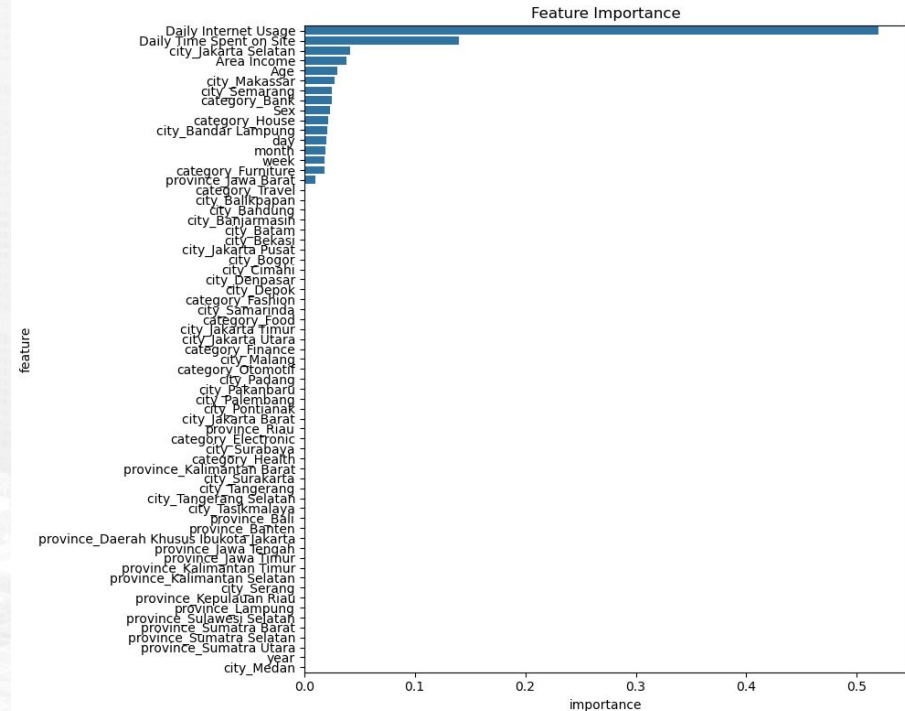# Feature Importance

From the graph, it can be seen that '**Daily Internet Usage**' and '**Daily Time Spent on Site**' are the top two features that influence customers to click on the ads. While both also correlated, both features are retained as they are not redundant (r=.52) and different features based on domain knowledge. Hence, we can accept the two features influencing the target.

For more information, see jupyter notebook here

Key Insights from EDA and Feature Importance

- User behavior, particularly internet usage and time spent on site, strongly influences ad engagement.
- Geographic location plays a significant role in predicting ad interactions.
- Economic factors, such as area income, affect how users respond to advertisements.
- Some product or service categories are more effective at driving ad clicks than others.
- Demographic factors have less impact on ad engagement than initially thought.
- The timing of ad delivery, including day and month, can influence user response.
- Regional differences in ad engagement suggest the need for localized strategies.
- Broad targeting approaches may be more effective than highly specific ones for many features.
- There's potential for effective user segmentation based on behavior, location, and economic factors.
- Ongoing data analysis is crucial to refine and adapt marketing strategies over time.

For more information, see jupyter notebook here

Business Recommendation & Simulation

Insights	Recommendations	Example
Optimize for Internet Usage and Site Engagement	Focus on strategies that target users based on their internet usage patterns and time spent on site.	- Develop personalized ad experiences based on users' daily internet usage - Create content and features that encourage longer site visits - Implement a tiered engagement program rewarding users for time spent on site
Geotargeting with focus on Jakarta Selatan	Prioritize ad campaigns and user acquisition efforts in Jakarta Selatan while maintaining presence in other key cities.	- Create location-specific campaigns for Jakarta Selatan - Analyze user behavior in Jakarta Selatan to identify unique characteristics *(data team)* - Use insights from Jakarta Selatan to improve strategies in other cities
Income-based targeting	Develop strategies that consider users' area income levels.	- Segment audiences based on area income data - Create tailored ad content and offers for different income segments - Test pricing strategies that align with various income levels

For more information, see jupyter notebook here

Business Recommendation & Simulation

Insights	Recommendations	Example
City-specific strategies	Develop targeted approaches for high-importance cities like Makassar and Semarang.	- Conduct in-depth analysis of user behavior in these cities *(data team)* - Create city-specific marketing campaigns and promotions - Establish local partnerships to increase brand presence in these areas
Category optimization	Focus on key categories like Banking and House, while also maintaining a diverse category presence.	- Allocate more resources to creating compelling ads for 'Bank' and 'House' categories - Analyze user journey and conversion paths in these top categories *(data team)* - Develop cross-category promotion strategies to leverage high-performing categories
Demographic considerations	While age doesn't appear as a top feature, consider sex as a relevant factor in ad targeting.	- Develop gender-specific ad creatives and messaging - Analyze and optimize ad performance separately for different genders - Test gender-neutral campaigns to compare effectiveness

For more information, see jupyter notebook here

Business Recommendation & Simulation

Insights	Recommendations	Example
Temporal targeting	Consider day and month in ad scheduling and campaign planning.	- Analyze ad performance patterns by day of the week and month *(data team)* - Develop day-specific or seasonal ad campaigns - Optimize ad delivery times based on when users are most likely to engage
Continuous monitoring and adaptation *(data team)*	Regularly reassess feature importance and adjust strategies accordingly.	- Implement a system for ongoing analysis of feature importance - Establish a process for quickly adapting marketing strategies based on changing feature importance - Conduct A/B tests to validate the impact of strategy changes based on feature importance

For more information, see jupyter notebook here

Simulation

- Assumption for cost and revenue has been made with as such
  - marketing_cost_per_user = 5000 (Assumed Rp 5000 per user)
  - revenue_per_conversion = 50000 (Assumed Rp 50000 per user conversion)

	Before Modeling	After Modeling	Changes
Conversions	103/199	100/103	**+ 45.33%**
Cost	199*Rp5000	103*Rp5000	**- Rp480.000**
Revenue	103*Rp50000	100*Rp50000	**- Rp150.000**
Profit	Rp4.155.000	Rp4.485.000	**+ Rp330.000**

For more information, see jupyter notebook here

Summary

- **Behavior-driven targeting is crucial**: The most influential factors in ad engagement are user behaviors, specifically daily internet usage and time spent on the site. This suggests that personalized, behavior-based ad strategies could be highly effective.
- **Geographic and economic factors matter**: Location-based targeting, especially in key cities like Jakarta Selatan, Makassar, and Semarang, combined with income-based segmentation, can significantly improve ad performance.
- **Category-specific optimization is important**: Focusing on high-performing categories like 'Bank' and 'House' while maintaining a diverse presence can enhance overall ad effectiveness.
- **Simulation shows potential for improvement**: The modeling approach demonstrated a **45.33% increase in conversions**, resulting in an additional profit of Rp330,000. This indicates that data-driven, targeted approaches can lead to tangible financial benefits.

For more information, see jupyter notebook here