Taxpayer Value Model (TVM): What is it?

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The second report on development of the Taxpayer Assistance Blueprint described "the initiation of a customer service resource optimization model. This model is being developed to help the IRS make better decisions on which services to provide to taxpayers and which channels to use to provide those services within the budget resources for service programs."¹ Ultimately named the Taxpayer Value Model (TVM), prototype development of this decision tool was completed in 2008. The TVM currently relies on the data set generated for the conjoint analysis conducted for the TAB Phase 2 report.² These data represent the most recent attempt to gauge, in a comprehensive manner, the preferences of taxpayers. Using these data, the TVM can bring the perspective of the taxpayer specifically, information on what service delivery options taxpayers want, into the taxpayer-servicerelated decisionmaking processes of the IRS.

As with any model, the TVM is only as good as the data it relies upon. Fortunately, the Taxpayer Value Model benefits from a data set developed specifically to gauge what taxpayers want from service. During development of the taxpayer assistance blueprint, conjoint analysis was used to gather an accurate estimate of taxpayer preference for service channels for a variety of service needs. Conjoint testing gathers information on participant choice behavior and provides a picture of what changes prompt switching behavior between choices. The conjoint method was chosen over more conventional survey methods because they often ask directly, "Which would you prefer?," generally resulting in a strong "status quo bias," thus overstating preference for familiar options. Unlike most other methods, conjoint testing provides information about the context of the service experience, and then gauges how changes in the service context relate to changes in attitude.

To accomplish this, the conjoint method asks taxpayers to choose between different service scenarios in a specialized survey. Survey participants work through successive "choice tasks" and choose what types of service they would prefer to use to accomplish a service need described to them.

¹ TAB Phase 2, p. 126.

² Shackleford (2007), IRS Research Bulletin, p. 241-260.

The choice made in each task is among "packages," which consist of service channels described by attributes of service.

For this research, four attributes of the service experience were identified as of prime significance to taxpayers.³ These attributes of service are access time, servicing time, hours of availability, and the likelihood of first contact resolution. Access was defined for survey participants as the time between beginning to seek service and when service delivery begins. Servicing time is that time consumed by actually getting the service they need. Hours of availability reflects the universe of opportunity to use a service channel. Finally, first contact resolution was described as the percentage chance that their service issue will be resolved during the first contact attempt.

Taxpayers choose between service options or packages defined by attributes of the service experience. These options are presented in a table like the one below (see Figure 1). For each table, the survey participant is asked to complete a choice task. In this instance, the participant will choose which channel he or she prefers to accomplish the assigned task, "Getting a Form or Publication." As taxpayers accomplish successive choice tasks, their choices reveal their preferences for service channel and the attributes of service that make different channels (un)attractive to different taxpayers.

Choice Task 2				
IRS Tax Assistance Method	Phone and talk with a representative	Use IRS.gov and browse for information	Phone and use the automated menu	Visit TAC and talk with a representative
Access time	15 min.	5 min.	5 min.	60 min.
Servicing time	10 min.	15 min.	1 min.	15 min.
Hours of Availability	Regular business hours	24 hours, 7 days	24 hours, 7 days	Regular business hours
Percent first contact resolution	95%	75%	95%	95%
	First concept	Second concept	Third concept	Fourth concept

Figure 1: S	Service Tasl	: Getting a	Form o	r Publication
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For this example, the preferred channel is shown in gray. Additional choice tasks, with the hypothetical respondent choice indicated in gray, show

³ Conjoint 2 preparation work included three focus groups to define the attributes of service of importance to taxpayers. These focus groups were conducted with a diverse group of taxpayers in rural and urban settings to capture a wide spectrum of needs and perceptions.

Choice Task 3				
IRS Tax Assistance Method	Phone and talk with a representative	Use IRS.gov and browse for information	Phone and use the automated menu	Visit TAC and talk with a representative
Access time	15 min.	5 min.	5 min.	60 min.
Servicing time	10 min.	15 min.	1 min.	15 min.
Hours of Availability	Regular business hours	24 hours, 7 days	24 hours, 7 days	Regular business hours
Percent first contact resolution	85%	75%	95%	95%
	First concept	Second concept	Third concept	Fourth concept

Figure 2: Service Task: Getting a Form or Publication

how changing the attribute levels for the different service channels reveals the underlying channel preference structure of the respondent in terms of "tradeoffs" across the common service attributes.

Subsequent "choice tasks" allow the taxpayers to choose preferred service channel as the attributes of service options change. Resulting movement (or lack of movement) to other service options shows the importance of different attributes to each respondent. In this example, changing phone Access Time from 1 minute to 15 minutes in Choice Task 2 did not result in a change in service channel preference. Even with first contact resolu-

Figure 3: Service Task: Getting a Form or Publication

Choice Task 4				
IRS Tax Assistance Method	Phone and talk with a representative	Use IRS.gov and browse for information	Phone and use the automated menu	Visit TAC and talk with a representative
Access time	15 min.	5 min.	5 min.	60 min.
Servicing time	10 min.	15 min.	1 min.	15 min.
Hours of Availability	Regular business hours	24 hours, 7 days	24 hours, 7 days	Regular business hours
Percent first contact resolution	75%	75%	95%	95%
	First concept	Second concept	Third concept	Fourth concept

First concept Second concept Fourth concept

tion reduced to 85 percent, the taxpayer in this example still prefers phone assistance with a live representative (see Figure 2).

Only when first contact resolution is reduced to 75 percent for the phone does this taxpayer choose a different service channel (see Figure 3). Rotating different service needs, service channels, and attribute levels for runs made by conjoint participants through choice tasks provides a full dataset of taxpayer preferences.

A measure of value is then established for each respondent based on the underlying conjoint "utility levels" for each level of each attribute. This value metric is then averaged across all respondents in order to assess overall value to taxpayers of any individual channel performance levels (based on the four service delivery attributes) or of different channels taken in combination. This can be calculated for all taxpayers or for a wide variety of taxpayer segments with different demographic and filing characteristics.

The explanation above is intended mainly to convey the quality of the conjoint data set that the TVM depends on to generate estimates of taxpayer value. The data set used by the TVM is both specific to taxpayer preference and extensive. Results were obtained from over 2,200 taxpayers, each running through choice tasks to define service preferences for two different service needs. This large data set was required for development of a prototypical TVM dataset allowing sublevel analysis according to service need and taxpayer segment. The definition of service channels to show self-assist and live-assistance allows some flexibility of interpretation, and is based on differentiation between routine, transactional tasks and more complex, interactive tasks as developed in the TAB Phase 2 report.⁴ Finally, the Conjoint Survey Sample was drawn using the only Web-based survey panel currently approved by the Office of Management and Budget (OMB), Knowledge Networks. To capture results representative of U.S. Census Demographics, Knowledge Networks uses random digit dialing for active member recruitment and provides Internet access to non-Internet users for its electronically administered surveys. Weighting procedures are used to assure that the survey sample is representative of the population of individual taxpayer households.

What Does the TVM Do?

Offering a means to estimate the interaction among taxpayers, service needs, and channels, the TVM is described in the TAB Phase 2 report as a "simplified model of IRS service delivery options designed to address the following strategic questions:

⁴ See TAB Phase 2, p. 41-43, 113-115.

- Which service channel resource allocations will maximize taxpayer value?
- Which attributes (i.e., access time, response time, service time, first contact resolution) are most important to taxpayers?
- Where will improvements to service result in the greatest payoff to customers?"⁵

The TVM provides estimates of how the value placed in different service channels changes as those channels change. If, for example, service speeds up without any deterioration in quality, the TVM can show just how much taxpayers will value that change in the service environment. As such, the TVM is a suitable means of bringing taxpayer input into the decision process.

In keeping with the focus of the TAB, the TVM allows the taxpayer perspective to play a role in decisions impacting the service environment. Indeed, it offers the best way to involve taxpayer perspective in the decisionmaking process. Other possible alternatives—directly involving taxpayers, conducting a suite of research methods for each proposal, or relying on operational data to gauge taxpayer value for service alternatives are costly, cumbersome, and subject to potentially damaging biases.

Direct participation of a representative sample of taxpayers in the planning and implementation processes of the IRS is not feasible. In addition to being cumbersome to include several hundred taxpayers in the planning and implementation processes of the IRS, there exists substantial burden of information to be mastered in order to provide informed input.⁶ Indeed, the subject matter spans beyond the Tax Code (which is itself a formidable body of information) to include policy related to information technology, privacy, access, and operational procedures informed by decades of practice, and practical compromise.

Similarly, initiating and conducting new research for each proposed initiative or operational adjustment are not an attractive option. A full set of fresh research for each initiative or proposed change would likely require too much time and too many resources within the current operational environment. Conducting one-off research for decisionmaking about the creation and composition of taxpayer service is not feasible because of the length of time involved to conduct the appropriate amount of defensible,

⁵ TAB Phase 2, p. 126.

⁶ At bare minimum, a representative sample would need to include the perspective of around 400 taxpayers to be statistically valid. If the perspectives of any subsets of taxpayers were valuable to the process, the number of involved taxpayers would expand considerably.

repeatable research, complete analysis, and render information useful to a decision. Indeed, the ever-shifting nature of information technology only increases the value of rapid but accurate customer feedback.

Finally, depending on operational data to infer that "taxpayers use that which they prefer" suggests that scope of service and performance are uniform across all channels when they are not. Habit is a strong determinant, and taxpayers may act upon that basis even if it means they are getting suboptimal service. The idea is not to play to habits which may include difficulty and inefficiency, but rather to shape a service environment that economically provides what taxpayers need in a manner they most prefer.

In addition to the time and resources required, and any inherent bias, analysis based exclusively on operational data would be largely channel-specific, and may not provide information that is directly comparable to other service delivery mechanisms. The objectives of enterprisewide seamless taxpayer service would likely remain elusive. Because the TVM is rooted in taxpayer value as defined by the underlying attributes common to all service delivery methods, it permits comparison in uniform units within and across service channels.

Because it is based on a dataset where taxpayers trade off their choices for service based on changes in the service environment, the Taxpayer Value Model (TVM) can help predict the taxpayer value impact of resource decisions—both increases and decreases. Negative changes in one attribute of service provision may be offset by improvements in other attributes. For example, if an investment will result in changes where the servicing time for the taxpayer increases 10 percent, while the first contact resolution for the same task improves 5 percent, there might be an overall net gain in benefit.

The TVM can provide assessments of all taxpayer value or value according to specific segments of taxpayers, specific service needs, and/ or specific service channels. For example, if an investment decision for IRS.gov would improve first contact resolution, the TVM can show the impact of this proposal on the service value perceived by taxpayers with incomes between \$36,000 and \$49,999 or the value perceived by all taxpayers.

The TVM is a measure created through direct feedback from taxpayers and is therefore less susceptible to biases resulting from precedent. For example, ways of providing service that, because of novelty or circumstance, do not have much current infrastructure within the IRS can be weighed on an equal basis with traditional service situations enjoying substantial institutional support.

Finally, simplicity is a key benefit of TVM. The simplicity and transparency of the model can foster widespread use and promote widespread appreciation of taxpayer value. The model brings the power of research to the decision process by providing an estimate of taxpayer value expressed as a single number somewhere between 0 and 200.⁷ Practically speaking, the estimates of taxpayer value resembling anything like the current or feasible service environment range between 50 and 150.

Current Limitations

As discussed above, the strength of the TVM is that it relies on taxpayer perspective and brings that perspective, easily and efficiently, into the IRS business decision process. That said, it is important to recognize what the TVM does not currently do.

First, the method used to gather the data underlying the TVM shows changes in preference rather than changes in actual behavior. Conjoint shows what attributes of service are important to people based on how their choices for service change among service channels. If taxpayers act according to their preferences, then it is an accurate predictor of behavior. Indeed, recent research shows that, for taxpayers seeking IRS services, the biggest difference between preference and behavior is the widespread lack of awareness and experience with many of the alternatives.⁸

Second, like any model, the results generated by the TVM are only as good as the data put into the TVM. Though the data set on taxpayer preference within the model is quite robust, it is possible that the data estimates entered into the model for a prospective business case can skew results. The unavoidably speculative nature of estimating how changes in service process will impact service delivery will be both a necessity and a challenge regardless of the tools brought to the decision process. Use of an Analysis Template developed for the TVM will help minimize the introduction of error as a result of estimating the impact of service investment, and make available

⁷ The data used within the TVM are scaled to an average value of 100, with the attributes of service set to current operational performance levels. The average utility for all taxpayers across all service needs and all segments is scaled to a Taxpayer Value of 0 if all channel attributes are set at their worst conjoint levels, and the average utility for all taxpayers across all service needs and all segments is scaled to a Taxpayer Value of 100 if all channel attributes are set at their current conjoint levels (the base case). For more information, see Appendix B.

⁸ 2008 W&I Market Segment Survey (Tax Year 2007).

the exact method and assumptions used to generate results.⁹ Ideally, these templates will record information that will maintain transparency and offer the potential for repetition of analysis and results.¹⁰ This template requires description of the justification for using the TVM, justification for the service channel selected, a record of the means used to provide estimates of the impact on the service environment, and a record of assumptions related to the development of taxpayer value measures.

Another current limitation of the TVM is the assumption that the eight service needs covered by the model are equally important across the taxpayer base. The conjoint method uses only descriptions to convey the importance of various taxpayer service needs rather than specifically asking taxpayers to define which issues would matter most to them. This limitation could be addressed in several ways, including weighting the value metric for the different service needs within the TVM according to additional information to estimate the importance of particular service needs. One way to do this, based on information currently available, is to set weights equal to the relative incidence of inquiries across all channels. In addition, possible future experimental research on how taxpayers understand and behave within the tax process might provide improved estimates of the importance taxpayers place on different types of service.

Finally, as the dataset used to populate the model ages, both base case estimates (currently observed attribute levels by channel) and taxpayer preferences may change. It is recommended that this research be replicated at least every 3–4 years.

Reasons to Use TVM

The TVM was built to bring the taxpayer into the decisionmaking process; help build new offerings; and adjust existing service provision that meets taxpayer preferences. Bringing the taxpayer perspective into the business case development and comparative decision process, the Taxpayer Value Model will catalyze creative thinking and exploration of options that likely would not have been considered under function-based planning. As a means of comparison during the decision process, the TVM offers the capacity to generate comparable results over time, across business divisions, and among service channels and segments of taxpayers. As such, it is a good first step for the IRS to take toward determining "which services it can deliver to

⁹ See Appendix A.

¹⁰ Repeating older analysis with newer data, and comparing this to actual operational data where implementation proceeded, may provide opportunities for additional refinement of the TVM.

various demographic groups, and the channel, or means of delivery, that each group needs and prefers."¹¹ Though not a sole deciding measure in and of itself, TVM results bring the perspective of the taxpayer into consideration as decisions about changes to service provision occur.

How Does TVM Fit into the Decision Making Process?

Beyond the limitations of the model, there are substantial limitations on how the results it generates should be used. Given all that the TVM can offer, it is important to recognize that it is not a single solution to the task of refining IRS taxpayer service. From the beginning, the TVM was conceived of as a single input among several under consideration within the investment decision process. As the TAB Phase 2 report states, "modeling and analysis can provide input to the questions cited above, but astute strategy development requires more than forecasts of what might happen under different funding scenarios. It requires choices that are most likely to further service goals, build on IRS resources and talents, and remain feasible and sustainable in planning and budget decisions."¹²

Using the TVM

TVM can be applied to several related aspects of the decisionmaking process for evaluating changes in service delivery by the IRS. The TVM will work best when applied to a specific business case for a new way of providing service, significant procedural changes, or adjustments in policy where measurable change is expected. The TVM depends on a measurable change in the attributes of taxpayer service to return an estimate of how this change might impact taxpayer value. In addition to the capacity to measure larger initiatives with potential for substantial impact across multiple service channels, multiple service activities, and a variety of taxpayer segments, the TVM can also be used on a small scale. The impact of minor changes in the attributes known to be important to taxpayers, can be assessed using the TVM.

¹¹ 2008 NTA Report to Congress, p. 101. See, e.g., National Taxpayer Advocate 2005 Annual Report to Congress 7; National Taxpayer Advocate 2006 Annual Report to Congress, Volume 2, *Study of Taxpayers Needs, Preferences, and Willingness To Use IRS Services* 14.

¹² TAB Phase 2 Report, p. 126.



The first step in applying the Taxpayer Value Model is completion of a description of the proposed initiative or procedural change. This definition typically includes selection of a service channel or channels, as well as the types of service needs that the proposed initiative or process change will impact. After defining the proposed change or initiative and the relevant channel(s), estimates for impact on the taxpayer service environment should be created. The proposed initiative or change must be assessed for its impact on the four attributes found to be most important to taxpayers: time required to access service, time required to get service, probability of first contact resolution, and hours of service availability. These values will be the basis for estimating the interaction between known levels of preference for service needs and channels as the attributes of service are changed.

Figure 4 is a screenshot of the actual computer interface users work with to run the model. The estimates of impact on access time, service time, first contact resolution, and hours of availability are entered in the four boxes under the heading Test Case, and are then compared with a "Base Case" that represents the averages of currently observed service attribute levels by channel. In Figure 4, access time improved from 5 to 3 minutes, and servicing time also improved from 5 to 3 minutes. In addition, with the example below in Figure 4, the hours of availability were changed to option 3, representing an increase above normal business

¹³ Hours of availability are currently described as three levels. Level 1 is business hours, level 2 business and evenings, and level 3 is business hours evenings and weekends.

hours to include evenings and weekends, and the likelihood of first contact resolution changed from 85 percent to 90 percent.¹³

After defining the impact of the proposed initiative or process change on the attributes of service, the service need and channel (or multiple channels) are selected. Next, a segment of the overall taxpayer base (or all taxpayers) is selected. Model output includes the overall value to all taxpayers (128 in this case) and to the chosen segment of the new option (141), compared with a base case of what is observed in the marketplace today (here, 104 for all taxpayers and 116 for the 60-and-over segment), projected market shares for each of the channels based on the option being tested (also compared with the base case) and statistical tests of significance of the change in value relative to the base case.



Flexibility in operating the TVM offers the opportunity for multiple estimates of taxpayer value relative to a range of potential changes in the taxpayer service environment.

Examples

The example below shows the changes in taxpayer value that might result from an initiative providing taxpayers online access to their tax account information in much the same way that banks and credit cards provide similar information now. In this example, such an account would decrease taxpayer access to the relevant information about their tax situations from 15 minutes to 3 minutes. In addition, the likelihood that they would find accurate information increases from 85 percent to 90 percent. With that change, a noticeable improvement in taxpayer value occurs, both for all taxpayers and those taxpayers between the ages of 18 and 29 (other segments could also be evaluated). Figure 5 shows the results as they would appear on the TVM screen, complete with assessment of the statistical significance of these



estimates. As referenced above, the 2 bar charts at the bottom of the TVM screen show the changes in market share that, given awareness of available options and action on preference, would result from these changes in the service environment.

A second example of applying the Taxpayer Value Model can be constructed relative to the current Customer Online Decision Support (COLDS) effort. The COLDS system will, after the completion of phase 2, supply the same decision tree to customer service representatives in Taxpayer Assistance Centers and to representatives working IRS phone service lines. This decision tree, designed to help isolate the service need, will also be available to taxpayers online.

In this hypothetical scenario, the taxpayer service need where the impact of COLDS will be estimated is "answering a tax law question." The Service channel where the impact of taxpayer value is to be assessed will be the IRS toll-free phone line with a service representative, and the specific

	Base Case	Test Case	Percent Value Increase	Percent Better Off
All Taxpayers	101	115	+14%	61%
Taxpayers 60 years and older	109	126	+16%	69%

Figure 7: Taxpayer Value Metrics

segment of the taxpayer population where taxpayer value will be gauged is taxpayers "60 years and over."

The working assumptions are that taxpayer access time to the correct service provider to deliver an answer to a tax law question will be decreased. At a conservative estimate, the access time improves from 5 minutes to 4. A second operational assumption is that the Interactive Tax Law Assistant/ Customer Online Decision Support (ITLA/COLDS) system will, because of improved routing and increased understanding of the taxpayer issue, result in improved first contact issue resolution. As a result, a 5-percent improvement in first contact resolution moves the resolution rate in the model from 85 percent to 90 percent. In this analysis, the attributes of service time and hours of availability are presumed to be unchanged by ITLA/COLDS. After entering these values into the model and running analysis, the resulting main screen looks like Figure 6.

The impact on taxpayer value realized by the changes outlined above are captured in Figure 7. Note that, though all taxpayers will realize an improvement in the value of the service provided for tax law questions over the phone, taxpayers in the 60-and-over segment will enjoy an even greater increase in value.

Factors of the TVM Be Addressed Going Forward

Attributes Describe Service

Because the TVM is built on taxpayer understanding and valuation of service attributes, these features of service must accurately represent what is important to taxpayers. Subsequent conjoint data collection efforts must revisit the features of service experience that are important to taxpayers, either directly through experimentation or through exploratory research. This will help keep the best attributes framed for subsequent data collection efforts. Experimental research might, in addition to other things, yield information to help appropriately weight different service needs according to the importance placed on that type of service need by taxpayers.

Limitations of Data

The initial focus of the conjoint analysis was W&I taxpayers only. To the extent that taxpayer value is freely interchangeable regardless of the types of entity the taxpayer represents, the TVM can be used to estimate changes for other categories of IRS taxpayers. However, the extent to which SBSE and TEGE constituents vary from W&I taxpayers must be addressed, ideally with additional data collection efforts.

Use Versus Awareness

As discussed earlier, one potential drawback of the conjoint method used to gather data for the TVM is the distinction between preference and actual use. For example, while awareness of the Web site and toll-free telephone line is now reasonably high (82 percent and 80 percent, respectively), just 34 percent of taxpayers have used the Web site, and 21 percent have used the toll-free line in the past 12 months.¹⁴ Just 61 percent are aware of local IRS offices, and only 5 percent have used them in the past 12 months.¹⁵ Future development of the model will, ideally, have the capacity to account for varying levels of awareness across the taxpayer base and within different segments of the taxpaying population.

The Age of the Data Set

Also, as discussed earlier, there is the issue of the currency of the underlying survey data TVM depends on for estimates of taxpayer value. The conjoint data set is now nearly 3-years-old. To the extent that taxpayers shift preferences over time, the underlying conjoint data base should be updated periodically.

Conclusion

The TVM accomplishes analysis that is uniform, durable, simple, and transparent, and in a way that clearly brings the preferences of the taxpayers into play during the decisionmaking process. In addition to providing an estimate of taxpayer value for proposed changes in the service environment, the TVM can serve as a valuable point of reference to help bring taxpayer perspective into the culture of the IRS. Because it relies on external data generated solely to represent taxpayer preference, the TVM permits comparable estimates of the impact of service changes on taxpayer value, regardless of the location

15 ibid.

^{14 2008} W&I Market Segment Survey (Tax Year 2007).

of proposed changes within the IRS. As an independent tool for consistent comparison across the enterprise, the TVM offers the opportunity to create reference points against which the evolution of the service environment can be charted, lessons learned, and successes documented. Though clearly not a panacea that will suddenly and without consequence bring perfect unison between IRS service and the expectations of taxpayers, the TVM decision support tool provides a solid first step toward universal and systematic inclusion of the taxpayer perspective in business decisions within the IRS.

Appendix A: Analysis Template—Used to Provide Consistency and Transparency in TVM Analysis Process

TAXPAYER VALUE MODEL (1	IVM)—ANALYSIS TEMPLATE		
Initiative Title:			
Date:	TVM File Name:		
Service Need:			
Service Channel:			
Taxpayer Segment:			
Segment Rationale:			
Business Estimate of Change in Access Time:			
Basis for Change in Access Time:			
Business Estimate of Change in Servicing Ti	me:		
Basis for Change in Servicing Time:			
Business Estimate of Change in Hours of Operation:			
Basis for Change in Hours of Operation:			
Estimate of Change in First Contact Resolution	ion:		
Basis for Change in First Contact Resolution			
Run By:			

Appendix B: Normalizing Taxpayer Value Scores

In constructing this scale, the model assumes that taxpayers, no matter what the attribute settings, will select their highest utility or first choice channel. Using this scale, some service needs will have current Taxpayer Values of less than 100 and some more than 100 because different service needs have different average utilities. Similarly, different segments will have different current Taxpayer Values because different segments have different average utilities. In any case, the Taxpayer Value will go up when the average utility goes up. Most importantly, any Service Package that has improved attributes will have a Taxpayer Value higher than its current value.



Customer Value of All IRS Services, by Segment