TRC+: Regulatory Compliance Theory of Diminishing Returns

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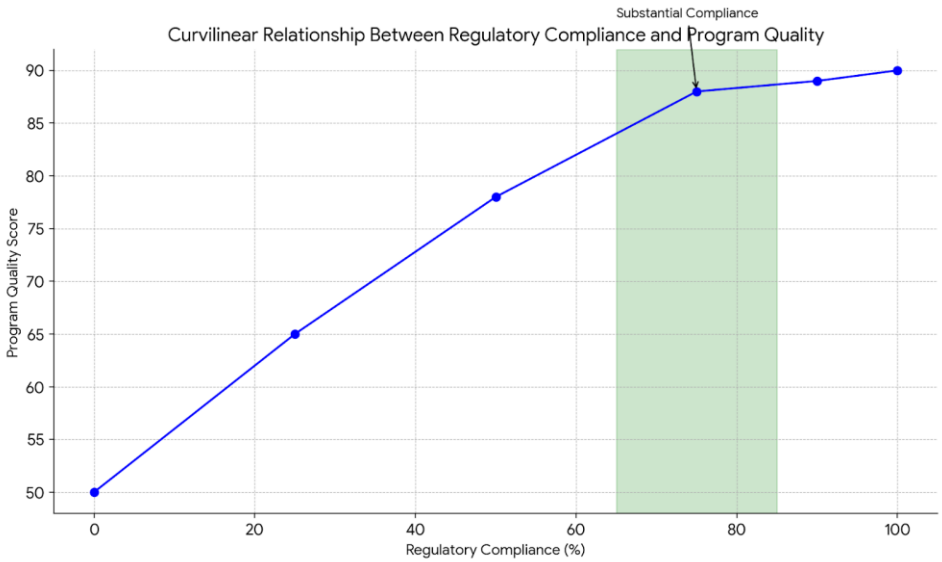
January 2024

This research abstract will update the relationship between regulatory compliance and program quality (depicted in the below graph) using three equations listed below which deal with a simple linear model at the low compliance range, a threshold model at the midpoint compliance range, and a diminishing returns model at the higher compliance range. A fourth model is also proposed which places more emphasis on the program quality side of the equation going beyond compliance levels.



1. Simple Linear Model (Low Compliance Range):

For the lower end of the compliance spectrum, where achieving basic rules leads to improved quality, a simple linear model might be applicable:

Program Quality = a * Regulatory Compliance + b

This assumes a direct positive relationship between compliance (measured as 0-100%) and quality, represented by the slope "a" and baseline quality "b" when no compliance exists.

2. Threshold Model:

Another approach is to introduce a threshold level of compliance, below which there's minimal quality improvement, but exceeding it leads to rapid quality gains:

Program Quality = f(Regulatory Compliance - Threshold)

Here, "f" is a function (potentially non-linear) representing the quality increase based on exceeding the threshold level.

3. Diminishing Returns Model:

The theory emphasizes a "plateau effect" for high compliance levels, where further compliance improvements yield minimal quality gains. This can be captured through models like:

Program Quality = max(Quality_max , min (Regulatory Compliance, Quality_max))

Here, "Quality_max" represents the upper limit of achievable quality, and the equation ensures quality doesn't exceed this limit regardless of compliance exceeding it.

These three equations should help to fine tune the analyses related to TRC+: Regulatory Compliance Theory of Diminishing Returns. A fourth model is also proposed which expands the theory called the Multivariate Model:

4. Multivariate Model:

The theory acknowledges numerous factors influencing the relationship, including program type, regulatory agency, and implementation effectiveness. These can be incorporated into more complex, multivariate models, like:

Program Quality = f1(Regulatory Compliance, Program Type, Agency Effectiveness) + f2(Compliance Implementation)

This example utilizes various functions ("f1", "f2") to account for diverse influences on program quality, going beyond just compliance levels.

Remember, these are just conceptual examples, and the specific equation will depend on the context and chosen factors for analysis. It's crucial to consider the specific research questions and limitations of each model approach when interpreting the results.

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