# MARKET RESEARCH: KEY DRIVER ANALYSIS

**CASE STUDY: SURVEY DATA ANALYSIS** | **Digital Electronics Business**

## Objective

Identify and measure key drivers of customer behavior impacting the user satisfaction for a Digital Electronics device.

## Background and Challenges

A mid sized market research consulting company is looking to go beyond the standard pieces of analyses to distinguish what really are the key factors causing satisfaction in usage amongst the consumers of a digital electronics product.

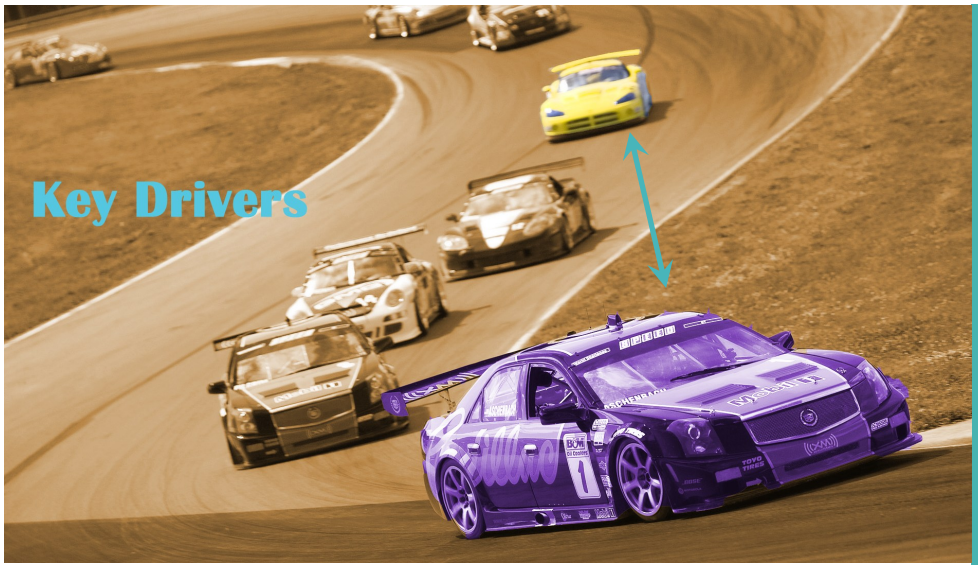
The product is a uniquely positioned item that has been attacked by similar products over the past few years, but has retained its charm amongst the customers due to brand recall and looks. Despite some seasonal drop in the sales, this has largely remained the company's star product with capturing top position in the competitive landscape.

The company is now looking to understand the 'sharing' aspect of the product for other products to mimic and reflect. What leads to the customers being so satisfied and recommending it to potential customers and acquaintances remains a key challenge to understand.

*"Our standard solution has been Max-Diff, we used Key Driver for the first time on your recommendation. And it was bang on. We delivered exactly what our client was after.*

*- Project Manager,*

*Research Excellence, USA*




**How to do Key Driver Analysis**

- **Grasp Seasonality Factors in business**
- **Identify Confounds**
- **Identify Phantom Inventories**

# Our Approach

Total Survey Questions: 36 | Total Respondents: 300+

Analyses Performed: Standardized Multiple Regression in R

**Structuring the Business Problem:** Key factors (or drivers) of satisfaction are to be understood. To structure the study, every variable and the response distribution is studied to look at the landscape of the data we have available with us. Open ended questions are given lower priority than questions with fixed responses. One of the questions is found to fulfill the criteria on which we could center our analysis. It had a 10-point response sheet and only a single answer is to be allowed hence we have overall satisfaction scores available with us on a scale of 1 to 10. :

25. How likely would you be to recommend your current electronic device provider to a friend, family member, or colleague?

| Not at all likely | | | | | Neutral | | | | | Extremely likely |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

This question is chosen as the dependent variable which due to the exhaustive list of factors available with us:.

27. And how would you rate the provider of your current device on each of the following elements of customer service from your **customer support/technical rep**? (Select one response per row)

| | Factors | Not at all satisfied | | | | Extremely satisfied |
|---|---|---|---|---|---|---|
| A | Same day onsite service | 1 | 2 | 3 | 4 | 5 |
| B | Periodic maintenance visits to clean/service the machine | 1 | 2 | 3 | 4 | 5 |
| C | Ability to connect via telephone in a timely manner | 1 | 2 | 3 | 4 | 5 |
| D | Availability of your information/product specs when you call so you don't have to remember/look for them | 1 | 2 | 3 | 4 | 5 |
| E | Knowledge of the machine | 1 | 2 | 3 | 4 | 5 |
| F | Helpfulness | 1 | 2 | 3 | 4 | 5 |
| G | Ability to communicate clearly | 1 | 2 | 3 | 4 | 5 |
| H | Live, hands-on training at time of installation | 1 | 2 | 3 | 4 | 5 |
| I | Provision of customized shortcuts at installation | 1 | 2 | 3 | 4 | 5 |

In all, there are 42 independent variables available with us. Almost all the respondents have filled the survey quite well and only eleven respondents are found to fill the survey with missing values.

**Analysis Method:** Because of the exhaustiveness of the factor variables, we identify the possibility of highly correlating variables within the regression models. We hence use various statistical techniques to cluster similar attributes out of which only one is to be chosen for the final model. Multiple iterations of models are conducted and results discussed with the research team to fix the final set of attributes that were aligning with the business rules. Model is developed and drivers are selected for presentation and discussion with the research team.

(more details in Appendix 1)

| Method | R Square | Adjusted R Square | Residual Standard Error |
|---|---|---|---|
| Standardized Multiple Regression | **0.4640** | 0.4112 | 0.7673 |

# Results and Implementation

| Independent Variables: | | Cofficients (B) | t value | Pr(>\|t\|) | Correlation Rank with Q25 | Relative Importance |
|---|---|---|---|---|---|---|
| Var 1 | Q28S | 0.198 | 3.030 | < 5% | >= 0.4 | 19% |
| Var 2 | Q28C | 0.153 | 2.458 | < 5% | >= 0.4 | 13% |
| Var 3 | Q27G | 0.198 | 2.192 | < 5% | >= 0.4 | 10% |
| Var 4 | Q28T | 0.120 | 2.174 | < 5% | 0.3 - 0.4 | 10% |
| Var 5 | Q26F | 0.194 | 2.080 | < 5% | >= 0.4 | 9% |
| Var 6 | Q26C | 0.146 | 1.531 | < 20% | >= 0.4 | 5% |
| Var 7 | Q27D | 0.097 | 1.289 | < 20% | >= 0.4 | 3% |
| Var 8 | Q26A | 0.088 | 1.087 | - | >= 0.4 | 2% |
| Var 9 | Q27C | -0.022 | -0.335 | - | >= 0.4 | 0% |
| Var 10 | Q26E | -0.023 | -0.274 | - | >= 0.4 | 0% |
| Var 11 | Q27F | -0.012 | -0.128 | - | >= 0.4 | 0% |
| Var 12 | Q27E | -0.011 | -0.122 | - | >= 0.4 | 0% |

Using the analysis, we are able to identify key drivers of satisfaction amongst the consumers using the following rules:

1. **High Drivers -** which have highest 'Relative Importance' & Significant p- values. Rest of the Drivers sorted on their correlation with the 'Overall satisfaction Score (Q25)'.

2. **Medium Drivers** – Correlation with 'Overall Satisfaction Score (Q25)' is greater than 0.3 & 'Relative Importance' less than 5%.

3. **Low Drivers** - Correlation with 'Overall Satisfaction Score (Q25)' less than 0.3 & 'Relative Importance' less than 2%.

## Contact Us

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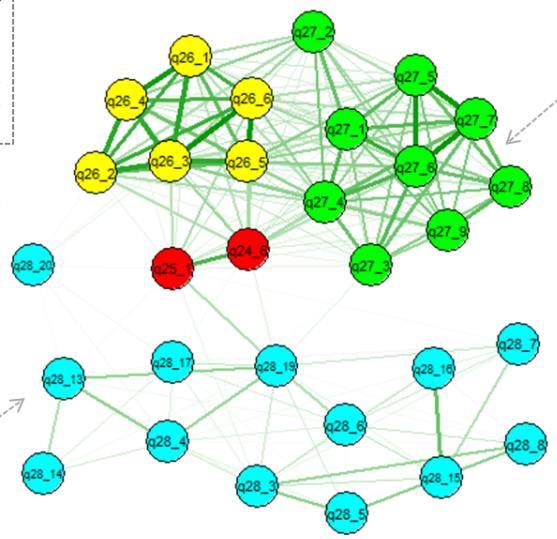
# Network Visualization- Key Driver Analysis

**Plot**: A network visualization of the correlations among two Dependent Variables (Q24F/Q25: in red) and 28 Dependent Variables (7 Variables in Q28 not considered due to missing values).

- Q24F,25: Dependent Variables
- Q26: 6 Variables
- Q27: 9 Variables
- Q28: 13 Variables

Nodes (Variables)




**Lines between the nodes are the Correlations** – The greater the Correlation between two variables, thicker the line between their Nodes

**Technique used - Spring Layout:** More highly correlated variables are placed near each other and away from less or negatively correlated variables.

**Q26|Q27:** Variables within the category are **highly correlated** to one another leading to **Multicollinearity**.

# Appendix 1:

| Appendix | Variables Select for Q26: | Variables Select for Q27 | Variables Select for Q28 | R Square | Comments: |
|---|---|---|---|---|---|
| Result 0 | Q26A-F | Q27A-I | Q28C-H,M-Q,S-T | 0.4640 | Many betas are negative. |
| Result a | Q26A, Q26F | Q27A-I | Q28C-H,M-Q,S-T | 0.4398 | Negative Betas in Q26 Removed |
| Result b | Q26A-F | Q27B,Q27D,Q27G,Q27I | Q28C-H,M-Q,S-T | 0.4601 | Negative Betas in Q27 Removed |
| Result a-b | Q26A, Q26F | Q27B,Q27D,Q27G,Q27I | Q28C-H,M-Q,S-T | 0.4529 | Negative Betas in Q26 & Q27 Removed |
| Result a-b-c | Q26A, Q26F | Q27D,Q27G,Q27I | Q28C,Q28E,Q28F,Q28M,Q28S,Q28T | 0.4433 | Negative Betas in Q26,Q27,Q28 Removed |

**Scenario Testing:**

Regression Models run for various sets of predictor variables just to check performance of interdependent variables on our base model (Result 0 above).

Result a: 2 Variables for Q26, all variables retained for Q27,Q28.

Result b: 4 variables for Q27, all variables retained for Q26,Q28.

Result a-b: 2 variables for Q26, 4 variables for Q27, all variables for Q28.

Result a-b-c: 2 variables for Q26, 3 variables for Q27, 6 variables for Q28.

Our Negative Betas in the model got eliminated when count of predictors = 2+3+6 = 11 for small reduction in the R square value (0.4640 to 0.4433).