Machine learning models could be a large improvement in the banking industry. However, there are some downsides to these models. Bank have very strict guidelines for validation certain practices in place to minimize the risk. When applying a machine learning model to a problem, small little nuances like these can become an even greater problem if not dealt with properly.

In an age where there are a vast many package and software stack available for use, model-validation is important. This article comes from McKinsey & Company, who has built a model validation framework that is fully compliant with the Federal Reserve SR11-7 regulations for banks. This model modifies elements and add new ones as well. The elements added are a basis for all machine leaning models, from a theory standpoint, and are:

1. Interpretability – the ability to interpret and understand the results of a machine learning model. A range of approaches are available
   1. Linear and monotonic models (aka linear regression)
   2. Nonlinear and monotonic models (aka gradient boosting models with monotonic constraint)
   3. Nonlinear and nonmonotonic models (aka deep learning)
2. Bias – level of influence in the model and has four main types
   1. Sample
   2. Measurement
   3. Algorithm bias
   4. Bias against groups or classes of people
3. Feature engineering – picking out the best features out of all combinations of features
4. Hyperparameters – the depth of a tree in random forest or the number of layers in a deep neural network and must be defined before training process
5. Production readiness – can the model be used in production
6. Dynamic model calibration – some models modify their parameters dynamically and can overemphasis short-term patterns

Banks will obtain great value from machine learning models (once Coronavirus has become not such a big influence) but must proceed with caution. Validating the models developed with a stringent criterion before putting them in production is going to be useful for moving into this next phase of ML for banking.