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Operational Risk (OR) results from endogenous and exogenous risk factors, as diverse and complex to assess as human resources and technology, which may not be properly measured using traditional quantitative approaches. Engineering has faced the same challenges when designing practical solutions to complex multifactor and non-linear systems where human reasoning, expert knowledge or imprecise information are valuable inputs. One of the solutions provided by engineering is a Fuzzy Logic Inference System (FLIS). Despite the goal of the FLIS model for OR is its assessment, it is not an end in itself. The choice of a FLIS results in a convenient and sound use of qualitative and quantitative

inputs, capable of effectively articulating risk management´s identification, assessment, monitoring and mitigation stages. Different from traditional approaches, the proposed model allows evaluating mitigation efforts ex-ante, thus avoiding concealed OR sources from system complexity build-up and optimizing risk management resources. Furthermore, because the model contrasts effective with expected OR data, it is able to constantly validate its outcome, recognize environment shifts and issue warning signals.