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CONCEPTUALIZING AND MEASURING THE MUSIC OF SATISFACTION USING ASSOCIATIVE MAPS

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Abstract

The aim of this paper is to propose, from a highly pragmatic perspective, a simple but useful method for finding out what satisfaction really means for consumers, building an instrument derived from individual perceptions. In order to achieve this aim, we will conceptualize satisfaction as an identifiable musical chord, which sounds different for each individual. In addition, we will explain why the combination of the first-person data approach and associative priming should be used to generate the notes of these chords. This information can then be summarized in a consensus associative map, which represents a recognizable chord for each individual customer. Finally, the elements of this associative map can be employed by managers and executives to periodically monitor the service provided. Consequently, a satisfaction instrument can be generated for each specific research context, taking into account the complexity of individual perceptions.

Keywords: Satisfaction, Measurement, Associative Maps, Associative Priming, Music

1. Introduction

Measuring customer satisfaction has been, without doubt, one of the main concerns of marketing and management researchers and practitioners over the last few decades. The importance of this research topic is seen, for example, when consulting the vast literature generated in the health service sector in particular, with more than 87,000 results appearing in PubMed.

Oliver (1997) proposed a widely adopted definition of satisfaction, as a consumer's fulfillment response - a judgment that a feature of a product or service, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment. Fournier and Mick (1999), however, indicated that satisfaction is a dynamic context-dependent process which depends on the consumers' motivations and cultural values; two consumers can claim to be highly satisfied with a product or service received and yet differ widely in their concept of what satisfaction means. Satisfaction can be considered as an attitude, but also as an emotion (Martin *et al.* 2008), something that is felt when evaluating an experience, as well as a subjective perception.

How to measure satisfaction remains today a highly controversial issue, due to the complexity of the concept and the different options proposed for measuring it. And it is also a common dilemma within individual research fields, such as health (Gill and Lesley, 2009), sports (Kim *et al.* 2014), and tourism (Sanchez-Rebull *et al.* 2018).

The aim of this paper is to propose, from a highly pragmatic perspective, a simple but useful method for finding out what satisfaction really means for consumers, building an instrument

derived from individual perceptions. In order to achieve this aim, we will conceptualize satisfaction as an identifiable musical chord, which sounds different for each individual. In addition, we will explain why the combination of the first-person data approach and associative priming should be used to generate the notes of these chords. This information can then be summarized in a consensus associative map, which represents a recognizable chord for each individual customer. Finally, the elements of this associative map can be employed by managers and executives to periodically monitor the service provided. Consequently, a satisfaction instrument can be generated for each specific research context, taking into account the complexity of individual perceptions.

The contribution of this research is twofold: (1) It justifies why attribute satisfaction and overall satisfaction are different entities which should not be used in the same model, employing an analogy with musical sounds; (2) it proposes how to generate a context-dependent satisfaction instrument employing disparate techniques, such as associate priming and associative maps.

2. Satisfaction Notes

We propose that a personal attitude x toward a product or service, ranging from an equilibrium point to a maximum and a minimum, can be modeled as a sinusoidal wave, which depicts a simple harmonic motion. The general equation for this wave is (1):

$$x(t) = Ae^{\gamma t} sin(\omega t + \varphi) \quad (1)$$

where *A* is the amplitude of the "motion", so that the values of attitude range from +*A* and –*A*. The angular frequency is $\omega = 2\pi f$, where f is the frequency, t is time and φ is the phase of the wave. The wave can decay with time, so the factor γ represents the exponential attenuation (or growth) of the wave, according to the sign of γ. A general explanation of this type of modeling can be found in French (2003). I will employ the analogy of sound waves, a type of mechanical wave that fulfills the requirements of equation (1). Musical notes are an example of this type of wave.

Therefore, the evolution of an attitude depends on time, and lies within the limits of the scale considered for measuring it. It is important to specify the interpretation of time here; attitude evolves with time, but this does not mean that this happens periodically (in the way that the rigorous interpretation of a physical wave is). Here we only use time to illustrate that an attitude can be above or below its mean value (the equilibrium point) depending on the moment of time at which it is measured. The equilibrium point often distinguishes positive from negative attitudes.

At this point, we are modelling the attitude of a consumer towards a specific attribute which is evaluated when forming a global satisfaction judgement. For example, in a service context, this attitude could be the satisfaction with the personal interaction with sellers. If we measure satisfaction at a specific moment of time, this satisfaction could be positive or negative, and its amplitude could also depend on the γ factor. If $\gamma = 0$, then satisfaction with the sellers would always lie between the same range of motion. If $\gamma \neq 0$, then satisfaction with the sellers will depend on the changes of expectations and experiences of the consumer in other similar services or in further interactions with the same service. For example, if we ask a customer to evaluate the satisfaction with a travel agency one week after a transaction, the degree of satisfaction could be high. But if we ask the same customer 10 weeks later, the degree of satisfaction expressed may have varied as a consequence of, for example, the customer's experience at another travel agency a few days or weeks earlier. If this second experience is highly satisfactory, then the first satisfaction judgment could be attenuated: $\gamma < 0$. However, if the second experience is unsatisfactory, then the first satisfaction judgment could be boosted: $\gamma > 0$.

Consequently, we can theoretically model attributes that individuals use to form their global satisfaction judgements. The attributes differ in the value of ω. Therefore, each attribute has a specific frequency, in the same way that each musical note has its own frequency. Figure 1 represents the satisfaction waves of five distinct attributes for two individual consumers. Each attribute differs in its frequency ω, but may also differ in its amplitude and its attenuation. The specification of the equations has been chosen only for illustrative purposes.

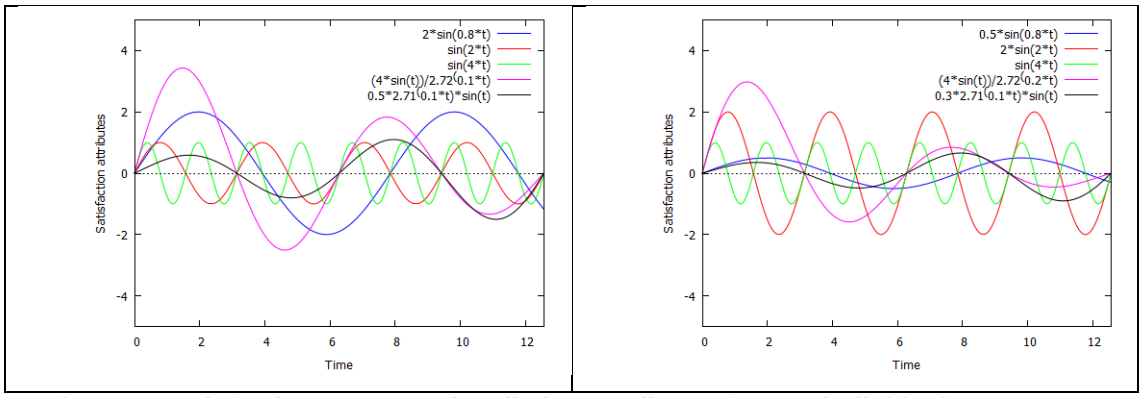

Figure 1. Satisfaction waves of five distinct attributes for two individual consumers

Therefore, we have depicted certain features of the definitions of Oliver (1997) and Fournier and Mick (1999): (1) Satisfaction is a judgement reflecting a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment; (2) satisfaction is a dynamic context-dependent process, which depends on the consumers' motivations and cultural values. The first feature is represented by the changes in the amplitude of the wave from its equilibrium point, and the second feature is represented by the dependence of time and the decay (or growth) factor.

Sinusoidal waves should not be interpreted literally, as periodic variation in satisfaction is not necessarily expected. However, sinusoidal waves illustrate the interesting feature of representing attitudes above and below a middle point, and the possible modulation of amplitude with time, similar to musical sounds. Both features have to be considered together in every satisfaction study, but the second one is often forgotten in cross-sectional research. In addition, the amplitudes of waves represent disparate intensities of attributes, providing the importance or relevance in the perception of each factor of satisfaction. It is true that there are studies trying to obtain a hierarchy of relevance of such attributes (sometimes referred as quality attributes) using their statistical links to overall satisfaction (e.g. Andaleeb and Conway, 2006; Arrazola-Vacas *et al.* 2015; Chen and Chen, 2010; Chi and Qu, 2009; Jones *et al.* 2017; Matzler *et al.* 2004), but all these approaches have important limitations as we will further explain.

However, we have only shown specific satisfaction judgements about attributes. Overall satisfaction is a more complex emotion.

3. Satisfaction Chords

Overall satisfaction judgements are fully or partially based on the evaluation of specific attributes. Satisfaction is formed by the evaluation of different attributes which may be correlated or not. For example, satisfaction with sellers can be correlated or not with satisfaction with facilities. From this perspective, overall satisfaction judgments are clearly formative instead of reflective (see Bollen and Diamantopoulus, 2015).

For each individual, overall satisfaction is the sum of the waves representing specific attributes. Therefore, overall satisfaction is another separate wave, with its own frequency. The perceived emotion of this wave is different for the sum of the perceived emotion of each separate attribute. Following the analogy of musical waves, each satisfaction attribute represents a note, but overall satisfaction represents a chord. The emotion felt after listening to one note after another is very different from listening to all the notes played at once (the chord). And this is what overall satisfaction means.

Each consumer listens to his or her own chord because the notes may be different. One consumer may employ 5 attributes (notes) to form the chord, but another may employ only 3. In addition, the features of each note for each consumer may be different (divergent amplitude and attenuation). The weight of each attribute is represented by its amplitude, i.e. the intensity of each note forming the chord may vary. Moreover, the notes can also be different (i.e. of a different

frequency), because some consumers may evaluate specific attributes that others do not consider.

Consequently, overall satisfaction is a chord, formed of individual notes played at the same time. Figure 2 represents the chords for the consumers of Figure 1. The resultant waves have been created by summing the individual waves of attributes (French, 2003), using the Maxima software. Although all the attributes had the same frequency for both consumers, amplitudes and attenuation were disparate, so that the final waves were clearly different.

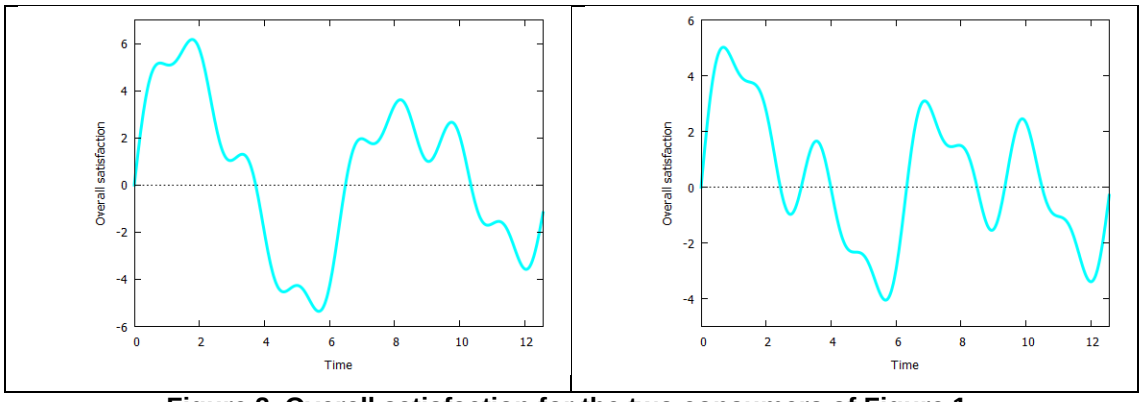

Figure 2. Overall satisfaction for the two consumers of Figure 1.

Figure 2 illustrates some interesting features: (1) overall satisfaction may be more intense (positive or negative) than the separate attributes, i.e. although a customer may be extremely satisfied in all the attributes, the global feeling of satisfaction could be even more intense; (2) although two consumers employ the same attributes to form the satisfaction judgement, the overall degree of satisfaction is different due to the amplitudes (weights) of each attribute; (3) since a precise value of overall satisfaction could be the same for two individual consumers, the way this value is obtained can be very different, i.e. this point could be reached from two different sets of attributes; and (4) if the satisfaction attributes considered were different between two consumers, then overall satisfaction would obviously be different, because of the disparate interaction of different frequencies.

Therefore, trying to measure overall satisfaction from individual attributes can yield misleading results because the whole is more than the sum of its parts (Franke, 1997). The halo effect may also distort the specific assessment of individual attributes once the overall satisfaction judgment has been formed (Beckwith and Lehmann, 1975).

Consequently, and from an operational viewpoint, we should distinguish between overall satisfaction and attribute satisfaction. The overall measure should be used for analyzing causal models, considering satisfaction as a mediating variable (e.g. Martinez and Martinez, 2008). This specific measure could be operationalized using single indicators (see Hayduk and Litvay, 2012). On the other hand, specific attributes could be employed to monitor management actions in order to improve the service quality provided and the experience of the customer.

In order to achieve this second aim, the relevant task is now concerned with developing measurement instruments that properly reflect the notes which form the satisfaction chord of each customer. And we propose to do so by using associative maps.

4. Identifying the Notes

We need to identify the notes of the satisfaction chord for each individual customer, but we have shown that these notes may vary from one person to another. We have to try to deconstruct overall satisfaction, while accepting that we will lose some information on the way. We will deconstruct chords into notes for each consumer, forming an associative map of satisfaction, where satisfaction is the central node to be linked to specific attributes. The associative maps method will help us achieve this aim (John *et al.* 2006).

The complexity of the elicitation process will depend on the aims and resources of the research, but our proposal is to simplify the process by using associative priming between the framework of the first-person data approach.

In the context of satisfaction measurement, associative priming would involve inviting the participants in the study to indicate the specific concepts of the service that they associate with satisfaction. It is very similar to the widely employed first qualitative stage in the development of measurement instruments, but with the main difference being that we are searching for a consensus among participants by using a step-by-step procedure (e.g. Boger *et al.* 2017).

Associative priming allows us to obtain a hierarchy of attributes ranked by the order in which they are mentioned (Batinic, 2015; Coleman, 1963). There is one specific associative map for each customer. And these attributes are linked to satisfaction with different degrees of intensity, depending on its hierarchy.

We may then use the frequency of mention to select the attributes for the final consensus map, weighting its importance by using some non-linear function. We propose to simplify this task by employing the power law function (2), a ubiquitous characteristic of learning, memory, and sensation (Anderson, 2001):

$$y = ax^{-k} \tag{2}$$

where *y* is the importance of the attribute, *x* is the order of mention, *a* is a constant, and *k* is a parameter which can be estimated. But we can again simplify this expression by using *a*=1 and by fixing *k* to a certain value in order to obtain a non-linear decay of *y* with *x*. At the end of the process, we may achieve a sensibility analysis for assessing the robustness of our assumption by using other values for *k*.

For example, with *k*=1, i.e. using $y = x^{-1}$, if a customer mentions four attributes, the weights would be 1.00, 0.50, 0.33 and 0.25, respectively. In more general terms, if *n* participants mention *j* distinct attributes, with *z* being the total number of mentions, then we will sum the different weights for each attribute *j* over the whole sample *n*, and then divide the total by *z*. Consequently, we will obtain an index of importance for each attribute ranging from 0 to 1.

The next step is to propose a threshold point within this (0,1) interval in order to select the final attributes for the consensus map. Additionally, we can also use the frequency of mentions and/or the number of first order mentions as other criteria in order to select the final attributes. We may use heuristic procedures such as those employed by John *et al.* (2006) or Boger *et al.* (2017), or even a statistical cut point, such as that employed by Martinez (2014).

5. The Final Instrument

We now have the final notes of our chord. If we have done a good job, the chord resulting from these notes should be recognizable for each individual customer, because we have included those notes which carry more weight or intensity. The final chord for a group of customers will maybe lack one or two notes, but these notes will probably be those with less amplitude (less weight), so the final sound of the chord would not be severely affected.

But remember that we should not use the specific attributes (notes) to measure overall satisfaction (the chord). We will do this separately using the single best item. We will employ specific attributes to monitor management actions. Measuring overall satisfaction is much less informative for managers than measuring attributes linked to satisfaction, thus we need such specific attributes to periodically evaluate managerial actions. In addition, we now have the weights of these attributes, so we explicitly know their importance in order to prioritize decision making.

6. Conclusions and Lessons for Practitioners

Measuring satisfaction is probably one of the main concerns in market and management research. The complexity of the concept and the difficulty in measuring it have generated

thousands of papers in the literature of several disciplines. We may never be able to solve the entire puzzle but, in the meantime, we need to continue trying to measure this key variable.

By following an analogy to musical sounds, we have conceptualized satisfaction as an attitude, an emotion that is context dependent and which evolves with time, following the definitions of other authors such as Oliver (1997) and Fournier and Mick (1999). Attribute satisfaction is a note, and overall satisfaction is a chord.

In addition, we have proposed the need to separate overall satisfaction (chord) from attribute satisfaction (notes), because the whole (chord) is different than the sum of its parts (notes). But both types of measurement are highly useful for practitioners because overall satisfaction is necessary in order to test causal models as a mediating variable, and because knowing the perception of attributes is necessary in order to monitor management actions.

Therefore, we need to develop specific instruments for each research context by summarizing the attributes which form satisfaction. We need to know the notes and deconstruct the chord (overall satisfaction) using the method of associative maps. And these notes can be elicited by associative priming, using the first-person data approach and generating individual maps which can be aggregated in a final consensus map. This final map represents the attributes linked to satisfaction and their respective importance, in the same way that notes with different intensities can form chords.

Researchers should not be tempted to assign values for the sinusoidal waves because the notes and chords metaphor is only a framework to better explain the conceptual and operational differences between attribute satisfaction and overall satisfaction. However, this analogy provides a powerful way to recognize such difference, and the starting point to search for ways of eliciting attributes, as our associative priming and associative maps proposal. Associative maps are of growing use in the brand management literature (e.g. Boger *et al.* 2017; John *et al*. 2006) to understand brand image and positioning, but they may also be employed to other attitudinal variables such as satisfaction.

Consequently, applied researchers following this line of reasoning only have to take the following steps:

1. Pick a non-marginal sample of individuals from the target population and elicit the attributes associated with satisfaction by using associative priming.
2. Obtain the weights (importance) of said attributes using a power law function applied to the hierarchy of mentions.
3. Create a consensus map with a threshold in order to select the final attributes and their importance.
4. Implement different measures of attribute satisfaction and overall satisfaction in the final questionnaires. The first should be used to monitor management actions, and the second to test causal models.

And now let's listen to the music of satisfaction!

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