Leveraging Process Mining for Enhanced Efficiency in Geran Utilities: Insights and from a Qualitative Study

Extended Abstract

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Abstract— Process mining has gained significant importance in research and practice over the past decade [1]. Many large publicly traded companies have successfully practiced process mining for several years. However, many companies continue to face problems and challenges in this context [2]. Due to the high throughput rates of mass processes and the strict regulatory framework of the energy sector in Germany, process mining is particularly promising for German utilities. A study by the German Association of Energy and Water Industries (BDEW) [3] from 2022 indicates that digitalization is the highest priority on the agenda of utilities. For instance, the ability to analyze large datasets is becoming increasingly important [4].

Furthermore, digitalization can be utilized to analyze and optimize existing processes and internal workflows, thereby identifying and realizing efficiencies [5]. Therefore, process mining should be considered one of those companies' most critical future initiatives. Still, to our best knowledge, utilities in Germany, particularly small and medium-sized utilities, often have not yet implemented process mining, even though they face the societal challenges of digitalization. According to research, the reasons for this are mainly the following: lack of success factors and objectives in the course of the implementation project, as well as a lack of know-how, resulting in insufficient professional support during the implementation [2, 6]. To address these challenges and facilitate the long-term entry of small and medium-sized enterprises, particularly from the German energy sector, into process mining, we performed a still ongoing qualitative study over three months. As part of this study, we conducted ten semi-structured interviews with companies from the energy sector that already use process mining, as well as with consulting companies and a major vendor of process mining software, all of whom have experience with process mining in utilities.

Keywords— Process Mining, Qualitative Study, Empirical Research, Lessons Learned, Business Process Management

I. LESSONS LEARNED

Our lessons learned and key takeaway from those first round of interviews were the following:

A. First pilot in Purchase to Pay

The first pilot process is typically "Accounts Payable" or "Purchase to Pay".

The reason is that this process is highly comparable across different industries and companies and requires relatively little effort. Therefore, it can be mapped easily by using process mining. A successful pilot in this process will likely have a significant demonstration effect on the rest of the organization.

B. Clearly defined Happy Path

For conformance checking, a target process flow, so called "Happy Path", must be defined against which the mined processes will be measured. However, for the discovery phase, it can be advantageous to start mining without a predefined Happy Path and develop one based on the discovery results.

C. Data cleaning in core systems

Before starting process mining, all interview partners, particularly the consulting firms and the software vendor, emphasized the necessity of data cleaning in core systems. The core data systems to be connected must contain accurate data to ensure the mining results do not present a distorted view of reality. Although the interviewees didn´t state specific problems regarding data quality, we assume that they do not differ greatly from the event log data quality problems, proposed by Bose et al. [7] in 2013.

D. Communicate positively

The software vendor particularly emphasized that one of the biggest fears of employees when introducing and using process mining is becoming something of a 'glass employee', as one of the biggest strengths of process mining is to bring transparency into a organization [8]. Therefore we consider open organizational communication as critical to the expected implementation success and long-term effects. This starts with a unified approach from top management through a top-down strategy and extends to training employees through workshops and seminars. According to the interviewees and the authors, this approach should greatly minimize the risk of employees rejecting process mining.

E. Additional Challenges

According to the respondents, further hurdles in the implementation include high costs for suitable process mining software and the associated consultancy, lack of personnel capacity, or insufficient proof of value.

F. Next Steps and Future Research

From the findings and key takeaways, design principles for the successful implementation and execution of process mining are to be developed. These design principles will be examined, validated, and refined in another round of interviews with selected participants, supported by literature regarding especially the topics of necessary data quality and communication. They will then be presented in a full paper to provide potential readers with guidelines to help them implement and utilize process mining more successfully in their organization. We also see great potential in research into improving the cost-effective implementation of process mining and plan to become active in this area, as some respondents rated the offerings of the current market leaders as too expensive.

II. REFERENCES

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