CASE STUDY

E-COMMERCE INDUSTRY

Sriya.AI
AI ANYWHERE ANYTIME

Objective

- To get the prediction accuracy of buyers by Auto-AI and DXI and compare.
- Precision AI using Target DXI based Random Forest trees. Target increase in number of Buyers is **20%** up from current levels.

DXI Hypothesis

- DXI is a proxy/surrogate for all features responsible for higher engagement and higher satisfaction. The higher the DXI, the better is the visitor engagement/satisfaction and hence increasing DXI score should lead to an increase in the number of Buyers.

DXI Definition

Digital Expert Index (DXI): Dynamic score/index obtained from a proprietary formula consisting of weights from 10 ML algorithms. DXI is a super feature and is a true weighted representative of all important features. Converts a multi-dimensional hard to solve problem into a simpler 2-dimensional solution (problem solved).

SCORE + CORRELATE = IMPROVE is the underlying hypothesis.

Discussion & Results
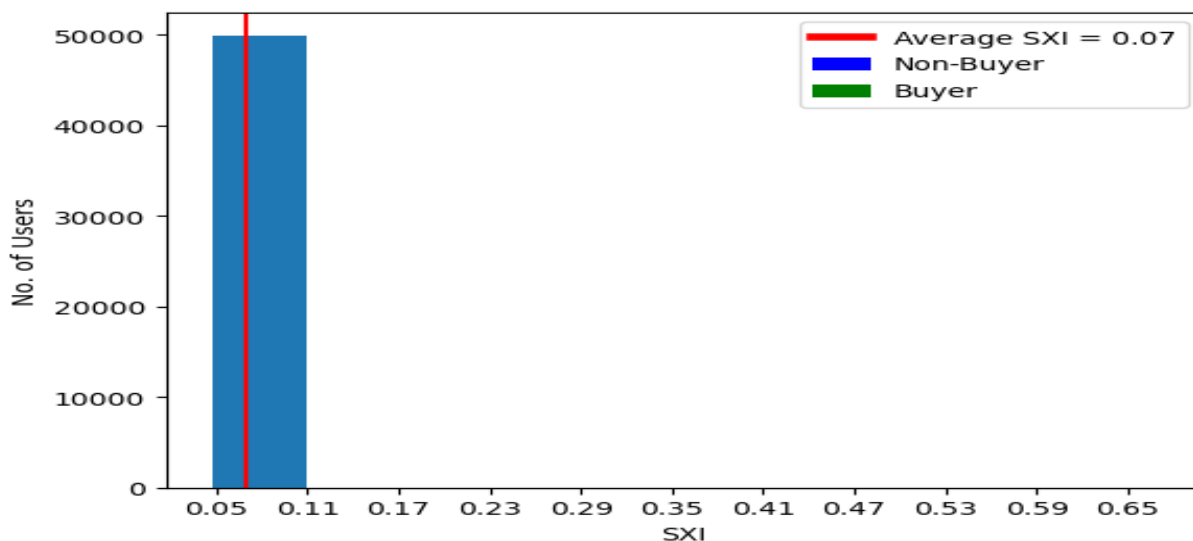
1. Exploratory Data Analysis

50,000 visitors were distributed to **867** good and **49133** bad. Good are Buyers and Bad are non-Buyers. So, **1.73%** is the current Buyers % and **98.27%** is non-Buyers % among all visitors.

2. DXI - Exploratory Data Analysis

The current Average DXI is **0.07**. No. of users above 0.07 is **2871** and of these **867** are Buyers and **2004** are non-Buyers. So, Buyers (%) are **30.1%** and non-Buyers **are 69.9%.**

Correspondingly No. of users below 0.07 is **47129** and of these **0** are Buyers and **47129** are non-Buyers. So, Buyers (%) are **0%** and non-Buyers is **100%**.

So DXI is a perfect proxy/surrogate for buyers and above average DXI ratio of good outcome is **17.3x** of the overall average and below average DXI the probability of a good outcome is **0**. So, an increase in DXI leads to an increase in Buyers.

3. Predictive AI

- Auto-AI Prediction accuracy is **99.99%** and the best performing algorithm is **XGBoost**.
- DXI Prediction accuracy of Buyers is **99.99%**.
- Ratio of DXI/Auto-AI prediction accuracy is **1.**

4. Precision AI

The desired increase in target outcome, which is # of Buyers, is 20%. The original Buyer conversion is **1.73**% so a **20**% increase should lead to a **2.07**% overall Buyers conversion (**1.73*1.2**). Which means **1040** of the customers from 50,000 would become Buyers rather than the current **867.**

As you can see from section 2, DXI is a perfect proxy for conversions and all buyers had higher than average DXI.

The correlation between DXI and Conversion Rate is **0.99**. This implies that DXI and Conversion rate are highly positively correlated to each other. Hence, an increase in DXI will result in an increase in Conversion rate.

Correlation graph: Conversion Rate & SXI
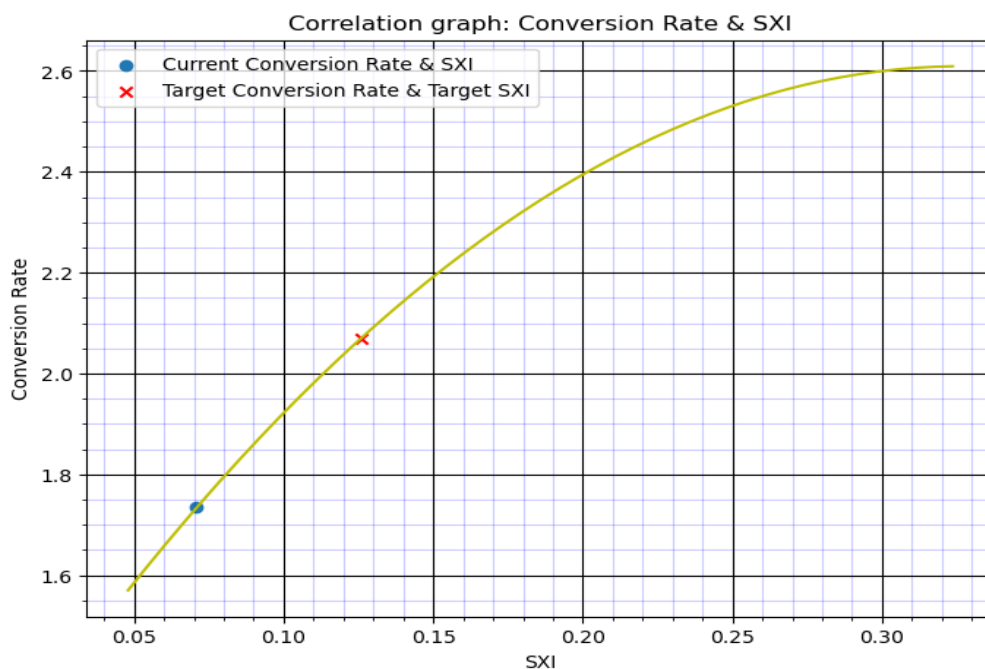
Current DXI and Target DXI Decision Trees

a. Current DXI Decision Tree
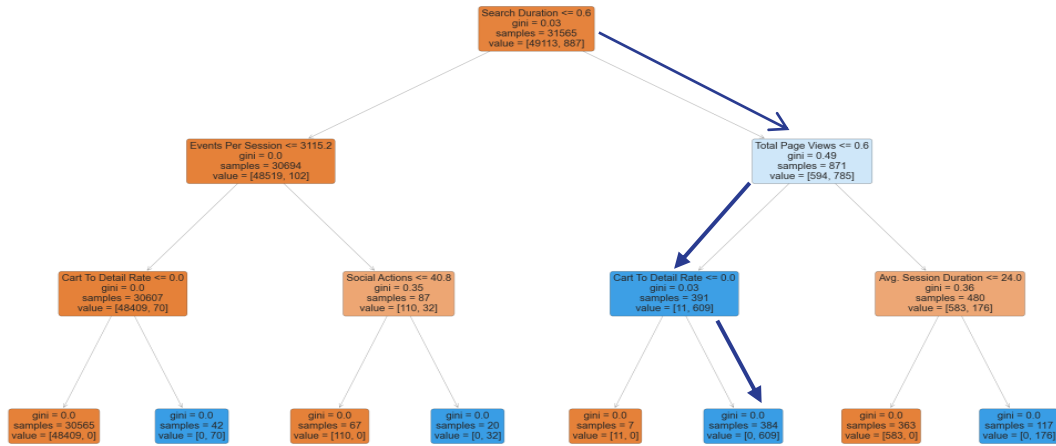
Interpretation

Node 1: Search Duration > 0.6 seconds (Number of buyers in the parent node: 887).

, **Left split:** 102; gini: 0.0, **Right split:** 785 – majority positive class; gini: 0.49.

(Total value for the next split: 785)

Node 2: Total Page Views <= 1

Left split: 609 – majority positive class; gini: 0.03, **Right split:** 176; gini: 0.36.
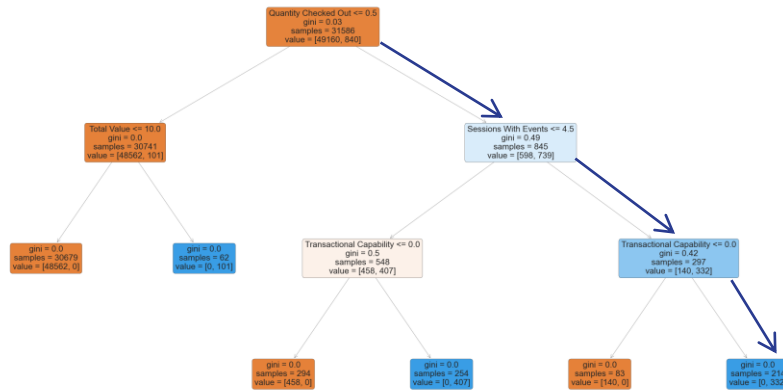
(Total value for the next split: 609)

Node 3: Cart to detail rate > 0 (Right split, so it is False. Hence, symbol changes from < to >)

Left Split: 0; gini:0.0, **Right split**: 609 - majority positive class; gini:0.0– Final Leaf Node

✓ Buyer/ Non-buyer ratio is **100**.

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b. Target DXI Decision Tree

Target DXI from correlation curve for 20% increase in target outcome of Buyers is **0.126**.

Interpretation

Node 1: Quantity Checked Out > 1 (Number of buyers in the parent node: 840).

Left split: 101; gini:0.0, **Right split: 739– majority positive class; gini:0.49**.

(Total value for the next split: 739)

Node 2: Sessions with Events >= 4

Left split: 407; gini:0.5, **Right split: 332– majority positive class; gini:0.42**.

(Total value for the next split: 332)

Node 3: Transactional Capabilities > 0.0

Left Split: 0; gini:0.0, **Right split: 332 - majority positive class; gini:0.0– Final Leaf Node**

- ✓ Buyer/ Non-buyer ratio is **332.**

Conclusion

1. Visitors whose DXI score is higher than current average DXI score of **0.07** have **1739 %** higher Buyer conversion than overall Buyer conversion average of all users.

2. Target **20**% increase in number of Buyers is achievable by increasing target SXI to **0.126** from current **0.07** levels. This would result in **1040** number of Buyers up from current 867 levels.

Initial Increase from current levels:
20% or 173.

SXI Impact
Potential

3. Based on the inference from the correlation graph w.r.t SXI there is a **potential 50.29 % compounded increase** if all recommendations in target SXI are completely implemented**.**

Compounding Increase from current levels:
50.29% or 436.

SXI Impact
Potential