A Primer on Process Mining

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Digital disruption is patent across all industries. The advent of new business models heightened customer expectations, and the availability of newer technologies is catalyzing business transformation. There is a huge need to be competitive, having business insights in real-time, better visibility, greater efficiency, and the capability to detect pain points in time. Therefore, it is critical for any business to have a deeper understanding of how things are working, and which are the areas for improvement. Addressing these challenges will require organizations to revisit their approach to detecting troubles and tackling them.

The base of any successful transformation initiative - whether it is digital transformation, intelligent automation, customer experience improvement, or regulatory compliance - is the organization's capability to aim at the right problem areas or improvement opportunities.

This is where process mining promises organizations by helping teams discover processes, highlighting pain points, analyzing conformance, and ascertaining opportunities to improve. With a compound annual growth rate of more than 45%, Markets & Markets estimated the value of the process mining sector to be 1.8 billion USD in 2023. By 2028, it is predicted to reach a net value of 12 billion USD.

The process intelligence market shows ni signs of slowing down most enterprises predict significant spending increases"

Q: What is your current level of investment in process intelligence technology and associated services and expected spending in the next 12-18 months
% respondents

Software License

Process minig software licenses

Process discovery software licenses

Internal Team Support

Internal team supporting product implementation and integrations

Internal team dedicated support for ongoing process insights

External Services Support

External team dedicated support for ongoing process insights

External consulting and advisory services

Third part services partner product implementation and integrations

Sample: Study by HFS Research and Genpact; 400 executives from G2000 enterprises
Source: HFS Research, 2023

What is Process Mining?

The definition as per the Process Mining Manifesto written by the members and supporters of the IEEE Task Force on Process Mining:

The idea of process mining is to discover, monitor, and improve real processes (i.e., not assumed processes) by extracting knowledge from event logs readily available in today's (information) systems. Process mining includes (automated) process discovery (i.e., extracting process models from an event log), conformance checking (i.e., monitoring deviations by comparing model and log), social network/ organizational mining, automated construction of simulation models, model extension, model repair, case prediction, and history-based recommendations.

Process mining enables businesses to discover processes, analyze multiple variations, and gain insights into how their processes are performed in real time. These 'X-ray reports' help them have a crystal-clear view of the processes and enable them to identify and prioritize opportunities for optimization, automation, reengineering, digital extension, elimination, or harmonization.

Process mining provides a new means to improve processes in various application domains. The omnipresence of event data combined with process mining capabilities allows organizations to diagnose problems based on facts rather than subjective opinions.

Traditional Process Mapping Methods vs Process Mining

The traditional method of mapping business processes is time and effort-intensive. It warrants the analysis of multiple documents, interviews, workshops, SoP reviews, and time & motion studies involving various stakeholders across the organization. The output of this whole effort is quite subjective, qualitative, and filled with biases & conjectures. The process details captured by an analyst are opinionated and are completely based on the individual understanding of the participants. The inputs given by them are a one-time understanding of the process.

In today's digital world, every bit of information that flows through a business process generates its digital trail, creating a plethora of data and uncovering where the information traveled to and when it did. These trails are leveraged by process mining techniques, making it an objective way to understand the process. It provides a real-time data-driven view of actual existing workflows and their outcomes.

Traditional Process Mapping

- Subjective
- Time-intensive
- Costly
- One-time understanding

Process Mining

- Objective
- Faster
- Cost-effective
- Realtime updates

Task Mining

Task mining is a technology used to capture and analyze user interactions within digital systems to understand how tasks are performed in real-world scenarios. It involves automatically recording user interactions such as mouse clicks, keystrokes, and application usage while employees perform their daily tasks on their computers or other digital devices.

The recorded data is then aggregated and analyzed to provide insights into how tasks are executed, including the sequence of steps, the time taken for each step, common pathways, deviations from standard procedures, and potential bottlenecks or inefficiencies. These insights can be valuable for identifying opportunities for process optimization, automation, compliance monitoring, and employee training.

It differs from process mining in that it focuses specifically on capturing user interactions at the task level, whereas process mining typically analyzes event logs generated by information systems to reconstruct and visualize end-to-end business processes.

Process Mining and Other Process Analysis Techniques

As per Wil van der Aalst, who is widely credited as the inventor of process mining, process mining bridges the gap between traditional model-based process analysis and data-intensive analysis techniques such as data mining and machine learning.

Traditional Business Process Management (BPM) and Workflow Management (WfM) approaches and software are model-driven, giving less importance to the actual data from event logs. Other methods, such as Machine Learning, Data Mining, and Business Intelligence, focus more on data without any consideration for end-to-end process models. Process mining aims to bridge the gap between BPM & WfM and DM, BI, ML, etc.

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In contrast, process mining leverages event data and process models to help with checking conformance, predicting delays, finding variants, and assisting in decision-making. It puts massive data volumes in a business process context.

Typical Use Cases for Process Mining

Discovery and analysis

Process mining provides a visual representation of actual business operations and processes by applying a set of algorithms to events and log data, resulting in highly adaptable, highly maintainable, and highly validated process models. Besides identifying process inefficiencies, this technique helps trace areas of improvement (for example, during digitalization initiatives) and reveals how to attain aimed business outcomes.

Auditing and compliance

Most organizations have defined standard operating procedures, work policies, work instructions, and established practices embedded into enterprise applications, such as ERP and CRM. But in real life, many of such predefined operations are often accompanied by "shadow operations." Process mining helps validate or audit whether real-life operations conform to these model operations.

Automation

Process mining helps in discovering and assessing the opportunities for process automation. It supports analyzing the impact of automation and the potential Return-on-Investment (ROI), offering proof-of-value and cost savings in the digital transformation journey.

Process Optimization

By easily identifying uncommon cases, outliers, inefficiencies, and unusual patterns, process mining helps trace issues before they disrupt business operations or customer experience. Analyzing processes creates prospects to benchmark and standardize performance, thereby leading to better efficiencies and advancements in processes

Summary

Process mining has surely moved away from academia and is ready to be implemented in business. To remain agile and competitive in business, it is crucial to have crystal-clear visibility of various aspects of the business in real-time. It enables businesses to find inefficiencies and leverage technologies such as IA and IoT. It provides unbiased real-time data for decision-making, helping organizations of all sizes discover process deviations, operational gaps, and opportunities to improve productivity.

ABOUT THE AUTHOR

Harshal is an accomplished Lead Business Analyst with over 13 years of expertise in Business Analysis & Consulting. He excels in Process Mining, Process Discovery, and Automation across various industries.Renowned for his extensive experience in RPA, Low-Code No-Code solutions, and digital process automation, Harshal has led high-impact consulting activities, architected cutting-edge automated solutions, and driven successful pre-sales initiatives. He holds a PG Diploma in Management & numerous certifications in Process Mining and RPA, underscoring his profound knowledge and leadership in the field. Harshal's exceptional skills and innovative approach make him a distinguished expert in business analysis and process automation

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