

# SOUND RESEARCH

## HOW SONOS BOOSTED ITS GROWTH TRAJECTORY BY LEVERAGING ADVANCED CAUSAL ANALYTICS

David Feick • Frank Buckler

### PREFACE

Identifying key success drivers for brand consideration is a main playing field of customer insight research. Sonos was eager to sharpen its understanding of in the wireless speaker market in general and specifically towards the Sonos brand. This research was important for Sonos as it delivered key insights that drove further brand momentum. Sonos was able to gain knowledge in causal relationships that were previously hidden in survey data. Furthermore, it showcased the impact that explorative causal modeling can have. The findings resulted in further applications of this methodology in topics such as customer loyalty modeling, copy test driver modeling, sales performance modeling, and marketing mix modeling.

### INTRODUCTION

Sonos is a newer brand in the speaker market and created a new category of wireless multi-room audio systems. The company has been highly successful building the market and increasing its market share. In the past, the company focused primarily on raising awareness rather than focusing communications on improving associations with brand identity, knowledge, or consideration. As awareness and market share rose, there were multiple signals that suggested that Sonos needed to evolve its communications focus.

FIGURE 1. SCREENSHOT OF A SONOS TV AD IN 2014 FOCUSING ON AWARENESS



### THE BUSINESS QUESTIONS

We started with the simple business question: What drives brand consideration in the wireless speaker market in general and for the Sonos brand, specifically? The objective was to gain knowledge that would inform marketing strategies, communications, and media mix.

Specifically, we wanted to discover which consumer experiences Sonos should focus on at each phase of the purchase funnel in order to promote successful marketing. How do the potential drivers differ among customer segments? What are the direct and indirect influences on the brand, and how does Sonos quantify those influences? What is the role of PR and word of mouth in shaping brand preference? What is the role of various touch points, especially TV and digital, in driving brand purchase intention?

**RESEARCH BACKGROUND**

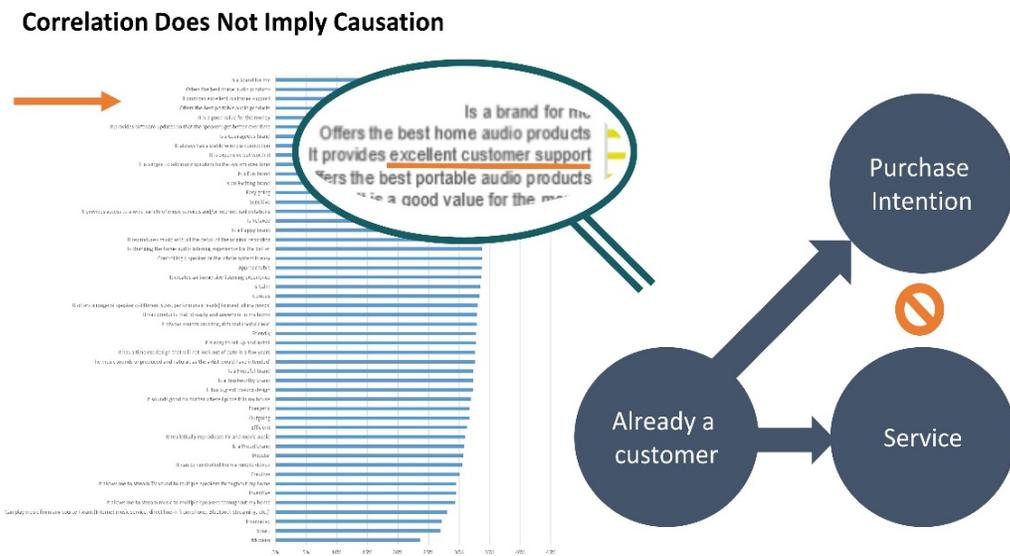
In past research at Sonos, key drivers for success were researched using simple correlation analysis. Previous attempts applying multivariate key driver analyses were unfruitful. The results lacked face validity and oversimplified the task. We knew we needed to up our game.

**METHODOLOGY: UNIVERSAL STRUCTURE MODELING**

Our approach was to use existing brand tracker survey data across a period of three months in USA, France, UK, Netherlands, and Germany. Data included 13,300 brand evaluations which included evaluations of the Sonos brand 1,800 times. To identify key brand drivers, it is necessary to overcome at least three core methodological challenges:

1. The analytical focus should be on *causation not just correlation*. Thus correlation analysis and other comparable forms, such as comparing profiles of Sonos-lovers vs. haters, must be interpreted with caution. Correlation can be caused by a third factor or an indirect causal path. Confusing correlation with causation can lead to drawing the wrong conclusions. The example in figure 2 shows that the assessments of customer service highly correlate with purchase intention, although later analysis showed that it had no significant causal impact on the outcome.

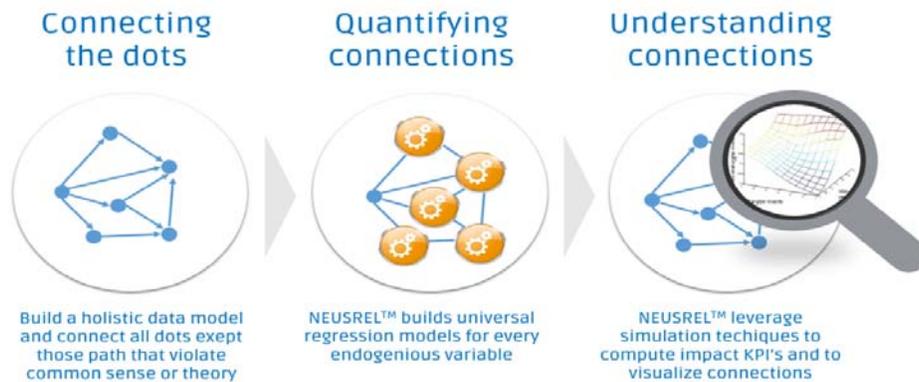
**FIGURE 2. EXAMPLE FROM DATA THAT ILLUSTRATE THAT CORRELATION SHOULD NOT BE INTERPRETED**



2. The analyses must account for *indirect effects*. We learned that factors influence each other – with increasing sound quality, value for money increases as well. The impact of sound quality, for example, can only be quantified accurately when we account for indirect effects. Interestingly, this in turn prohibits the use of any conventional key driver analysis (regression, econometric modeling, etc.) as these analytical procedures only measure direct effects rather than total effects.
3. Through past experience, we knew that key driver analyses do not yield satisfactory explanatory power. Research indicates that this is due to one reason: relationships among key drivers are often *nonlinear* and each driver’s impact strength is frequently *moderated* by other factors. Worse even, those variable *properties are rarely known upfront* and thus cannot be modeled with a standard parametric modeling approach.

These three challenges suggest choosing a new analytical approach called “Universal Structure Modeling” (USM) (Buckler, Hennig-Thurau 2008, 2001). USM follows a semiparametric approach by modeling relationships deploying a Bayesian Neural Network. Mathematicians refer to those algorithms as “universal function approximators”. For every endogenous variable in a path model, USM estimates the “universal function”. By themselves, these universal functions are “black boxes”. That is why USM uses specialized simulation techniques that extract the unique effect of each factor. USM computes direct and total effect strengths of each factor and visualizes complex relationships among factors.

FIGURE 3. THE ANALYSIS PROCESS OF USM

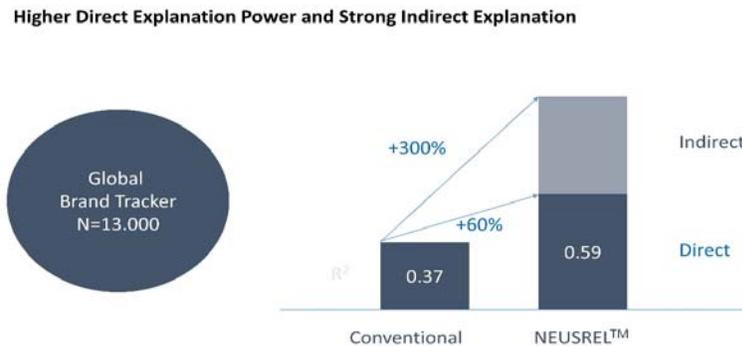


Overall, we found that USM delivers three valuable benefits: First, it provides unexpected results that resonate with intuition, as data is modeled more holistically and realistically. Second, it provides insights that are not possible with conventional methods, as it evaluates complex hypothesis that were not pre-specified. Third, we found that the yielded results were more widely accepted amongst a company’s research professionals as the approach does not only make intuitive sense, but also delivers increased model fit.

Specifically, USM explained Sonos’ brand consideration by  $R^2=0.59$ , while linear approaches only achieved  $R^2=0.37$ . Even using cross-validation the same lift was achieved with  $R^2=0.55/0.34$ . In short, USM was able to explain much better why customers would choose the Sonos brand.

The impact strength of factors is expressed in a measure called “Total Avg. Simulated Effect”. By simulation, it measures how outcomes change when a factor is changing. Those direct effects are in a second step aggregated from direct to total impacts.

FIGURE 4. EXPLANATION POWER OF USM VS. LINEAR REGRESSION



**THE MODEL**

The modeling process starts with building a usable data matrix. The standard process is to take existing data (or to collect future data) and find variables for four important categories. This framework is derived from the SORC scheme developed in psychological science that ensures we build holistic models:

1. **Stimulus:** Which variables measure things we can directly control, and which are therefore mostly independent from other influences? In this study the touchpoint contact variables come under this category.
2. **Object Conditions:** Which variable measures things that influence outcomes but are out of our short-term control? Demographics of the respondents, the assessed brands, did the respondent already own the brand, and so forth fall under this category
3. **Response:** Which variables describe how target customers respond to stimuli and conditions? These, amongst other things, include brand attribute assessments and other attitudinal measurements.

4. *Consequence*: Which variables measure outcomes do you want to influence? Here we typically have the decision funnel starting at awareness, through to consideration to finally purchase intent. Most recent approaches tend to also measure more “Customer Decision Journey Moments” such as Evaluation and Trial.

Once all available data has been collected, we define an initial model. Unlike conventional approaches to structure modeling or path modeling that only allow paths that are backed by well understood hypothesis, USM turns the logic around. A priori, we only *eliminate* paths that common sense and theory *cannot* support. With this mindset, we assume, for instance, touchpoints to influence attribute assessments and not the other way around, or we assume demographics to influence consequences and not the other way around.

This being done it is now the time for the NEUSREL software to model and quantify impact measures for paths, to extract graphs that illustrate nonlinear relations and interactions. Furthermore, the software computes the total impact of drives towards outcomes by measuring the impact of direct paths and indirect paths – routes where a driver influences another driver that has a direct impact.

## THE RESULTS

The USM methodology delivers a rich and detailed view on the network of cause and effect. It requires some experience to boil everything down to the main findings and key take-aways. Figure 5 illustrates this relationship. Leadership Personality has a negative, direct impact on purchase intention but a positive, indirect impact on brand identification. The total impact is neutral – not negative. However, this personality trait seems to have two sided to the coin – a share that generates identification and another share that negatively influence future purchase.

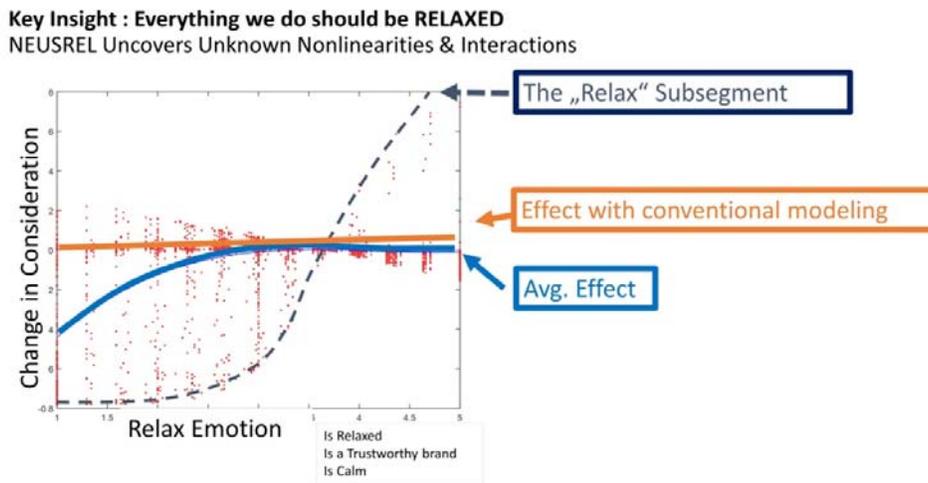
FIGURE 5. EXAMPLE OF FINDING WITH DIRECT AND INDIRECT RESULTS



## Key insights

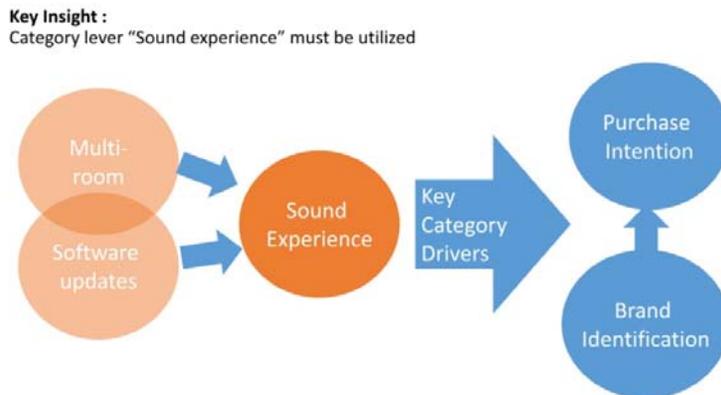
1. At Sonos many believed that the emotional value of the brand is excitement and enjoyment. However, we learned that a “feeling relaxed” emotion is a key driver of brand consideration. For example, the context of using Sonos speakers is linked to relaxing at home rather than throwing a party. The simulated impact of the latent variable “Relax” further shows nonlinear features. It is not necessary to communicate “super-relaxation” – just a good pinch of it will suffice. Also an interaction was detected: a certain subgroup of respondents strongly resonated with “super-relaxation”. (See figure 6.)

FIGURE 6. EXAMPLE OF AN UNPROPOSED NONLINEARITY AND INTERACTION THAT USM DISCOVERED



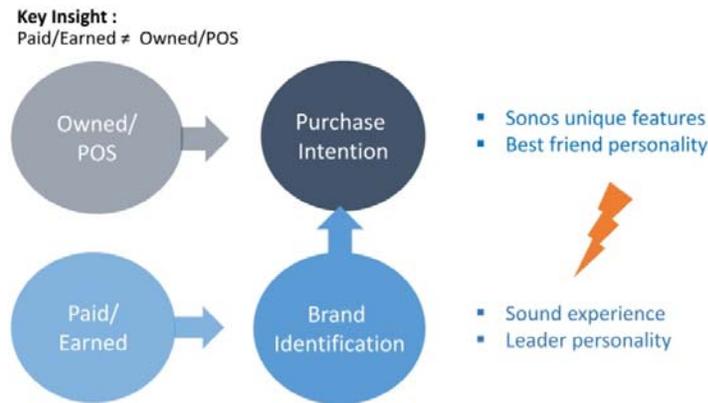
- At Sonos many focused on ease-of-use and simplicity, which was assumed to be a core reason for Sonos’ success. However, we learned that sound experience is still the most important driver of home audio brand consideration and Sonos should also look for opportunities to communicate its premium position in this area. However the causal model showed that the unique Sonos features were driving sound experience perception. The takeaway was that communications should use Sonos’ differentiating features as a means of illustrating that Sonos delivers a unique sound experience.

FIGURE 6. CAUSAL NETWORK SHOWED THAT SONOS’ UNIQUE FEATURES CAN BE USED TO REASON WHY THE BRAND DELIVERS GREAT SOUND EXPERIENCE



- At Sonos there has always been a strong focus on raising awareness. We learned that in the actual market phase it is highly effective to focus on creating Brand Identification - which will consequently promote brand consideration and purchase intent.
- At Sonos there has been the belief – which most other brands share – that a single positioning will be functional across all touchpoints and customer journey moments. We learned that creating brand identification, which is heavily influenced by paid media, is driven by a very different set of success factors than purchase intent, which is heavily influence by owned media and at point of sale. This is illustrated in figure 7.

FIGURE 7. DIFFERENT TARGET OUTCOMES HAVE DIFFERENT SUCCESS FACTORS



### BUSINESS RESULTS

We learned that a “feeling relaxed” emotion is a main driver of Sonos’ brand consideration. The new ad campaign reinforced Sonos’ ability to communicate feelings of comfort and relaxation at home.

We learned that Sonos needs a stronger focus on “sound experience”. A new high-end speaker – New PLAY:5 – has been recently introduced to capture a premium quality sound position in the wireless speaker market. The new Sonos’ communication is now trying to reason that the tangible Sonos advantages (esp. multi-room feature, software updates, calibration) translate into a unique and unmatched sound experience.

FIGURE 8. SCREENSHOT OF A 2016 TV AD



The advanced causal modeling described in this paper was successful in shaping marketing decisions and strategies. There is already some indication that the applied analytical strategies will be a cornerstone of improving Sonos’ commercial effectiveness, and will ultimately result in growth of the Sonos brand.

### IMPLICATIONS

This research was important for Sonos as it delivered key insights that drove further brand momentum. Sonos was able to gain knowledge in causal relationships that were hidden in survey data. Furthermore, it show-cased the impact that explorative causal modeling can have. The findings resulted in further applications of this methodology in fields such as:

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- *Customer loyalty modeling*: How to gain loyal customers and how to drive further cross and upselling?
  - *Copy test driver modeling*: Extent copy test surveys and research which properties of a creative drive consideration and purchase intention.
  - *Sales performance modeling*: Build a database on shop level to research the impact of POS display (and where to place it), sales force visits, trainings or POS demonstration events.
  - *Marketing mix modeling*: Explore interrelation of paid, owned and earned media and quantify short, mid and long-term impact of marketing dollars on brand equity and sales.

The presented findings are important to the market research community as it illustrates the untapped potential of advanced causal modeling using standard survey datasets.

## REFERENCES

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## THE AUTHORS

David Feick is Global Director, Consumer Insights, Sonos, United States.

Frank Buckler is CEO & Founder, Success Drivers, United States/Germany.