**Data Analytics for Marketing: analysing customer interactions for data-driven decisions**

**Introduction**

Marketing and data had always worked together, but it was the expansion of the internet and technology that brought the two areas closer than ever. With the exponential amplification of digital day-to-day activities – that before would be performed just in an offline environment – the volume of data required to manage them was also increased, not just reshaping the way that companies work, but additionally multiplying the sources from where they can obtain meaningful insights to improve their operations.

In regards to Marketing, for example, if before the strategies to attract and retain customers were grounded mostly by surveys and activities reports, with the popularisation of analytics methodologies the game has changed significantly: businesses now have a whole supply of tools to measure their performance, identify customer’s needs and shape their projects properly.

**Problem definition**

Given that data analytics consists in extracting valuable information from data for a more accurate decision-making process, in marketing that can be translated into diving into customers’ preferences, behaviour and market trends to establish the most effective plan in order to keep the business growing.

**Objectives**

This project outlines a study of customer responses to marketing initiatives with the aim of obtaining valuable insights to boost the company’s performance. In line with this proposal, were defined the consecutive objectives:

* Delivery of an overview of the marketing scenario and why it is connected to the data analytics mechanisms;
* Analysis of features like click rates, time spent in the page and campaign channels to predict conversion rates;
* Manipulation of the dataset with methods such as decision trees and xxx, which provide valuable information for both categorical and numerical values;
* Explanation, through theoretic validation, of the choice of methodology adopted in the study;
* Elaboration of marketing strategies for different groups in order to accomplish the business targets.

**Literature review**

In their research connecting marketing with analytics tools, Kozlovskyi et al. (2018) ratifies that the process of development of marketing strategies involves steps like identifying the targets of the business and their importance, defining priorities for the tasks and their order of execution, description of the methodology in the context of the employment and elaboration of solutions in line with the model.

With regard to the methodology adopted, Duarte et al. (2022) affirmed in their study that Machine Learning algorithms have been increasingly used in the development of marketing strategies due to their ability in optimizing the process, saving time and resources. Their article offers a clear and concise description of several techniques that are commonly used in the analysis of customers’ behaviour, including the K-nearest neighbour (KNN) and Decision Tree methods, that were chosen as primary models to support this research.

**Methodology**

As its main purpose, this study explores the application of Machine Learning methods for decision-making principles in marketing, collecting, cleaning and manipulating several types of data such as demographic (age, gender), marketing (conversion rate, number of clicks, modality of the campaign) and customer engagement (time spent, amount of visits in the website), that were positioned as feature variables in correlation with the target variable, the conversion rate, which was used in the dataset as a binary value as a matter of simplification.

The dataset selected as the guide of this project, named *Predict Conversion in Digital Marketing Dataset,* was collected from Kaggle, and it “provides a comprehensive view of customer interactions with digital marketing campaigns” (...) “making it suitable for predictive modeling and analytics in the digital marketing domain.” Kharoua (2024). Shared as an open license material, the directory was published in 2024 under the CC BY 4.0 license, allowing researchers to share and adapt it for any reasons.

**References**

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