Business Case
for
Data Exploratory Analysis

Model Solution

By

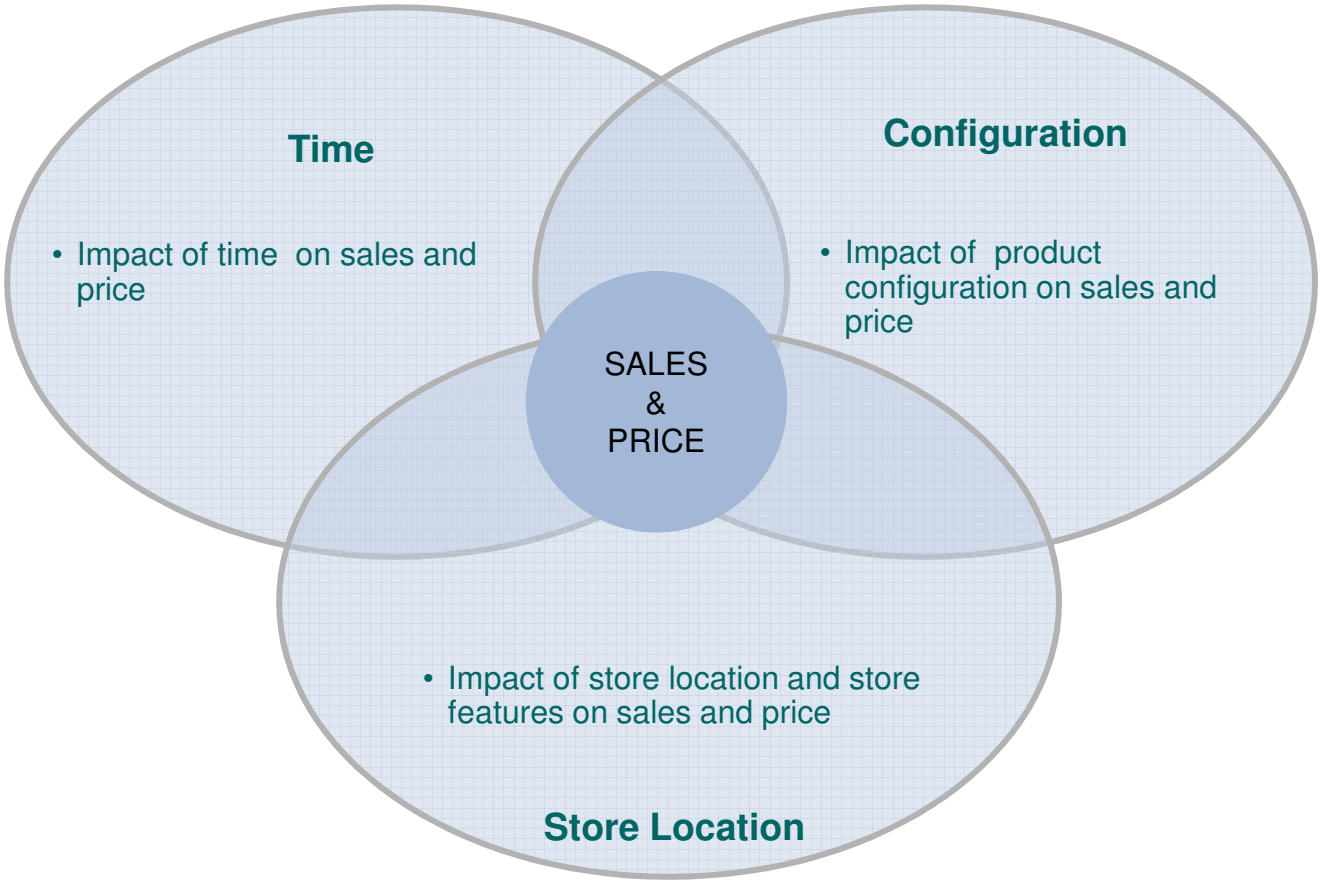
CHANDRA MOULI KOTTA KOTA

Outline of the Challenge

- **The Business Objective:**
  - Determine product strategy and pricing policies that will maximise company's projected revenues in 2009.

- **Management's Charter:**
  - Uncover any information in the available data that may be useful in meeting the business objective, and make specific recommendations to management that follow from this (85%).
  - Also assess the relevance of the data provided, and suggest how the company can make better use of data in 2010 to shape this aspect of their business strategy and operations (15%).
  - Clearly define approach .

Revenue Drivers



Are prices changing?

- **Does Laptop price change with time?**
  - ✓ **There is price drop $5 every month across all models. This results average price change is ~35% (Between Jan and Dec) which is very high.**

- **Are prices over retail outlets consistent?**
  - ✓ **Prices over retail outlets are consistent except CR78IE, SW1P 3AU and W43PH. These stores are offering 30% discounts across all models at end of each quarter (i.e March, June, September & December).**

- **How does price change with configuration?**
  - ✓ **The price variation between different configurations ~70%. This variation is increasing over the period of time(Jan – 66% and Dec- 81%) and is very high in end of each quarter.**

How location is influencing sales?

- **Where are the stores and customers located?**
  - ✓ **The minimum distance between two stores is ~1.6KM. Customers visiting stores different places (up to 20 KM)**
- **Which stores are selling most?**
  - ✓ **The maximum sales(~71%) contributing below 5 stores**
    - **SW1P 3AU – 19%**
    - **SE1 2BN – 16%**
    - **SW1V 4QQ - 15%**
    - **E2 0RY – 11%**
    - **NW5 2QH – 10%**
- **How far would customers travel to buy a laptop?**
  - ✓ **Customers visiting stores from long distances up to ~20KM. But maximum sales(~94%) is coming from the customers who are around 1 to 7 KM radius.**

How configuration is influencing prices?

- **What are the details of each configuration, and how does this relate to price?**
  - ✓ **All features including Screen Size, Battery Life, RAM, Processor Speeds, Wireless, HD Size and Applications Bundling are influencing prices.**
  - ✓ **Prices are correlated positively with configuration.**

- **Do all stores sell all configurations?**
  - ✓ **Maximum stores sold at least one configuration in the year except few stores (E2ORY, CR78LE, E78NW, KT2 5AU, N17 6QA, N3 1DH, S1P 3AU and W4 3PH). S1P3AU sold only 138 different types of configuration laptops.**

How Revenue is influenced by different factors?

- **How do the sales volume in each store relate to company's revenues?**
  - ✓ **5 stores contributing 71% revenue and remaining 11 stores contributing remaining 30%**
- **How does this depend on the configuration?**
  - ✓ **Revenues are contributing from across all configuration however maximum coming from average configuration.**
- **What statistical technique should be applied to predict the sales of the company in 2010?**
  - ✓ **We can apply Time Series forecasting Technique. Last 7 months contributing 88% revenue.**
  - ✓ **Since the data is only existed for 12 months, predicting 2010 sales will be challenging.**

Analytics Initiatives

- **We can find key drivers for revenue or profit by store.**
  - ✓ **Y (DV)= Revenue or Profit or Growth Rate**
  - ✓ **X's (IV's) = Laptop Features, customer radius, discounts, Distance, nearest store distance etc**
  - ✓ **Technique = Linear Regression**

RECOMMENDATIONS

- **Since Maximum revenue is coming from customers who are around radius**
- Discounts not influenced in sales of these stores wo
- **Product price reduction** of older configurations at stores generating most sales.
- Concentrate product inventory of newer configurations initially at stores generating most sales to maximize appeal to customer location preferences*
- Consider opening additional stores at mid point locations where customers travel a great distance. This however will based on evaluating the cost/benefit associated with it.

*This is a hypothesis based on initial data pointing to it. It needs to validated with further validated by comparing distance travelled by consumers over stores.

Appendix

Data

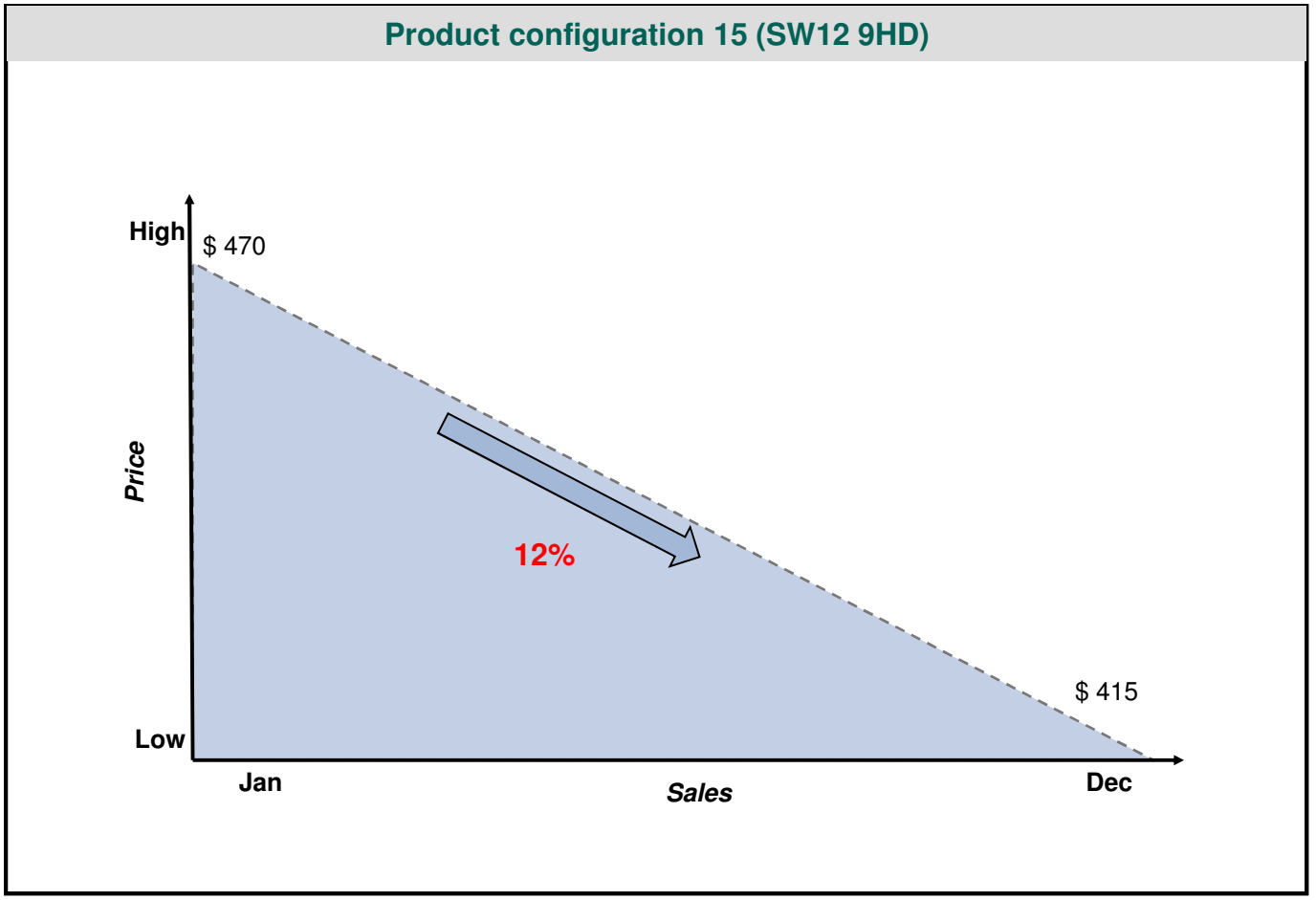
An analysis was performed to uncover key drivers behind company annual revenue.

Data was collected along the following dimensions which were made available

TRANSACTIONAL	PRODUCT	STORES	POSTCODES
• **297,572 transactions across various stores**	• **Product categories and dimensions**	• **Store locations defined by postcodes**	• **Lat/Long information relating to postcodes**

Transactional information had 14 rows with missing information on retail price which were removed.

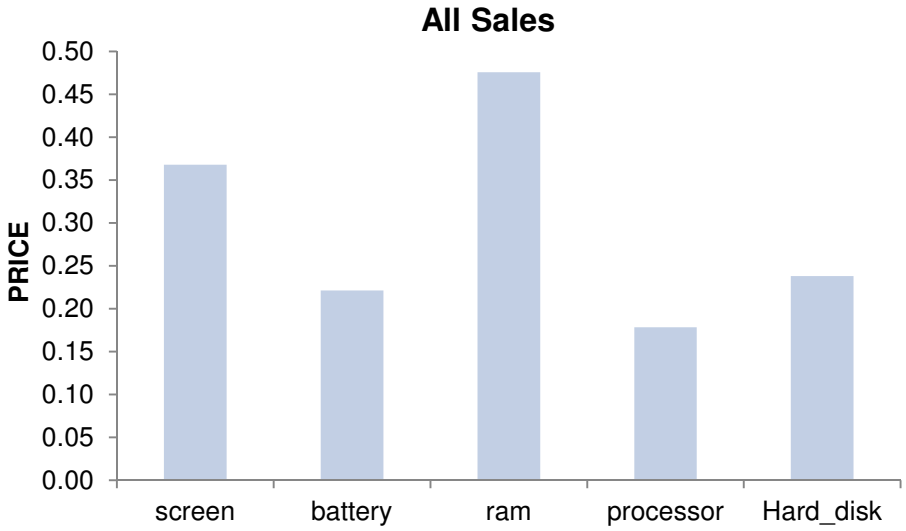
Product pricing tapers down over time..

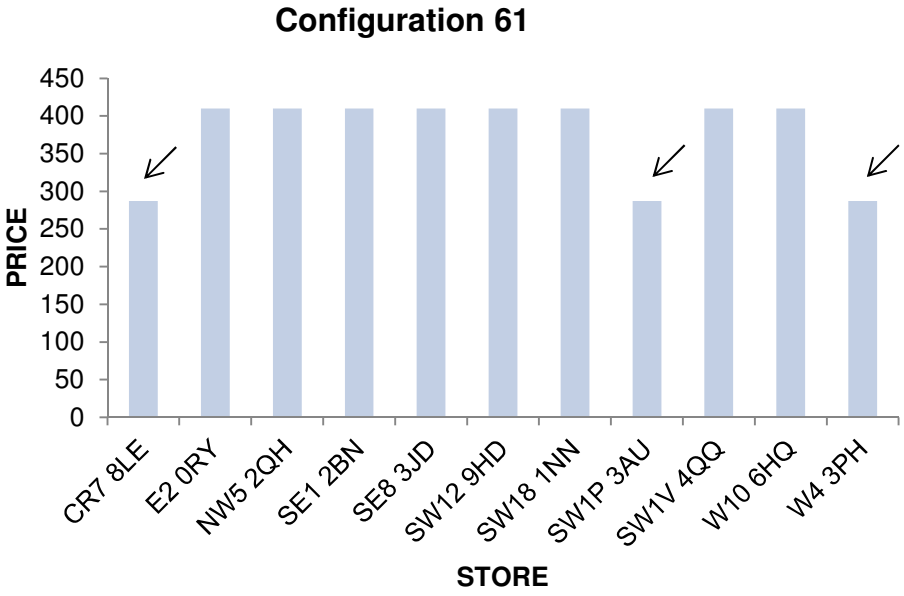


Price decreases over time and the theme is consistent across stores suggesting declining value of existing configuration.

Pricing has a strong correlation to increased configuration….

- Increased configuration has a positive influence on pricing

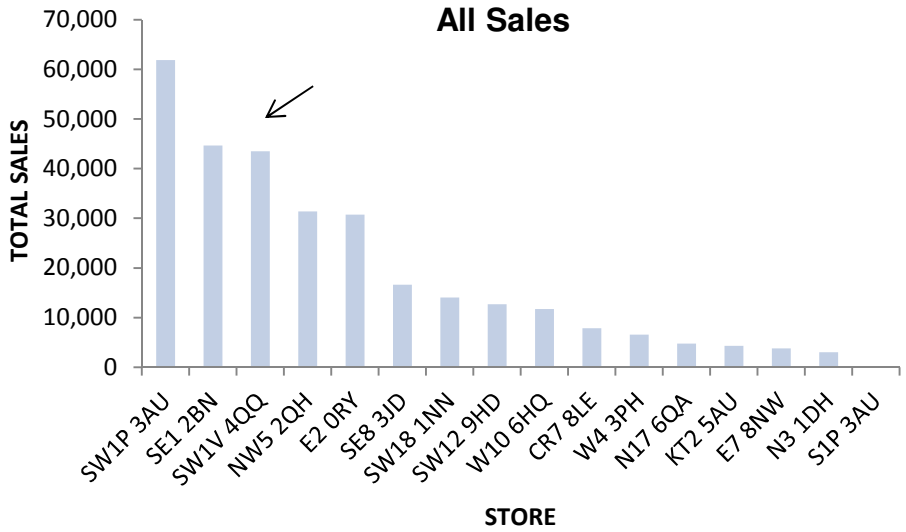


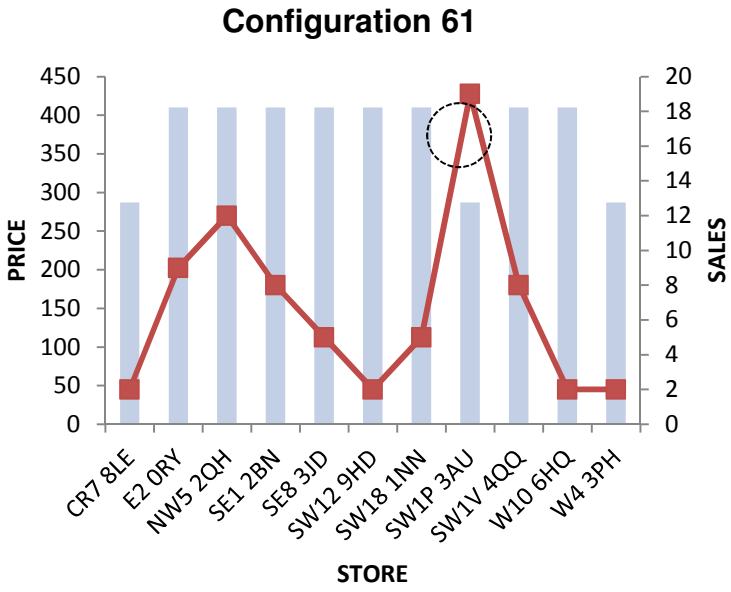


- Pricing varies across stores

Sales is concentrated in a few stores…

- Sales are concentrated in a few stores. Sales vary even with similar pricing.





- Sales increase with lower pricing at certain stores

Sales across stores doesn't comprise of all product configurations suggesting that every product is not available in every store.

Further analytics and relevant data capturing to shape business strategy….

DATA QUALITY

Further transactional information, store information and cost information will increase the value of data to achieve the business objectives such as–

- discounts
- whether product on sale
- whether salesman assisted in sale
- No of salesmen in store
- Cost information

FURTHER ANALYTICS

- Use of the above mentioned data to perform regression modelling will assist in understanding the key drivers of price and sales.
- The regression modelling can be used to predict sales in 2010.
- With further information gathered, price elasticity modelling can be developed to identify optimal pricing points