towards excellence by embedding our working principles into everything we deliver as an organization.

Organizations are constantly looking for new and innovative ways to increase market share, grow and protect revenues and become market leaders. We at BSC will assist in enabling you to meet your immediate short terms goals and help align your strategy going forward through leveraging the power of smart analytics and our years of expertise as industry leaders.

We encourage you to contact us should you have any inquiries concerning how we may be able to apply smart analytics to your business.

## References

[1] - "The Big Data Challenge: How to Develop a Winning Strategy."

EMC Information Infrastructure and Cloud Services

http://www.cio.com/article/708477/The_Big_Data_Challenge_How_to_Develop_a_Winning_Strategy

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[3] - http://www.pwc.com/gx/en/ceo-survey/2013/industry/retail-and-consumer.jhtml

[4] - "10 Reasons Why Budgets Cause Problems."

Beyond Budget Round Table (BBRT) – An Independent international research collaborative

http://www.accountingweb.com/topic/cfo/10-reasons-why-budgets-cause-problems

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