From the chi-square test results, it can be concluded that the features "channel\_sales," "has\_gas," and "origin\_up" have a significant correlation with the target feature "churn." Meanwhile, the feature "id" does not show a significant correlation with churn and may not have much influence in predicting the likelihood of customer churn.

Features with negative correlation to "churn":

- cons\_12m: Weak negative correlation indicates that the higher the electricity consumption in the last 12 months, the lower the likelihood of churn.

- cons\_gas\_12m: Weak negative correlation indicates that the higher the gas consumption in the last 12 months, the lower the likelihood of churn.

- cons\_last\_month: Weak negative correlation indicates that the higher the electricity consumption in the last month, the lower the likelihood of churn.

- num\_years\_antig: Moderate negative correlation indicates that the longer a customer has been a client, the lower the likelihood of churn.

Features with positive correlation to "churn":

- forecast\_cons\_12m: Weak positive correlation indicates that the higher the forecasted electricity consumption for the next 12 months, the higher the likelihood of churn.

- forecast\_discount\_energy: Weak positive correlation indicates that the higher the forecasted current discount, the higher the likelihood of churn.

- forecast\_meter\_rent\_12m: Weak positive correlation indicates that the higher the forecasted bill of meter rental for the next 12 months, the higher the likelihood of churn.

- forecast\_price\_energy\_peak: Weak positive correlation indicates that the higher the forecasted energy price during peak period, the higher the likelihood of churn.

- margin\_gross\_pow\_ele: Strong positive correlation indicates that the higher the gross margin on power subscription, the higher the likelihood of churn.

- margin\_net\_pow\_ele: Strong positive correlation indicates that the higher the net margin on power subscription, the higher the likelihood of churn.

- pow\_max: Weak positive correlation indicates that the higher the subscribed power, the higher the likelihood of churn.

Based on the correlation results, the features that have a significant correlation with "churn" are price\_mid\_peak\_var, price\_peak\_fix, and price\_mid\_peak\_fix.

Based on the total available data, there are 13,187 customer records that did not churn (they continued using the company's products or services), and 1,419 customer records that churned (they stopped using the company's products or services).

With this information, the company can realize that approximately 1,419 customers have churned. This indicates a potential issue in customer retention, and the company needs to take steps to reduce churn to avoid losing more customers in the future.

Further analysis and appropriate preventive actions can be taken based on this data to enhance customer satisfaction, identify the reasons for customer churn, and design more effective retention strategies to retain existing customers.

Regarding channel sales, the best recommendation based on this data is to focus on the "foosdfpfkusacimwkcsosbicdxkicaua" and "MISSING" channel sales. The "foosdfpfkusacimwkcsosbicdxkicaua" channel sales have the highest number of non-churning customers, but it also has a significant number of churning customers. Therefore, further analysis is needed to understand the factors causing churn in this channel sales and take appropriate actions to minimize churn.

Similarly, the "MISSING" channel sales also have a high number of non-churning customers, but it also has a significant number of churning customers. Further investigation is needed to understand why this channel sales has a high number of churning customers and take steps to improve customer retention.

An example of implementing these recommendations is to conduct further analysis regarding the factors influencing churn in the "foosdfpfkusacimwkcsosbicdxkicaua" and "MISSING" channel sales. For instance, customer surveys can be conducted to understand their needs and satisfaction, and competitor analysis can be performed to understand why customers choose to switch to competitors. Based on the analysis results, actions can be taken, such as improving service quality, offering special deals to loyal customers, or enhancing communication with customers to minimize churn.

For customers with gas subscriptions, the best recommendation is to pay attention to them as they have a higher churn rate. Steps that can be taken to reduce churn among these customers include improving service quality, implementing customer retention programs, and providing effective communication channels.

Regarding campaign categories, the "kamkkxfxxuwbdslkwifmmcsiusiuosws" campaign attracts many customers, but retention strategies can be enhanced to reduce the churn rate. On the other hand, the "lxidpiddsbxsbosboudacockeimpuepw" campaign has a more significant number of churning customers, indicating the need to reevaluate marketing and retention strategies to enhance customer loyalty from this campaign.

In conclusion, the company can utilize the insights gained from the analysis to devise effective strategies for customer retention, minimize churn, and improve customer satisfaction. By focusing on the right channels, providing excellent service, and implementing targeted retention programs, the company can create a positive impact on customer loyalty and long-term success.