Data Driven Customer Segmentation - A Prototype for POWDIENCE

Degree programme: BSc in Industrial Engineering and Management Science | Specialisation: Business Engineering
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Customer segmentation plays a vital role in any marketing strategy. POWDIENCE offers a tool where users can create personas based on real data. The student created a prototype how the existing tool can be extended. Thanks to a Machine Learning algorithm, additional insights about customer data are offered. A wireframe shows how it can be integrated from a user's perspective. The prototype allows users to upload their data and generate customer segments based on the algorithm.

Initial Situation

Customer segmentation supports customer orientation, simplifies customer processing and is a central basis for the development of personas. POWDIENCE is a Start-Up which supports companies in developing personas efficiently. It offers comprehensive data analysis that ensures that the personas created are truly representative. The goal of this bachelor thesis was to extend the existing POWDIENCE tool with Machine Learning functions which help to segment an existing customer basis. A wireframe and a prototype have been developed.

Wireframe

To have a common understanding, a wireframe was made in a first place. The iterative process where the student presented the wireframe, got feedback from POWDIENCE, and then adjusted the wireframe, showed fast results. It was an excellent foundation to then write accordingly the algorithm. The wireframe shows how an algorithm could be implemented into the existing tool and what functions and results were to be expected. The wireframe shows how a user can upload data, adjust attributes, and then let the algorithm generate clusters. These clusters then are visualized in an interactive presentation. Then the user can change the settings until he is satisfied with the results of clustering. Then clusters can be transformed into personas which again can be manually customized like in Figure 1.

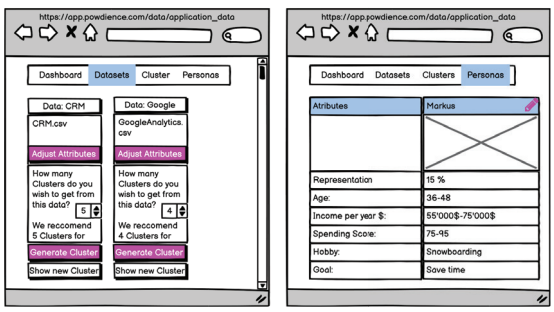

Figure 1 - Wireframe

Cluster Algorithm

The next important aspect of the thesis is the algorithm which is developed by the student. A Jupyter notebook is made. To allow user minimal interactions, the notebook is later transferred into an app. It offers elegant and simple visualizations. The algorithm analyses customer data and divides it into several segments. For this project, the k-means algorithm is used to cluster the data. These clusters are visualized user-friendly and intuitive, so a layperson understands how the segments differ from each other like in Figure 2.

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Conclusion

The thesis confirms the usability of cluster algorithm for customer segmentation. The prototype provides first insights and presents which added values are given by Machine Learning segmentation. However, the prototype only offers a few functionalities which can be further developed and tested. As a further step it is recommended to finish the prototype and test it with existing or potential users.

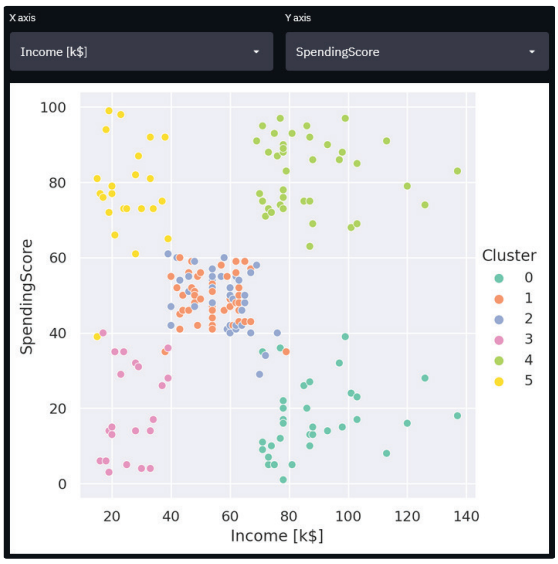

Figure 2 - Cluster visualization