ONLINE SHOPPING SITES RESEARCH AND ANALYSIS (FOCUSING ON ONLINE SHOPPING BEHAVIOUR)

INTRODUCTION

Aim

The project aim is to investigate the effects of various features and new technologies on web-based shopping sites and the effects on the behavior of shoppers.

Objects

- To assess the effects of design and functionality factors on customers' experience and their choice of a particular product.
- ► To determine the extent to which emerging technologies have helped in making online shopping better.
- To establish the factors that influence consumer interaction and satisfaction with online shopping websites.
- ► To offer a practical course of action that can be implemented on online shopping sites about the research.

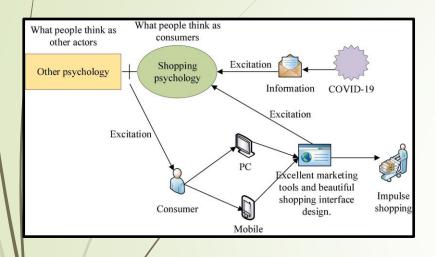
INTRODUCTION

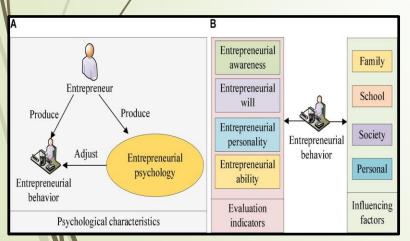
Research Significance

- This research is important as it discusses the facets of or relating to online shopping sites that affect both the business persons and the users.
- These research findings are useful in highlighting strategies that may help in enhancing shopping websites.
- The implications offer insights to improve the overall online strategy, user experience, and customer satisfaction.
- Consumers benefit from the research by gaining insight into how the online shopping environment can be modified to suit their expectations.



Literature Review





Key Drivers of Online Impulse Buying in S-Commerce

- The drivers of "Online Impulse Buying Behavior" in S-commerce need to be clearly understood by both researchers and practitioners.
- It is also highly dependent on the psychological factors of the customer: their emotions, moods, and perceptions.

Development of a Causal-Chain Framework

- These methods have been effective in capturing consumer attitudes, behaviors, and the impact of various stimuli on impulse purchases.
- The broad application of the S-O-R model in these studies underlines how external stimuli, such as marketing cues or social interactions, impact internal consumer states.

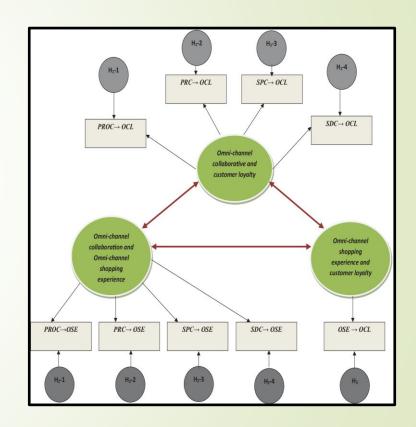
Literature Review Contd..

Impact of Technology-Related Quality and Context-Related Situational Benefits

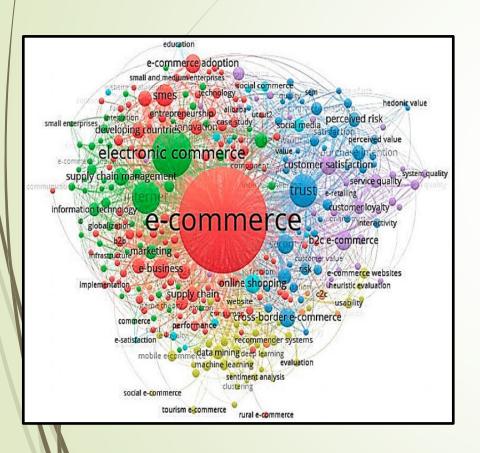
The context-related situational benefits allude to those particular advantages that an e-channel offers based on the situation or context of a consumer.

Perceived Risks of Online Shopping

- This is whereby the consumer receives a particular product with a perceived quality, functionality, and appearance.
- There is one broad problem concerning the security of transactions primarily fraud and identity theft.



Literature Review Contd..



Consumer Marketing Strategy

- E-commerce has significantly transformed how businesses, particularly consumer-oriented firms, market their products.
- E-commerce simply is the process of selling and buying products through the internet, which is coupled with monetary transactions and electronic transfer of data.

Literature Gap

- A majority of the existing research works have considered short-term dynamics, including an abrupt switch to online purchases.
- There is also a lack of comprehensive analysis of the long-term psychological processes that may underlie changes in consumption patterns.

Methodology

Research Philosophy

- The research philosophy applied in the case study that has been presented on online shopping.
- This approach is commonly employed to highlight the relationships and trends that come out of measurable and numerical characteristics.

Research Approach

- The type of research used in the case study on online shopping sites is the deductive type.
- This approach entails placing hypotheses as methods to the theoretical models that have been proposed for theory.

Research Approaches

- Qualitative approach
 is concerned with subjective assessment of attitudes,
 opinions and behaviour.
- Quantitative approach
 involves the generation of data in quantitative form
 which can be subjected to rigorous quantitative analysis
 in a formal and rigid fashion. This approach can be
 further sub-classified into inferential, experimental and
 simulation approaches to research.

Methodology Contd..



Research Strategy

The method employed when conducting case studies on online shopping sites is the exploratory research method combined with the confirmatory research method.

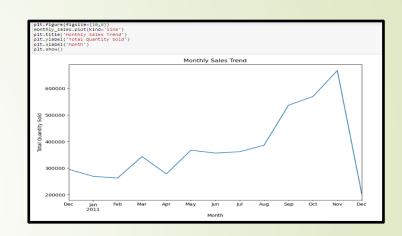
Tools and Techniques Used

- The process of exploring data, engineering features, clustering, and predictive modelling has been carried out using Python in this research.
- Predictive modeling involves applying different ML algorithms, including "Linear Regression" as well as "Logistic Regression Models", a "Random Forest model", as well as "XGBoost Models".

Result and Discussion

```
Data Cleaning
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_excel('Online Retail.xlsx')
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 541909 entries, 0 to 541908
Data columns (total 8 columns):
   Column
                 Non-Null Count
     InvoiceNo
                  541909 non-null
                                  object
                  541909 non-null
     StockCode
                                  object
                 540455 non-null
     Description
                                  object
     Ouantity
                 541909 non-null
                                  int64
     InvoiceDate
                 541909 non-null
                                  datetime64[ns]
     UnitPrice
                 541909 non-null
                                  float64
     CustomerID
                 406829 non-null
    Country
                  541909 non-null object
dtypes: datetime64[ns](1), float64(2), int64(1), object(4)
memory usage: 33.1+ MB
```

```
EDA
# Descriptive statistics for numerical columns
print("Descriptive Statistics:\n", df_cleaned.describe())
             Quantity
                                         InvoiceDate
                                                           UnitPrice
       401604.000000
                                             401604
                                                     401604.000000
          12.183273
                      2011-07-10 12:08:23.848567552
                                                           3.474064
mean
       -80995.000000
                                2010-12-01 08:26:00
                                                           0.000000
min
25%
                                2011-04-06 15:02:00
                                                           1.250000
            2.000000
                                2011-07-29 15:40:00
50%
            5.000000
                                                           1.950000
75%
           12.000000
                                2011-10-20 11:58:30
                                                           3.750000
        80995.000000
                                2011-12-09 12:50:00
                                                       38970.000000
         250.283037
                                                          69.764035
         CustomerID
       401604.000000
count
        15281.160818
min
        12346.000000
25%
        13939.000000
50%
        15145.000000
        16784.000000
        18287.000000
         1714.006089
```



The above figure illustrates the flow for washing an online retail data set where data pre-processing and analysis are carried out in the Pandas program.

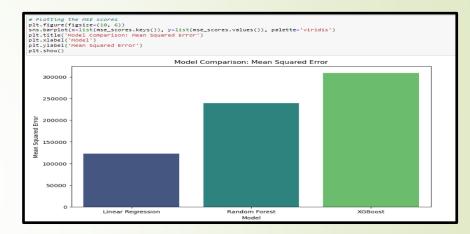
The above figure depicts descriptive values of the cleaned online retail data using the df. describe() method.

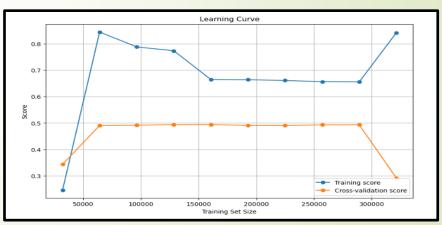
The above figure contains a line chart which represents the monthly sales in the online retail dataset.

Result and Discussion Contd..

Key Findings

- The analysis through online shopping websites reflected that there are very strong implications for understanding consumer behavior within a rapidly evolving digital landscape.
- The research also emphasized the fact that these apparent features, such as the ability to get suggestions and customize products using dynamic pricing.
- The features in *K-means clustering* of customers led to a better understanding of a variety of different purchasing behaviors, which can help guide marketing strategies for businesses.





Evaluation and Conclusion

```
xgb_model = xgb.XGBClassifier(use_label_encoder=False, eval_metric='mlogloss')
xgb_model.fit(X_train, y_train)
y_pred_xgb = xgb_model.predict(X_test)
print("XGBoost Accuracy:", accuracy_score(y_test, y_pred_xgb))
print("Classification Report:\n", classification_report(y_test, y_pred_xgb))
C:\Users\Tech Assignment 02\AppData\Roaming\Python\Python311\site-packages\xgboos
G: C:\buildkite-agent\builds\buildkite-windows-cpu-autoscaling-group-i-0015a69472
Parameters: { "use_label_encoder" } are not used.
  warnings.warn(smsg, UserWarning)
XGBoost Accuracy: 0.99995020002988
Classification Report:
               precision
                            recall
                                    f1-score
                                               support
                                                 2613
                             1.00
                                       1.00
                                                117869
    accuracy
                                                120482
   macro avg
                                                120482
                   1.00
                             1.00
                                       1.00
weighted avg
                                                120482
```

```
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score

# Initialize and train the model
linear_reg = LinearRegression()
linear_reg.fit(X_train, y_train)

# Make predictions
y_pred = linear_reg.predict(X_test)

# Evaluate the model
print("Mean Squared Error:", mean_squared_error(y_test, y_pred))
print("R^2 Score:", r2_score(y_test, y_pred))

Mean Squared Error: 123138.73474023967
R^2 Score: 0.7424052729318672
```

Critical evaluation

- The study conducted about consumer behaviour in online shopping is very helpful about the given factors about the design, functions, A.I and A.R.
- The evaluation process of the approaches, such as EDA and other predicting models, show that those are useful in proving the consumer's patterns.

Summary of the Achievement

- This research achieves its key objective regarding the effects of various attributes and technologies on online shopping behaviour.
- By applying its methodological design effectively, the study might have identified a few critical factors for engagement and satisfaction with e-commerce.

Evaluation and Conclusion Contd..

Research Recommendation

- Based on the findings, some recommendations to e-commerce companies on how to upgrade their online platforms could be given as follows.
- First, these businesses try to enhance the user experience through intuitiveness and personalization features.
- User/experience is the backbone of increasing customer engagement and satisfaction.

Future Work

- Future studies are conducted as longitudinal research with special attention to how consumer behaviour evolves, especially with continually integrated new technologies into e-commerce.
- Studies are urged to expand the dataset of different retailers in different sectors to achieve a better perspective on shopping behaviour.

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Thank You!