

Process Mining the Requisition-to-Pay Process: Utilising QPR ProcessAnalyzer in Indirect Procurement Department

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Introduction

Large companies utilise Enterprise Resource Planning (ERP) systems to help run their entire business operations, as these systems help manage business functions across companies whilst focusing on heavy data storage in a shared database. There are ample modules including accounting, customer relationship management, human resources, manufacturing, marketing, project management, quality assurance, sales, and supply chain within ERP systems. However, process inefficiencies tend to negatively impact companies in terms of customer engagement, workforce contentment, mistakes, re-work, neglecting work, waste of resources, amplified operating costs, holdups, and bottlenecks (Cavintek, 2023). Thus, it would be an oversight for a company not to improve and develop their processes within existing ERP systems. To do this, companies should have a clear understanding of their current business processes.

According to Schmeizer and Walch (2022), there are plenty of platforms on the market which businesses can utilise for process optimisation. Big Data provides an opportunity to obtain and analyse events when information is inserted into information systems (Van der Aalst, 2016, pp. 3–10) Process mining as a technique aims to exploit such event data in a meaningful way (op. cit.).

Traditionally organisations have focused on where they would like their process(es) to be but have not been able to obtain true data on where they are now (Badakhshan et al., 2022, p. 3). This is possible with process mining. According to Kermani et al. (2024, pp. 134342, 134353), process mining is on trend, especially in project orientated companies. Badakhshan et al. (2022, pp. 1–2) note that there is an increasing interest in process mining research and practice, although they state it is unclear how organisations use process mining to create value.

Considering procurement specifically, the typical process which purchasing departments follow begins with the trigger of a need to procure goods/services, also known as a request. The next steps involve sourcing and generating a purchase order, receiving a confirmation from the supplier, receiving the goods/services, the invoice related and some method of approval for the invoice to be paid. Deviations to the process can cause issues both in the internal process, but also in the external process (supplier's side) since quotations, sales orders and supply invoices as well as queries or disputes related to invoices from customers can cause additional manual work and potential retractions, re-work, additional emails or other communications and in the case of invoices, credit note and new invoice allocation requirements too.

Analysing the Requisition-to-Pay (R2P) process in an Indirect Procurement department via process mining aims to identify process issues and provide invaluable into the system data. The research project sets out to discover how the QPR processAnalyzer tool can be utilised in the R2P process and what techniques are required to ensure process mining is successful.

Process Mining and Analysing Processes

According to QPR (n.d.-a) there are 7 steps of process mining. These include collecting data, preprocessing data, discovering processes, analysing, and drilling down on root-causes, optimising processes, obtaining automation candidates for prioritisation, and predicting KPI performance and preventing problems.

A process mining project is said to consist of five stages, according to van der Aalst (2016, Chapter 13.3). Planning and justifying (stage 0), extracting (stage 1), creating a control flow model, and connecting even logs (stage 2), creating integrated process models (stage 3), and operational support (stage 4). According to QPR (n.d.-b.), the process mining lifecycle starts with identifying the process model requirements. This is done by preparation in terms of interviews, workshops, hypotheses, process modelling and ETL data via a connection. Once the preparation is complete, the process model is built, and the analysis can be carried out via discovering, analysing, turning the model into relevant and actionable data, defining, and developing key success factors and KPIs i.e., creating a new process model. The next step is then to share results of the discovery and analysis. After the insights, actions can be taken in terms of business initiatives and projects, a re-design model and change management, intelligent automation, and system developments. Once complete, business value is generated.

The identified challenges in process mining include data acquisition, preparation, and interpretation. Process discovery is said to be the most vital and visibly challenging part of process mining. The expectation is that applying the tool will result in in identifying bottlenecks as well as potential automation opportunities. More specifically in relation to procurement solutions highlighted by QPR, the four key areas are reducing maverick

buying, increasing three-way-match rates, gaining procurement process end-to-end visibility, and predicting and preventing process failures.

Results and conclusions

In order to answer the research questions, a process mining project focusing on the R2P process of the case company was carried out. The results show that QPR ProcessAnalyzer can provide valuable insights into business processes, locating bottlenecks, inefficiencies and areas of improvement. However, managing complex data can be challenging, it requires specialised skills to provide meaningful and actionable outcomes. Certain types of data may also be difficult for the platform to manage or may present such data in a complex manner due to complex process scenarios. Additional resources and expertise can therefore be required, which can lead to more time and financial impediments.

The process between transforming the event log data, control-flow model and process model was the most time consuming and difficult part of this project, as was expected based on the literature review. Current system data was used to support in the detection, prediction and recommendation part where operational support was utilised as a validation mechanism. Such interventions, adjustments and redesigns were possible during the transcript phase although this is where the project's main delays arose.

The project faced challenges related to data transformation, and time allocation and the need for additional expertise and support from QPR was necessary to ensure further delays were avoided. The project however has shown vast potential and has already started to pay off, but there were areas for improvement to achieve more comprehensive and faster results. The tool provided valuable data regarding business cases and process improvements which confirmed the development priorities and displayed a positive return on investment to management. The tool's benefits in compliance and process monitoring also contributed to its overall value.

The QPR ProcessAnalyzer platform can be utilised in the R2P process for identifying bottlenecks in the process. Training and knowledge sharing should be done to promote the use of the platform, as well as creating dashboards which allow accurate data to be presented to management in a professional and appealing manner.

Each step of the process can be analysed, either as a whole or as a portion for further granularity. Rework analyses were the starting point of the analysis, at each portion of the process for deeper diving into the data. Then key performance indicators and process performance indicators were considered, as they are the department's current goals, and deviations related were scrutinised. Process developments were made along the way, and management saw the figures based on QPR dashboards, allowing them to make decisions based on real-time data and utilise it to their advantage. Additional recommendations have been noted to guide internal stakeholders when placing purchase requisitions, and robotic process automations have been also highlighted to remove mundane tasks from operations.

The techniques for ensuring process mining endeavours are successful include dedicated resources which can yield faster and more extensive results. It is necessary to have a project team with technical backgrounds

to enhance the effectiveness of process mining, whilst ensuring data accessibility, as this is fundamental to succeeding. External partners, such as QPR, should be regularly involved in keeping the project on track, to ensure it succeeds. Further, establishing clear objectives and data requirements at the beginning of the project is essential, although having an iterative approach is often necessary as new data needs are discovered.

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References

Badakhshan, P., Wurm, B., Grisold, t., Geyer-Klingeberg, J., Mendling, J., & vom Brocke, J. (2022). Creating business value with process mining. *The Journal of Strategic Information Systems 31*(4), 1–3. https://doi.org/10.1016/j.jsis.2022.101745

Cavintek, Inc. (10.6.2023). *How to Improve a Process at Work? 10 Ways to Improve Processes*. https://www.cflowapps.com/how-to-improve-a-process-at-work

Kermani, M. A. M. A., Maghsoudi, M., Darzi, E. (2024). Enhancing Procurement Performance in Project-Oriented Organizations: A Process Analysis Approach. *IEEE Access 12*(1), 134340–134354. https://doi.org/10.1109/ACCESS.2024.3462852

QPR. (n.d.-a). *Procurement*. https://www.qpr.com/process-mining/procurement

QPR. (n.d.-b). *Introduction* to Process Mining. https://training-qpr.talentlms.com/learner/courseinfo/id:159

Schmeizer, R., & Walch, K. (27.4.2022). *How to Improve and Optimize Business Processes, step by step*. TechTarget. https://www.techtarget.com/searchcio/tip/How-to-improve-and-optimize-business-processes-step-by-step

Van der Aalst, W. M. P. (2016). *Process Mining: Data Science in Action* (2nd Ed.). Springer.