The Role Of Conjoint Surveys In Reasonable Royalty Cases

Law360, New York (October 16, 2013, 6:37 PM ET) -- Experts in reasonable royalty cases typically must identify the portion of the defendant's profits attributable to the patent-infringing components of a complex product using the approach established by the Georgia Pacific factors.[1] However, the evidentiary standards for this profit apportionment approach have become increasingly stringent. Specifically, the Uniloc decision struck down the long-standing 25 percent rule on the grounds that the rule was not tied to the facts of the case.[2] And rulings by the court in ResQNet and several later cases have greatly increased the scrutiny of license agreements that would be accepted as comparables.[3]

Given these changes, litigants in patent cases must consider anew the data that they use to establish a reasonable royalty for the patents at issue. Documentary evidence obtained during the discovery process can continue to provide valuable qualitative information on how these patents contribute to the overall value of the infringing good.[4] Increasingly, however, litigants are also seeking to establish damages through more quantitative approaches.

Two key quantitative approaches for determining damages are natural experiments and conjoint surveys. Natural experiments occur when we can observe sales of a product both with and without the infringing features, either over time or across geographies. When available, they provide the best data for quantifying the extra amount that a consumer would be willing to pay for a product that has the patented features, as compared to one that does not.

Typically, however, it is not possible to observe products with and without the infringing feature either over time or across geographic areas. Hence, litigants are increasingly turning to conjoint surveys, which elicit from consumers information about the purchasing decisions they would make if infringing and noninfringing versions of the product were both available. This article provides a conceptual overview of the conjoint survey methodology and reviews the responses these studies have received in several recent patent cases.

Conjoint Surveys: Key Concepts and Terminology

Today, most conjoint surveys are conducted in an online setting where survey respondents must choose among product profiles with different basic features. For example, a conjoint survey designed to elicit consumer preferences with respect to colas might ask a respondent to choose among product profiles that differ in brand, amount of caffeine, type of sweetener and price.

To make this example more concrete, consider a case where a respondent is asked to choose among the following four alternative product profiles: (1) Brand X with caffeine, (patented) artificial sweetener, and a price of $1.75; (2) Brand Y with no caffeine, cane sugar, and price of $1.50; (3) Brand Z with caffeine, (patented) artificial sweetener, and a price of $2; and (4) Brand Z with caffeine, cane sugar, and a price

of $2. This survey format, known as a choice-based conjoint (CBC) survey, has a long history, to which Dan McFadden, an author of this article, has made key contributions.[5]

The features of the product profile (in this case brand, amount of caffeine, type of sweetener, and price) are often referred to as attributes, while the values that characterize each attribute are referred to as levels. While our example describes colas in terms of four attributes, one might think that for a more complex product, such as a smartphone, the conjoint analysis would need to examine many more attributes. However, humans are limited in their capacity for choosing among a large number of options. In fact, extensive experience with conjoint surveys has shown that consumers cannot make effective decisions that involve weighing more than seven attributes.[6]

Respondents to CBC surveys must typically perform between 12 and 20 "choice tasks," depending on the complexity of the product. In the cola example above, each choice task requires a respondent to choose his preferred alternative from among a "choice set" of four alternative product profiles. Each respondent choice provides a data point for the analysis. Hence, if 400 respondents take the survey and each respondent makes 20 choices, there will be 8,000 data points in the analysis.

We can then use these data points about each respondent's choices in a statistical analysis to determine how much each level of each product attribute contributes to customers' overall valuation of the product. This contribution is referred to as the "part-worth" of the attribute level. In the patent infringement context, the part-worths are a key input in the determination of the reasonable royalty. They are typically used to isolate the consumer's willingness to pay (WTP) for the patented level of the attribute.[7]

Conceptually, we can illustrate how a respondent's choices can be used to determine WTP using the cola example. Suppose that all features other than price and type of sweetener are fixed, and we observe that the respondent: (1) chooses (patented) artificial sweetener when it costs 25 cents more than cane sugar and (2) chooses cane sugar when artificial sweetener costs 50 cents more. From these results, we can infer that the respondent's WTP for artificial sweetener lies between 50 cents and 25 cents.

While we could ask the respondent directly what value he places on artificial sweetener in cola, customers typically find it difficult to answer these questions accurately. This difficulty arises partly because such an exercise asks them to think about their preferences in a way that is unfamiliar to them, and partly because other factors constrain their responses; these factors might include a desire to appear logical or socially responsible. Conjoint surveys enable us to obtain information about the choices people make and the drivers of their behavior in a more reliable way.

Responses to Conjoint Surveys

Below, we discuss issues that have been raised in recent intellectual property cases that used conjoint analysis.[8] These issues include: (1) respondent selection; (2) attribute choice; (3) introduction of confusion and/or cognitive bias; (4) irrational responses; (5) match between attribute level description and infringed patent(s); (6) inclusion of noninfringing alternative; (7) relevance of WTP results; and (8) consistency with real world evidence. Below, we discuss each of these topics in turn.

Respondent Selection

Respondent selection is a critical issue for any survey — conjoint or otherwise — that is presented in a litigation setting. As outlined in the Manual for Complex Litigation, in order for survey evidence to be considered reliable, the population must be properly chosen and defined and the sample chosen must be representative of the population.[9] In a patent infringement matter, the relevant population is typically the likely buyers of the infringing product. Hence, a good conjoint survey will focus on

identifying a representative sample of this population.

Attribute Choice

As noted above, a respondent engaged in a conjoint survey can only make choices among products based on seven attributes or fewer. Rebuttal experts often claim that the other attributes included in the survey were insufficiently justified. In at least one case, this issue was one of the bases for exclusion of part of the conjoint survey results.[10] Thus, the expert who performs the conjoint analysis must be able to defend why he has included some attributes in his study and not others.

Theoretically, the choice of attributes should not have a significant impact on the results because respondents are told to hold all other attributes constant. However, consumers may hold different views on which attributes are being held constant. For example, in a survey regarding the importance of touch-screen capabilities in a smartphone, consumers who believe that the phone will come equipped with voice transcription capabilities will see the touch-screen capabilities as less important, while others who are unaware of these substitute capabilities may perceive touch-screen capabilities as more important. Differing consumer perceptions of what is being held constant will be a lesser concern when people are familiar with the product under consideration, as was the case in the Apple v. Samsung and Microsoft v. Motorola conjoint surveys; in those cases, survey respondents were current owners.[11]

Irrational Responses

Irrational responses occur when a consumer makes a decision that violates one or more of economists' standard assumptions about consumer preferences. For example, a consumer makes an irrational choice if he prefers a good that costs more over the same good that costs less or if he chooses an inferior good over a superior good at the same price. Of course, irrational choices occur in other contexts, and they are a subject of study and debate among economists.

As pointed out by TVI's expert in TVI v Sony, a standard approach for dealing with this issue is to estimate part-worths using a procedure that constrains the data so as to be consistent with economic rationality.[12] Nevertheless, opposing experts will often highlight the unconstrained responses in their critiques of conjoint analyses, and the presence of such irrational responses may be taken as evidence that consumers did not fully understand the questions that they were asked.[13] Hence, the conjoint survey expert must be prepared to address this issue and explain how he has handled irrational responses in his analysis.

Introduction of Confusion and/or Cognitive Bias

As noted previously, most conjoint surveys are conducted over the internet. While internet administration of surveys can minimize many traditional sources of bias,[14] defendants in cases where internet conjoint surveys have been used focus on: (1) whether the respondents understand the questions;[15] and (2) whether the questions themselves influence the respondents.[16] These issues, which can arise in conjoint and other stated preference surveys, are the subject of a vast literature.[17]

In order to address these issues, survey experts often conduct pre-tests and then debrief a small sample of respondents to figure out how the respondents understood the questions and whether the survey instrument biased their responses in any way. The results of the pre-test can then be used to refine the survey instrument to minimize confusion or to alter the language so that no biases are introduced to the survey process. In any case, survey experts need to be prepared for claims that their survey questions induced confusion or cognitive bias among survey respondents and they should be able to produce evidence from survey pre-tests demonstrating that this was not the case.

Match Between Attribute Level Description and Infringed Patent

Defendants will often argue that the conjoint survey expert has used an incorrect attribute level description in his analysis, so that the description that is intended to capture the infringed patent actually does not do so. This is not something that the survey expert can control; he will ordinarily have to accept as correct the attribute level description that he is given for the infringing feature. However, if it is deemed to be incorrect, the results of the survey may be determined to be irrelevant.

For example, in Fractus v Samsung, the court excluded the conjoint survey prepared by Fractus' experts because it estimated consumer preferences for internal (as opposed to external antennas) in cell phones while the patents at issue were found to relate to two features of internal antennas, as opposed to whether the antenna was internal or external.[18]

Inclusion of a Noninfringing Alternative (NIA)

The consumer's WTP for an infringing feature depends on what noninfringing alternative products exist. If such alternatives exist, the survey expert must assess the degree to which consumers prefer the infringing alternative to the NIA. Thus, the conjoint survey should include noninfringing levels of the relevant attributes unless the plaintiff can credibly argue that there are none.

For example, in our very simple cola example, the NIA for the patented artificial sweetener was cane sugar; a more realistic example would have included several other kinds of nonpatented artificial sweeteners, as well as other kinds of natural sweeteners such as high fructose corn syrup. Of course, one common area for dispute among plaintiffs and defendants is whether there is an acceptable NIA available to consumers and, if so, what the degree of consumer acceptance of that alternative would be.[19]

Relevance of WTP Results

Defendants have argued that WTP results emerging from the conjoint analysis do not directly address the value of the patents in question. However, it is important to note that different research questions require different information about WTP. For example, if the researcher seeks qualitative information about how much consumers value the infringing level(s) of the attribute at issue, he can develop a conjoint survey that provides that average or median consumer WTP, as Apple's expert did in Apple v. Samsung.

On the other hand, if the researcher wants to assess the price premium associated with the infringing feature, then he will need to develop a conjoint survey that assesses the WTP of the marginal consumer — i.e., the consumer who is indifferent between buying and not buying the infringing product. It is the WTP of the marginal consumer that is equivalent to the price premium associated with the infringing level of the attribute; this marginal consumer can be identified by offering respondents a "no buy" option.

Consistency With Real World Evidence

In a conjoint survey that is aimed at determining price (as opposed to median or average WTP), results can be tested using real world evidence. Conjoint analysis generates part-worths for every level of every attribute in the study. While there might not be market evidence available on consumer WTP for all features, there may be market evidence for some features, and an opposing expert can compare prices to the conjoint results for the feature for which market evidence is available.

Opposing experts may criticize a conjoint study by comparing market evidence of the value of certain features to the part-worths computed in the conjoint study. Of course, the party conducting the conjoint

study can anticipate this criticism and address it by including product offerings that correspond to real market offerings in the study. In this way, the conjoint survey results can be tested using evidence on real market behavior and adjusted to better reflect real behavior when necessary.[20]

Conclusion

As courts have changed the standard they apply to the calculation of reasonable royalty damages, litigants have responded by turning to conjoint surveys. These surveys have been used to establish the value of patented attributes in a number of recent high-profile cases, including Microsoft v. Motorola, Apple v. Samsung, and Oracle v.Google. Like all analyses submitted in a litigation setting, conjoint surveys have been and will continue to be carefully scrutinized. Therefore, it is important that an expert with extensive experience in survey methodologies conduct the survey in accordance with best practices to ensure that results are reliable and valid.

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[1] Since the 1970s, the Georgia Pacific Factors have provided guidance on the conduct of this apportionment analysis. Many of these factors focus attention on whether or not the infringed patent contributes to the product's overall value in the marketplace. Other factors focus on the costs to the patent owner of granting a license as well as the established licensing practices of the litigants as a source of information about the royalty amount that would emerge from the hypothetical negotiation.Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116, 1119-20 (S.D.N.Y. 1970), modified and aff'd, 446 F.2d 295 (2d Cir).

[2] Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1312 (Fed. Cir. 2011).

[3] ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860 (Fed. Cir. 2010).

[4] For example, firm promotional literature, third party product reviews, and competitive assessments have been used in disputes as evidence either to support or refute claims that the success of a product is tied to the patented feature. Similarly, customer feedback and usage data (either collected in the ordinary course of business or, more typically, through usage surveys) can also provide evidence about whether the alleged infringing feature drives demand for the product.

[5] In a 1986 study, Dan McFadden showed how conjoint experiments could be conducted in a format that resembled market alternatives, and analyzed using the tools that he had developed for analyzing individual choices in markets. (See McFadden, Daniel. "Estimating Household Value of Electric Service Reliability with Market Research Data," Marketing Science 5.4 (Oct 1986): 275-297). This approach is now standard in the use of conjoint analysis in marketing.

[6] See, e.g., Green, P. & V. Srinivasan. 1990. Conjoint Analysis in Marketing: New Developments with Implications for Research and Practice. Journal of Marketing 54 (October): 3-19, pp. 8-9.

[7] Depending on how the consumer's WTP is measured, it can be used to shed light on a number of questions relevant to patent damages, as noted in our review of defendants' responses to WTP

calculations.

[8] We reviewed all examples of conjoint analysis used in patent cases for which information was available in the form of expert reports, rebuttal reports, Daubert decisions, and the like. As of this writing, the cases for which such information was available were: (i) Microsoft Corporation v. Motorola, Inc., Motorola Mobility, Inc., and General Instrument Corporation. United States District Court for the Western District of Washington at Seattle. No: C10-1823-JLR ("Microsoft v Motorola"); (ii) Apple Inc. v. Samsung Electronics Co., LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC. United States District Court Northern District of California San Jose Division. No: 11-cv-01846-LHK ("Apple v Samsung"); (iii) Oracle America, Inc. v. Google Inc. United States District Court for the Northern District of California. No: C 10-03561 WHA ("Oracle v Google"); (iv) TV Interactive Data Corporation v. Sony Corporation, et al. United States District Court Northern District of California Oakland Division. No: 4:10-CV-00475-PJH ("TVI v Sony") and (v) Fractus, S.A. v. Samsung et al. United States District Court for the Eastern District of Texas Tyler District. No: 6:09-cv-203-LED-JDL ("Fractus v Samsung"). Conjoint analysis has also been used in a few other types of cases including false advertising and antitrust.

[9] Manual for Complex Litigation, 4th ed. Washington, DC: Federal Judicial Center, 2005, pp. 101-103.

[10] Order Granting in Part and Denying in Part Google's Daubert Motion. Oracle v Google. March 13, 2012, p. 13.

[11] Expert Report of John R. Hauser. Apple v Samsung. March 22, 2012, p. 26. See also Declaration of Dr. R. Sukumar in Support of Motorola Mobility's and General Instrument's Opposition to Microsoft's Rule 702 Motion. Microsoft v Motorola. September 10, 2012, ¶ 9a.

[12] Reply Expert Report of Dr. V. Srinivasan (Reply to the Klein and Hoffman Rebuttal Reports). TVI v Sony. January 21, 2013, pp. 5-6.

[13] For example, the judge in Oracle v Google found the irrational responses to be evidence that the expert in that case had chosen the attributes in his conjoint study inappropriately.

[14] Internet surveys can remove certain classes of survey errors because internet surveys do not require human intervention. For example, interviewers can unintentionally skew results if they mispronounce words or make errors in recording responses. Respondents may also be influenced by interviewers' noticeable characteristics. Internet surveys eliminate these influences on survey results.

[15] For example, in Microsoft v Motorola, Microsoft's rebuttal expert claimed that several survey questions were poorly worded and impossible to understand, thereby inducing confusion in survey respondents. Declaration of Peter E. Rossi in Support of Microsoft Corporation's Rule 702 Motion to Preclude Testimony by Charles R. Donohue and Dr. R. Sukumar. Microsoft v Motorola, August 27, 2012, ¶ 24-26.

[16] In Apple v Samsung, one of Samsung's rebuttal survey experts claimed that Apple's expert had biased results by presenting the touchscreen attribute in an animation, making it seem more important than other attributes accompanied by static explanations. Declaration of Yoram (Jerry) Wind. Apple v Samsung. October 19, 2012, ¶ 57-58.

[17] See e.g., Goett, Andrew A; McFadden, Daniel L; Woo, Chi-Keung. Energy Journal 9 (1988): 105-120; "Referendum Contingent Valuation, Anchoring, and Willingness to Pay for Public Goods," with D. Green, K. Jacowitz, and D. Kahneman, Resource and Energy Economics, Vol. 20, 85–116, 1998 and "The New Science of Pleasure," Handbook of Choice Modeling, S. Hess and A. J. Daly, (eds.), Edward Elgar, forthcoming, 2013.

[18] Order. Fractus v Samsung. April 29, 2011, p. 2.

[19] Opposing experts cited this issue in all of the cases that we reviewed.

[20] This issue was raised in Apple v Samsung. See Declaration of R. Sukumar in Support of Samsung's Opposition to Apple's Motion for a Permanent Injunction and for Damages Enhancements. Apple v Samsung. October 19, 2012, ¶ 4-5.