

DATA MINING UPDATE // BLACKWELL



DATA MINING ACTIVITIES DURING JULY 2019

1

ANALYSIS OF PRODUCT PIPELINE

2

ANALYSIS OF BRAND PREFERENCE

3

M&A: EVALUATING STRATEGIC POTENTIAL OF TARGET

TEAM



ELIAS

Participated in all three analyses



JOËL

Participated in the Product Preference
analysis



PAUL

Participated in the M&A analysis

ANALYSIS:

PRODUCT PIPELINE

PRODUCT SELECTION PIPELINE



SHORTLIST PRODUCTS

This was the first screening. Sales identified products that were good strategic fits and compiled a shortlist of potential additions to Blackwell's selection.

PREDICT PROFITABILITY

Based on the shortlist, data mining techniques were employed to predict the potential profitability of the products on the shortlist. The five most profitable products were highlighted. This was the second screening.

SELECT PRODUCTS

The third and final step in the selection pipeline is the actual selection, where the results of data mining are combined with business reasoning and products are selected based on projected profitability and strategic fit.

PREDICTED TOP 5 PRODUCTS

TOP 5 PREDICTED PROFITABILITY

Product	Sales Price	Margin	Volume	Profit
PC Dell (172)	\$ 860	20%	1.3k	\$ 224,976
PC Dell (171)	\$ 699	25%	1.1k	\$ 197,817
Laptop Apple (173)	\$ 1,199	10%	1.1k	\$ 133,568
Tablet Apple (186)	\$ 629	10%	1.7k	\$ 110,012
Tablet Amazon (187)	\$ 199	20.0%	1.4k	\$ 56,118

- WE WERE PREVIOUSLY TASKED WITH PREDICTING THE TOP 5 MOST PROFITABLE PRODUCTS FROM THE SHORTLIST
- PRESENTED RESULTS DID NOT CONSIDER THE EFFECTS OF PRODUCT TYPE, IF ANY

PREDICTING SALES PER PRODUCT TYPE

- **FOR THE SECOND PHASE OF OUR DATA MINING EFFORTS IN RELATION TO THE PRODUCT PIPELINE WE WERE ASKED TO PREDICT THE SALES OF LAPTOPS, PC'S, NETBOOKS AND SMARTPHONES**
- **WE WERE ALSO REQUESTED TO EVALUATE THE STATISTICAL SIGNIFICANCE OF PRODUCT TYPE WHEN PREDICTING SALES FIGURES**

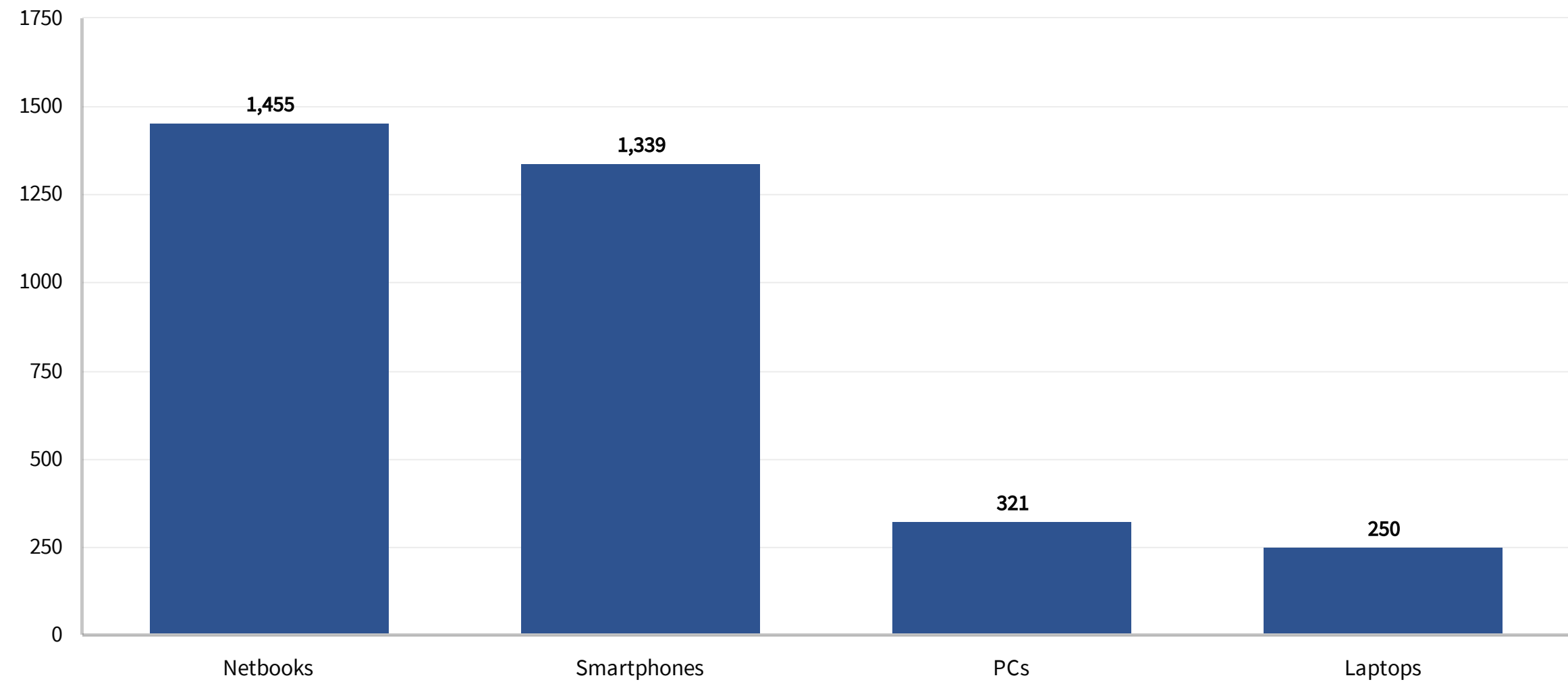
SIGNIFICANCE OF PRODUCT TYPE

- **WE TESTED THE STATISTICAL SIGNIFICANCE OF PRODUCT TYPE WITH THE SO-CALLED ANOVA METHOD, WHICH BASICALLY TELLS US IF A COMPONENT DOES NOT CONTRIBUTE TO A GIVEN TOTAL**
- **THE ANOVA TEST SHOWED THAT THE PRODUCT TYPES WERE NOT INSIGNIFICANT**
- **THE RELATIVE PREDICTING POWER OF EACH PRODUCT TYPE VS VOLUME WAS HOWEVER NEGLIGIBLE IN THE PRESENCE OF MORE POTENT PREDICTORS, SUCH AS CUSTOMER SATISFACTION METRICS**

PREDICTION MODEL

- **PREDICTIONS WERE MADE WITH A DECISION-TREE ALGORITHM CALLED RANDOM FOREST, THE TRAINED REGRESSION MODEL REACHED AN ACCURACY OF AROUND 92%**

PREDICTED SALES PER SHORTLISTED PRODUCT TYPES (UNITS)



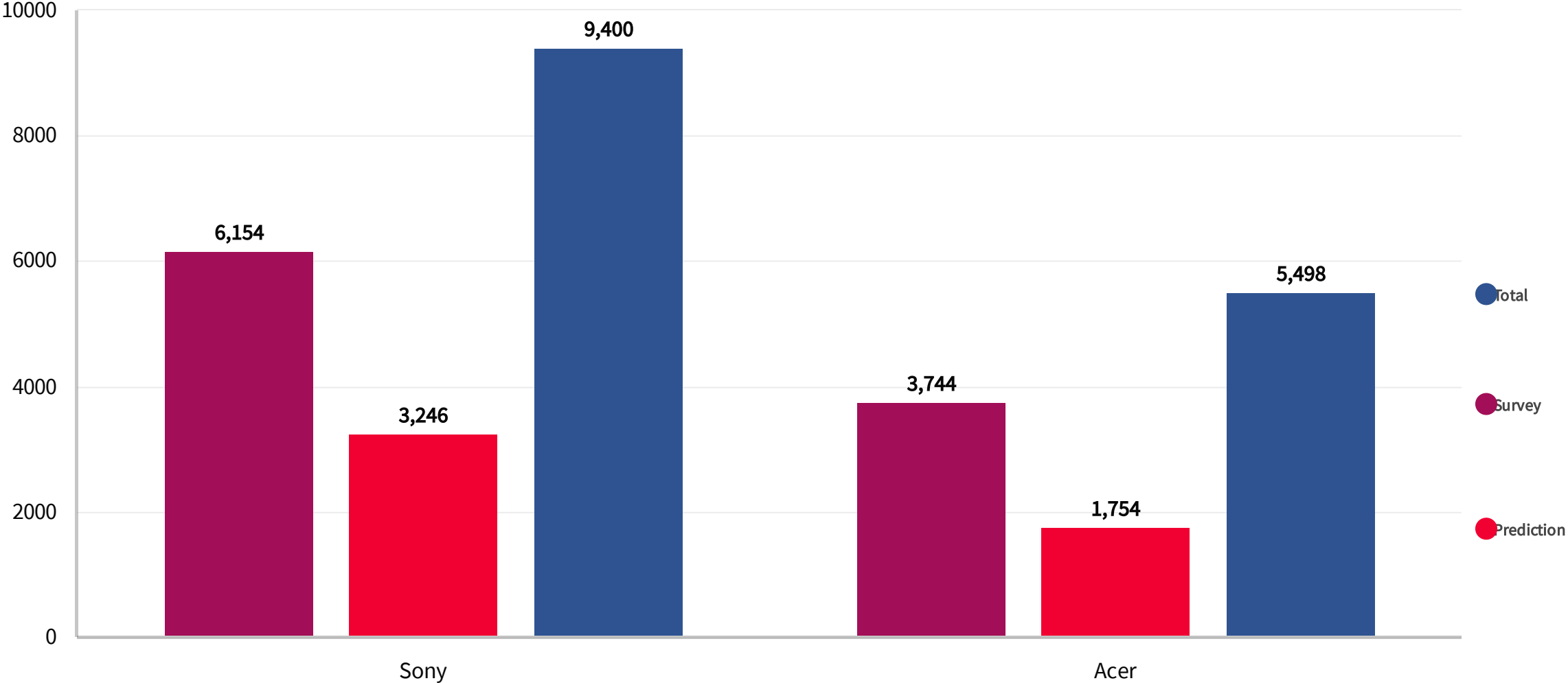
SECTION 2

BRAND PREFERENCE ANALYSIS

ACER OR SONY

- **WE INVESTIGATED WHETHER THE CUSTOMERS OF BLACKWELL WOULD PREFER ACER OR SONY BASED ON OTHER CUSTOMER DATA**
- **THE ANALYSIS WAS MADE ON THE BASIS OF A COMMISSIONED SURVEY ABOUT BRAND PREFERENCE**
- **THE SURVEY WAS INCOMPLETE AS IT WAS MISSING ANSWERS REGARDING BRAND PREFERENCE FOR APPROXIMATELY 33% OF THE SUBJECTS**
- **OUR TASK WAS TO TRAIN A CLASSIFICATION MODEL TO PREDICT THE MISSING ANSWERS**

SURVEY + PREDICTION SHOWS THAT CUSTOMERS PREFER SONY



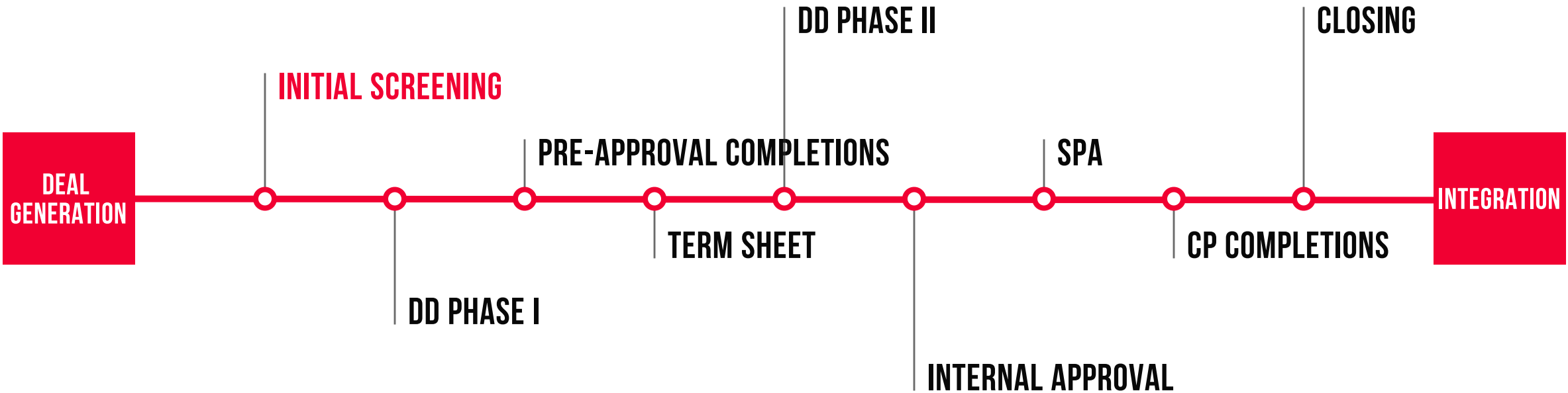
DATASET IS NOT REPRESENTATIVE OF THE POPULATION

- **AGE AND SALARY WERE THE TWO RELEVANT ATTRIBUTES IN PREDICTING BRAND PREFERENCE**
- **MEDIAN AGE OF DATASET VS US TOTAL: 50 VS. 38**
- **MEDIAN ANNUAL INCOME OF DATASET VS US TOTAL: 85,000.00 (NET OF X.I) VS 31,000.00 (INCL. XI)**
- **THE PREDICTION IS ACCURATE RELATIVE TO THE DATASET, BUT THE DATASET IS **INHERENTLY FLAWED** RENDERING THE RESULTS MOOT**

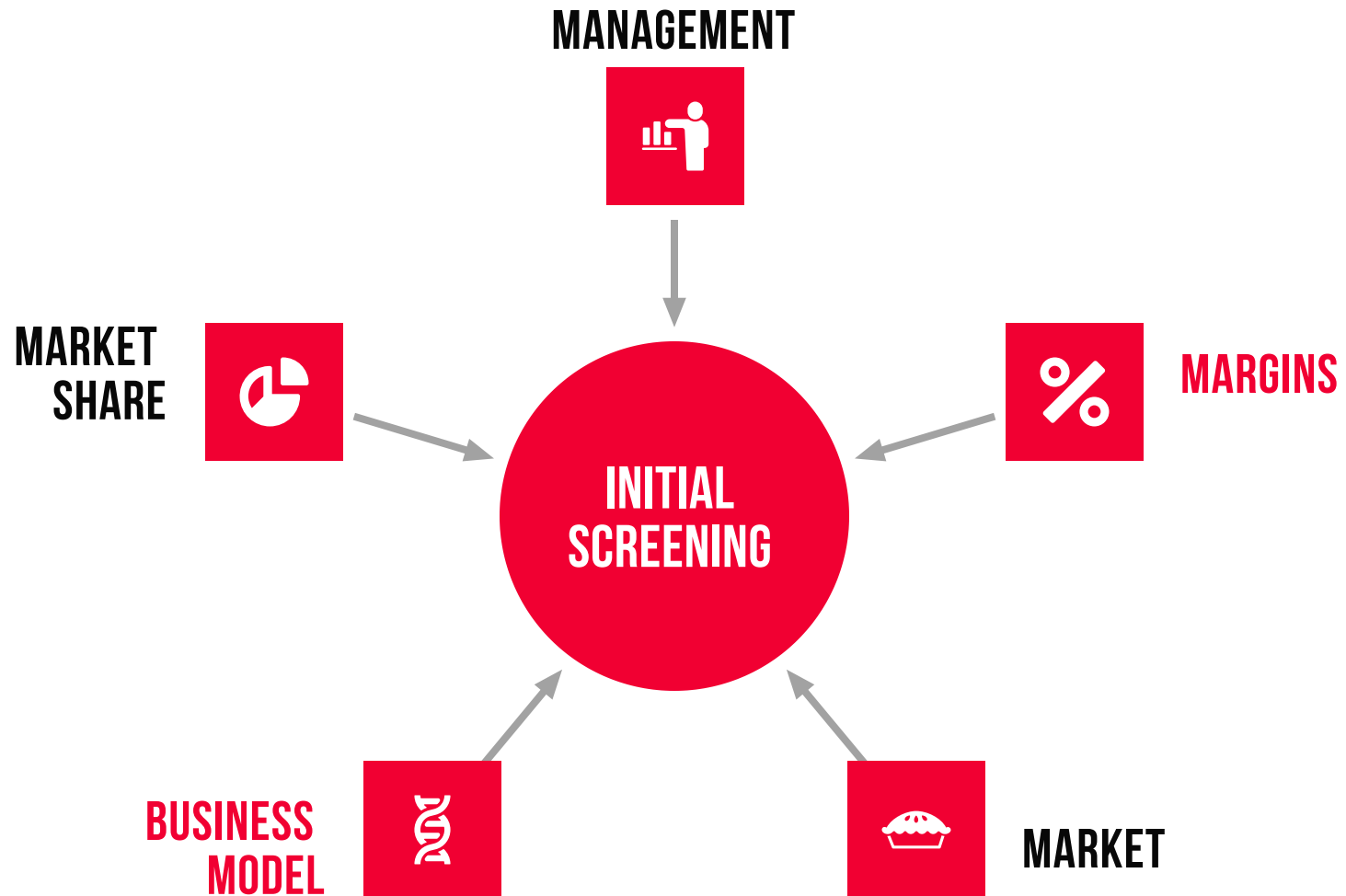
SECTION 3

M&A: EVALUATING STRATEGIC POTENTIAL

OUR REVIEW AS PART OF THE M&A PROCESS



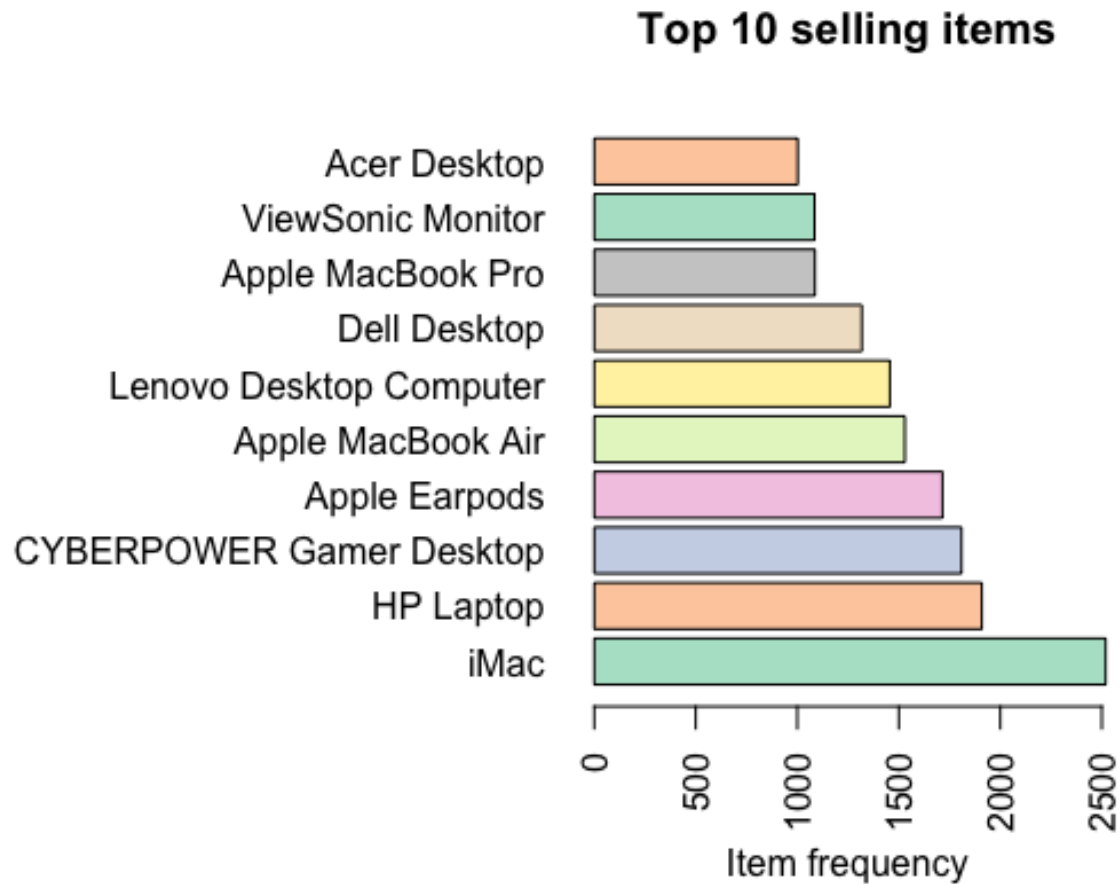
DATA MINING COMPONENTS OF THE INITIAL SCREENING



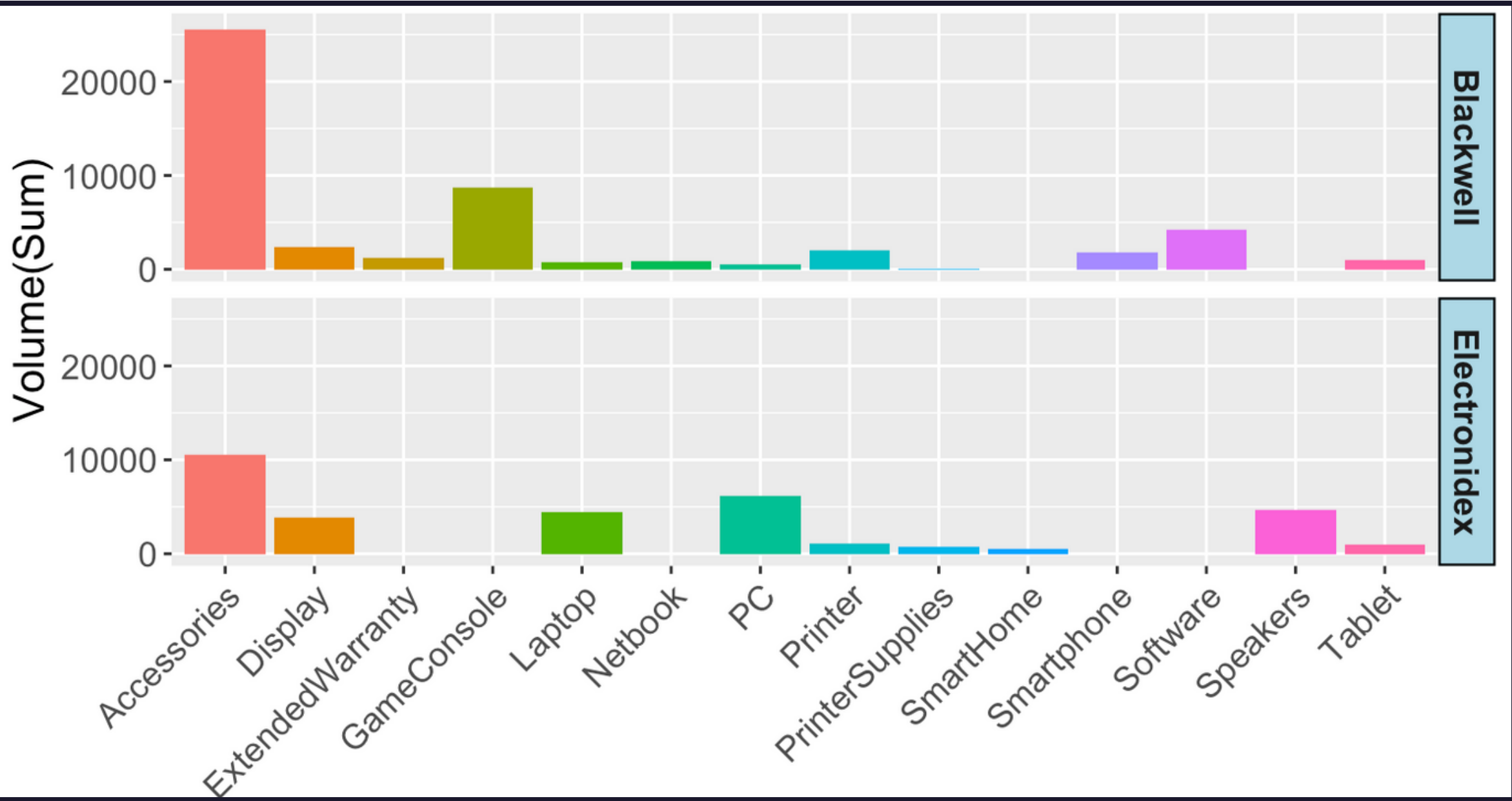
STRATEGIC OBJECTIVES OF THE ACQUISITION?

- **WILL AN ACQUISITION ADD TO THE STRATEGIC CAPABILITY OF BLACKWELL?**
- **SELECTION SYNERGIES**
- **CUSTOMER-SEGMENT SYNERGIES**
- **ACCELERATION OF BLACKWELL'S ECOMMERCE BUSINESS**

ANALYSING THE TARGET'S TOP SELLERS



- **8 OUT OF 10 TOP SELLERS ARE PC'S (LAPTOPS OR DESKTOPS)**
- **4 OUT OF 10 TOP SELLERS ARE APPLE PRODUCTS**

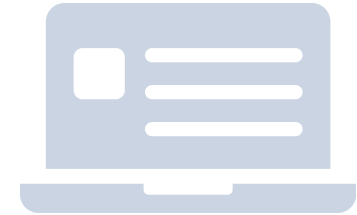
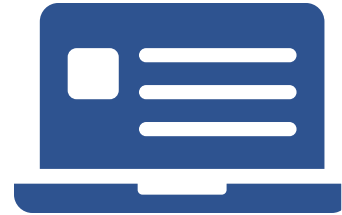
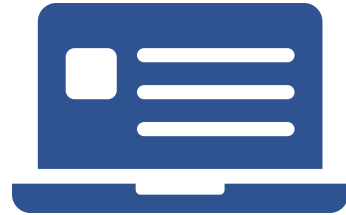


48%



Of transactions are B2B

71%



Of sold items are B2B

STRATEGIC OBJECTIVES

- **BASED ON OUR LIMITED REVIEW, SYNERGIES MAY BE REALIZED (TO THE BENEFIT OF BLACKWELL) IN THE PC BUSINESS SEGMENTS AND THE B2B SALES**

DESCRIPTIVE ANALYSIS

ELECTRONIDEX (THE TARGET)

Evaluating traction and revenue of the Target's PC business by using benchmarks and proxies

START-UP E-COMMERCE RETAILER

Management has informed us that the Target is a startup e-commerce retailer in the electronics sector.

MONTHLY SALES REVENUE OF THE PC BUSINESS

The transactional data shows that the Target sold 16,903 PCs during the period. According to data provided by Statista, the global average selling price of a PC is USD 733. This gives us a benchmark revenue of around **USD 12.4 Mn per month.**

DESCRIPTIVE ANALYSIS (CONT.)

ELECTRONIDEX (THE TARGET)

Evaluating traction and revenue by using benchmarks and proxies

TRAFFIC

In order to determine a benchmark estimation of traffic, expressed as a number of sessions initiated we divided the number of completed transactions (9835) with the benchmark average conversion rate of 1.56%. This returns an estimated number of around **630,500 sessions initiated per month.**

TRACTION

A combination of provided data and industry benchmarks gives us the following hypotheses in regard of traction:

- The Target is **well past an inflection point** in sales growth and is currently scaling up; and
- The Target is in **Series A** stage at minimum.

HYPOTHESIS FOR CROSS-SELLING OPPORTUNITIES

- **OUR ASSOCIATION MINING OPERATION SHOWS US THAT CUSTOMERS THAT PURCHASE LAPTOPS OFTEN PURCHASE HEADPHONES**
- **THERE WAS LIMITED EVIDENCE TO SUGGEST BRAND ASSOCIATION, BUT WE SUSPECT THAT THIS IS A RESULT OF THE RELATIVELY LARGE FRACTION OF THE SALES BEING B2C SALES**

RECOMMENDATION

- **PROCEED TO THE FOLLOWING STAGE OF THE PROCESS IF INITIAL FINDINGS REGARDING STRATEGIC FIT IS SUFFICIENT TO MERIT TICKET SIZE**