Characteristics of a Predictive Modeling Problem

For actuaries specifically, here are some common characteristics that make a problem "worthy," i.e., it can and should be addressed using predictive models:

You can clearly identify and define a business issue that needs to be addressed.

Objectives such as grow my portfolio, increase profit, strengthen underwriting, and improve marketing campaigns are too broad. How do you even begin to address these topics?

Be more specific. For example, can we reduce underwriting costs for new customers by first scoring the applicants based on "people like me," then prioritize where to spend money on medical tests and reports accordingly? In other words, can we identify which reports are most needed to effectively underwrite certain people? That leads us to the next point.

You can address the issue with a few well defined questions.

Continuing the scenario, there are many ways to reduce underwriting cost. Where is the best place to start? Some of the options are quick wins and others are not; some might be operational and others are analytical. Let's say the focus is to reduce the number of reports needed per applicant based on historical customer profiles and experiences. The questions become:

- What data do you need, and what data do you have to conduct the analysis?
- What is the target/outcome?
- How well is the target representing the problem? See more in Section 1.1, Effective Problem Definition.
- What is the success criteria? In other words, how will the model performance be evaluated? If the results are satisfactory, how will it be deployed?

You have lots of good and useful data that can be used to answer these questions.

This requires:

- Permission to use the data
- High data quality: accuracy, frequency, granularity, relevance, interpretability
- The ability to link various data sources at needed level
- The ability to identify information gaps

You are certain the predictions will drive actions.

From IT infrastructure, internal/external communication, data collection, data manipulation, model development, cultural acceptance, all the way to final conclusion: Is your approach practical, understandable, and implementable?

A model is no good if it just sits on the shelf collecting dust.

You are certain it is better than any existing approach.

Is there an easier way to address the issue, without building a model? If so, do that instead.

You can continue to monitor and update the models as new data comes in.

Models are not static, especially when actions were taken based on the results of the model. Operationalizing predictive models is an indication of a successful project.

Keep that in mind as you think about using predictive analytics to address an issue. Can you operationalize it?