Application of Operational Risk Assessment Invasion as a Passive Art Form

Elven Riley, Seton Hall University
Amanda Karpa, Seton Hall University
Xiaohe Liang, Seton Hall University

ABSTRACT

An operational risk assessment (ORA) is a method performed by a third party to identify whether a company's procedures are documented or not. Following the method will produce evidence that the targeted step was executed, so ORA's simply verify compliance to documented procedures by reviewing byproducts of actual activity. A properly performed ORA mitigates "risks of loss resulting from inadequate or failed internal process, people and systems or from external events" (Basel III 2011). This paper describes an approach to bring these abstract concepts to life within a business school setting, allowing students to recognize the benefits and demonstrate the limits of the technique, bringing the concept to practice.

INTRODUCTION

Why is an Operational Risk Assessment (ORA) relevant? Today international Basel III accord (2011), the Dodd/Frank bill (2010), and the "stress tests" of the Federal Reserve (2012) are forcing large participants in the capital markets to confront their operational risks and document their processes. The finance academic community has made enormous progress in understanding financial market behavior, beginning with the seminal work of Markowitz (1952) and continuing with Sharpe (1964), Fama (1970), Black and Scholes (1974), Ross (1976), and Fama and French (1992), to name only a very few. This progress, however, is limited to the retail side – the pricing of securities, the construction of portfolios, and the management of generalized risk. Far less progress has been done on idiosyncratic risk of the operational side – what happens "after the trade." This is not a small matter, as seen, for example, in the "flash crash," in which the Dow Jones Industrial Average plummeted by nearly 1000 points on May 6, 2010, before recovering in a matter of minutes, and related challenges posed by high frequency and algorithmic trading approaches as reported jointly by CFTC and SEC staffs (2010). Indeed, recent work links the equity valuation arena with the market microstructure tests of the banking stocks (Elshahat et al 2012).

The international Basel II accord (2004) defined three major risk components, Credit, Market, and Operational Risks as the formulaic calculation of regulatory capital. There are two serious challenges to managing idiosyncratic operational risk. It is not transferable through a market to a speculator and, second, it involves detailed costly expert examination of the entire process flows. The operational risk framework we employed proposes a two-stage evaluation,

with the first being a low-expertise, low cost, low-impact, minimum-time-commitment, assessment that provides transparency and a mechanical integrity value. These comparative base line metrics, once available, support a prioritization second stage not explored in this paper.

ORA IS NOT AN AUDIT

How does an Operational Risk Assessment (ORA) compare to an operational audit? The act of reviewing the target operations by an outside third party without being disruptive and still producing constructive information is an art. The traditional "audit", a methodical and formal examination of an organization's accounts and financials, is a good conceptual starting point for understanding an ORA. However, the word "audit" is usually expressed synonymously with "business interruption" and "invasion," creating uneasiness on all sides. Adding to this unease is the minimalist feedback audit report, or single line "no significant findings to report", delivered by an opaque audit team after a major time investment of the audited unit's labor. We prefer the word "assessment", as in review or appraisal, and with maybe a bit of a "levied tax" as the bias of an ORA.

First, as is often the case with external assessments, the assessors (in this case, the team of students) know less about the target processes than the line-of-business operational managers. For today's newly invented financial industry algorithmic businesses and their one-off per-company unique process implementation, it is not economically possible to review the operations with Subject Matter Expert (SME) rich teams; they just do not exist. The pilot lab exercise recreated the same disadvantaged relationship.

Second, because there is less negative connotation than a financial audit, failing an ORA is not proof of malfeasance, and thus allows for more substantive conversations between the assessor and the assessed before, during, and after the assessments. Indeed part of the goal is to establish a dialogue around improvement discovery in the base processes with target SME leadership. Recent financial disasters – the downfalls of Bear Stearns, Lehman, and AIG, for example – were all actively perpetrated over long periods yet evaded discovery by strict financial reporting audits. The assumption of the ORA methodology involves a multi-year context of periodic reviews to encourage improvement discovery by the target SME, or a management behavior that repeated lack of progress is an early smoke signal.

Third, the reliance on the financial valuation and cash flow analysis reporting alone proved to be insufficient for the complicated financial products and their processes because these "black boxes" were also often the authoritative valuation "golden source". There are always non-financial objects to count in any business process that can provide process behavior insight. The restriction to the financials alone is an unnecessary restriction in the assessment scope. The well designed business work-flow integrates multiple data points to support a controlled and consistent quality result as well as profits.

Fourth, we desired a common-sense logic framed in the discipline of a methodology that could be taught easily as an entry level business lab experience course, comprehended quickly without the barrier of a broad scope industry terminology, and adopted by assessors who had little job experience, let alone operational training. The failings of the mortgage origination

business, which contributed to the current housing crisis, were apparent in hindsight as operational failings of the first order. Common-sense today teases the question of "how could you ever expect this process to be defensible?" If the businesses of tomorrow are only accessible for review and management by deeply skilled SMEs, then we are doomed to repeat these failings. The resource cost of managing these businesses must be minimized, and one way is the use of simply trained assessment teams producing a simply stated report of findings. It does not have to be a process design review, just an assessment of what exists to verify the existing in-use processes.

Fifth, as an educational institution, we needed to identify a willing production target to experiment with our approach and fine-tune the learning objectives of all the students involved. We were fortunate to have an initial pilot partner with a complicated production process that completed in five days and was repeated a handful of times during the fall and spring semesters of academic year 2011-12.

ORA IN THE CLASSROOM

This paper presents an application of ORA to educational centers as performed by a team of finance students at an AACSB-accredited institution. The definition of the team's task was to assess whether the outcomes produced by the target production process were the result of following the targeted unit's documented process. The students, who were initially unfamiliar with the target process, not only had to perform the ORA but also subsequently communicate the findings in a transparent framework that the target unit found useful. The learning objective was the benefits and the limitations of using an ORA within a business setting and thus an example of moving from concept to practice.

We began with seven simple goals for the ORA team:
1. No new steps will be created/required in the target process for completion of the ORA
2. The development of the ORA template for a target process requires minimal interaction to establish
3. The ORA will report on a single independent instance of the target process
4. The ORA, once created, could be repeated per instance of the target process with ORA reports easily comparable
5. All natural documents created at any point in the target process were to be examined/inspected
6. Only one short observation visit to the process during the execution was required
7. The complete methodology and results could be presented succinctly to interested parties having only a cursory understanding of the target process

We developed a simple method based on more formal and elaborate scientific methodologies that can be summarized as follows:
1. The output of the target process was accepted as the factual and correct result. The ORA just asks if we can find evidence that the documented target process was followed to produce the results, not judge correctness.
2. The ORA process is a separate process, preferably executed in parallel, but potentially in a post-target event instance.

3. The logic of the ORA process worked in a reverse flow to the target process and attempted to reverse-engineer the final work-flow product of the business back through the documented creation steps.
4. All naturally created target process documents and data files can be and should be used as input to the ORA process steps without additional interaction.
5. No verbal evidence was to be relied on for any ORA step, but common sense would allow for accepting physical evidence that inferred completion, although weak, was admissible.
6. The ORA process steps ask two questions:
    a. Is there evidence of the completion of a target process step?
    b. Can the evidence found be common-sense judged as consistent with the surrounding target steps and the target results as documented?
7. The ORA will assign risk values based on how transparent the impact of an improperly completed target step could be observed in the target result, High/Medium/Low.
8. The ORA does not judge correctness, but does indicate compliance. The ORA will report a single target result to be "non-compliant" if most of the target process steps completions are ambiguous or inconsistent; or if a single task is found directly inconsistent between inputs and the final delivered results.

IMPLEMENTATION

We chose a target unit to evaluate that performed a monthly event with about 70 steps, conducted over a period of one week, involving about 50 people, a combination of faculty, students, and external service organizations. The ideal process for an ORA should be intricate, documented, and repeatable, and that this event conformed. We avoided candidates that were able to be intuitively assessed as too simple or too small which would have prevented the student ORA assessors to gain an understanding of the difficulty in evaluating business processes without an SME on the assessing team. We began by identifying and codifying the 70 steps as provided by the process managers, identifying basic evaluation criteria. These included, for example, sequential task dependencies, actors responsible for execution, input data and output data to the task, and gross timing constraints.

The target event was a university national sports poll that is conducted approximately monthly during the academic year by faculty and students. The result of each polling event is a media press release with conclusions. The availability of this final output document to the public with a date and time established an anchor to our assignment of risk values for each task. Many tasks did not contribute directly to the final press release, but were required for internal house-keeping of the process during the multiday event. A loss of quality of these tasks would rarely be directly visible in the press release, but could introduce quality issues/errors that undermine the veracity of the conclusions. We rated these hidden-quality related tasks in mass not uniquely per task. A preponderance of these errors resulted in a "non-compliant" rating. We used greater than 50% as the easily communicated management definition of preponderance. Any task that resulted in an observable correlated impact on the final press release was rated as high risk. The entire set of these high risk items required direct, as opposed to implied, verifiable byproduct documents of compliance with the documented processes. If byproducts could not be found then instead of an overall "in compliance" finding the ORA used the "not in compliance" term.

The initial establishment of the ORA template required fourteen days to develop, including the learning curve of the assessor. However, when applied to the target event spanning about seven days, the ORA process required one student four hours to complete. The template is reusable per event with minor updates for keeping up with changes in the target process.

FINDINGS

The practical experience of assessing operational integrity with limited training and limited knowledge of a complicated target operational process can be implemented within the limits of a business school environment. The results of the example ORA were well received by the subject matter experts and the target process owners as constructive notes that could be used to precipitate, not prescribe, process redesign by the owners. Interested third parties, the business school dean explicitly, were able to assess the usefulness and applicability of the learning experience, as well as affirming that an executive level transparency of the base operations was communicated in a one-hour presentation.

The students, one finance graduate student and one accounting graduate student, assigned to work on the ORA had no prior understanding of operational risk or the target process. The bulk of our team effort was consumed in developing our ORA methodology while discovering the terminology to use to describe the ORA. Indeed, even the term ORA took time to be discovered as we iteratively inched away from an audit mindset. Upon completion of the pilot ORA, the students were able to readily converse on the merits and the limitations of the methodology and the estimated effort to adapt to a new target process or re-execute the existing template.

The standard suite of PC software business tools was all that was required. Other than an overview presentation of the Operational Risk Assessment methodology the data, analysis, and process are now housed in a single Excel workbook for this target business process. The use of Critical Path Method tools, special statistical data tools or process engineering tools were found not to be worth the time and effort to learn and integrate to the learning experience. As a basic lab exercise integrated into a business school experience, we found an Operational Risk Assessment to be achievable and a very worthwhile preparation for the real-world challenges of assessing business risk.

Recognition of the ORA limitations are as powerful a learning experience as recognition of the advantages and this is especially true when concluding judgment is communicated to executive management.

1. Right answer always: The methodology only examines compliance to the department's self-defined processes. The department's results are never in question by the ORA team; indeed a requirement of the mind exercise is to believe the departmental result is emphatically correct and thus bring attention to the ambiguous process execution trail as being inadequate. An ORA will never, and should never, challenge the departmental result.

2. Existing process steps are what is: While seemingly innocent, the suggestion of change to the target process is indefensible and a waste of time leading only to the obvious conclusion that the ORA lacks self-discipline. The ORA team has, by definition, less expertise and less understanding than the target department. If there is repetitive inability for compliance to the existing process, suggesting that a re-work of the process is required, the ORA team is the last group to be solicited for advice. Therefore, any suggestions of process change by the ORA team are breeches of the methodology.
3. Not all problems are discovered with a single tool: Fraud, especially with extensive collusion, as well as errors of business judgment will never be discovered by an ORA process. The quality of the departments business processes were originally designed and implemented to bring more consistency to the performance of the departments operation. Fraud, or trickery, is intent to appear to comply but actually not. Compliance as defined in the context of an ORA is literal and demonstrable. Compliance to a goal or an aspiration is also not within the reach of an ORA. That being said, a repeated lack of compliance reported by successive ORAs of a single department could be the basis for where the additional costs of funding an in-depth review should be considered.
4. One department's errors are another department's meat: The realization that business processes must allow for, adjust, and account for errors is painfully simple to state and yet wickedly difficult to implement. Adopting the statisticians rubric, the identification of variance beyond a prescribe tolerance is the definition of an error. An error detected by the targeted business process is, as should be, by design. The frequency of recovery may be operating with compliance to the defined process and yet be a noteworthy observation. The logic model would be that a double negative is a positive and while double processing consumes double the resources, it may be the unavoidable norm for the target industry. The observation is worth a note in the ORA report, but is more proof that the target process is effective than proof there is a problem, and a point for communication with the target subject matter experts (SME).

FURTHER STUDY

We are now considering the usefulness of the exercise and the learning objectives achieved for integration into existing finance and management course work or into the corporate internship program. Also, currently we rely on simple arithmetic to calculate averages and performance, but going forward we are exploring applying simple predictive analytics, regressions and randomness comparison.

REFERENCES

Abkowitz and Mark, 2008. "Operational Risk Management: a case study approach to effective planning and response" John Wiley & Sons

Black, F. and M. Scholes. 1973. "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy,* 81, pp. 637-654.

CFTC and SEC, 2010. "Findings Regarding the Market Events of May 6, 2010" Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues.

Elshahat, A. and Parhizgari, A. and Hong, L. 2012. "The information content of the Banking Regulatory Agencies and the Depository Credit Intermediation Institutions," *Journal of Economics and Business*, 64, Issue 1, January–February 2012, pp. 90-104

Fama, E.F. 1970. "Efficient Capital Markets: A Review of Theory and Empirical Work," *Journal of Finance,* 25, pp. 383–417.

Fama, E.F. and K.R. French**.** 1992. "The Cross-Section of Expected Stock Returns," *Journal of Finance*, 47, pp. 427–65.

Figini, Silvia; Kenett, Ron S.; Salini, Silvia, 2010. "Optimal scaling for risk assessment: merging of operational and financial data," *Quality & Reliability Engineering International* Vol. 26 Issue 8, pp. 887-897.

Fleming, M., 2012. "SAP Customers Move to Managed Cloud Services to Cut Costs and Improve Efficiency of B2B Integration," IDC Whitepaper.

Guegan, D. and Hassani, B. 2011. "Operational Risk: A Basel II++ Step before Basel III," Documents de Travail du Centre d'Economie de la Sorbonne.

Markowitz, H. 1952. "Portfolio Selection, *Journal of Finance* 7, pp. 77-99.

Moosa, I. 2007. *Operational Risk Management: Finance and Capital Markets*. New York: Palgrave Macmillan.

Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues, 2010. "Findings Regarding the Market Events of May 6, 2010"

Ross, S.A**.** 1976. "The Arbitrage Theory of Capital Asset Pricing," *Journal of Economic Theory,* 13, pp. 341–360.

Sharpe, W. 1963. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk," *Journal of Finance,* 19, pp. 425-442.