



Unleashing Hidden Profits: Process Mining and Digital Twins

Increasing net profit isn't just about boosting sales or cutting costs. It's about optimizing your entire operation to eliminate profit leaks – those hidden inefficiencies that silently drain your bottom line.

Two powerful tools for uncovering and plugging these leaks are process mining and digital twins. Let's explore how these innovative approaches can transform your business operations and drive profitability.

Overview: Process Mining and Digital Twins

Process mining is like having X-ray vision for your business processes. It uses data from your existing IT systems to create a clear, objective picture of how your processes actually work in real life, not just how you think they work. This reveals inefficiencies, bottlenecks, and deviations that may be costing you money without you even realizing it.

Digital twins, on the other hand, are virtual replicas of your physical processes or systems. They allow you to simulate changes and predict outcomes before implementing them in the real world. Think of it as a risk-free testing ground for process improvements.

Both these tools increase net profit by:

1. Identifying inefficiencies and bottlenecks that are currently eating into your margins
2. Allowing you to test and refine improvements before investing in their implementation
3. Providing ongoing monitoring to catch new inefficiencies as they arise
4. Enabling data-driven decision making for continuous process optimization

Process Mining: Uncovering the Reality of Your Operations

Process mining software is your secret weapon for understanding what's really happening in your business. Here's how it works:

1. *Data Extraction*: The software connects to your existing systems (ERP, CRM, workflow tools) and extracts event logs – detailed records of what happened, when, and by whom.
2. *Process Discovery*: It analyzes these logs to automatically create a visual map of your actual process, including all variations and exceptions.
3. *Conformance Checking*: The software compares the actual process with your intended process, highlighting deviations that could be costing you money.
4. *Performance Analysis*: It calculates key metrics like processing times and bottlenecks, showing exactly where delays are happening.
5. *Root Cause Analysis*: For any issues identified, the software helps pinpoint root causes. For example, it might reveal that invoice processing delays are often associated with a particular supplier.
6. *Continuous Monitoring*: Once set up, process mining continuously monitors your processes, alerting you to new inefficiencies as they emerge.

By using process mining, you might discover that:

- 30% of your invoices are going through unnecessary approval steps, delaying payment and missing early payment discounts.
- One particular step in your production process is causing a bottleneck that reduces overall output by 15%.
- A specific type of customer request is taking 3 times longer to process than average, hurting customer satisfaction and tying up resources.

Each of these insights represents an opportunity to plug a profit leak and improve your bottom line.

Digital Twins: Your Virtual Sandbox for Process Improvement

While process mining shows you what's happening now, digital twins allow you to explore what could happen if you make changes. Here's how they work:

1. *Model Creation*: Using data from your real processes (which could come from your process mining efforts), you create a detailed virtual model of your system or process.
2. *Simulation*: This model allows you to run "what-if" scenarios. What if you automated a particular step? What if you reorganized your warehouse layout? What if you changed your staffing levels?
3. *Prediction*: The digital twin predicts the outcomes of these changes, showing you the potential impact on key performance indicators like processing time, cost, or output quality.

4. *Optimization*: By running multiple simulations, you can optimize your processes in the virtual world before making any changes in the real world.
5. *Continuous Learning*: As your real processes continue to run and generate data, this can be fed back into the digital twin, continuously improving its accuracy.

Using a digital twin, you might:

- Simulate the impact of automating your accounts payable process, predicting a 40% reduction in processing time and a 25% cost saving.
- Test different layouts for your production line, finding a configuration that could increase output by 20% without additional resources.
- Model the effects of different inventory management strategies, identifying an approach that could reduce carrying costs by 15% while maintaining service levels.

Bringing It All Together: Process Mining and Digital Twins in Action

Imagine you're the CEO of a manufacturing company looking to improve profitability. Here's how you might use process mining and digital twins together:

1. *Start with Process Mining*: You implement process mining software to analyze your order-to-cash process. The software reveals that there's a significant delay between orders being received and production starting, and that this delay is worse for certain types of products.
2. *Root Cause Analysis*: Digging deeper with the process mining tool, you discover that the delay is caused by a complex approval process for customized orders, and by frequent stock-outs of key components for certain product lines.
3. *Create a Digital Twin*: Using the detailed process map and data from your process mining exercise, you create a digital twin of your entire order-to-cash process, including sales, inventory management, production, and shipping.
4. *Simulate Improvements*: With your digital twin, you simulate several changes:
 - a. Streamlining the approval process for custom orders
 - b. Implementing an automated reordering system for key components
 - c. Reorganizing your production floor to optimize for your most common product configurations
5. *Predict Outcomes*: The digital twin predicts that these changes could reduce order-to-delivery time by 30%, decrease inventory costs by 20%, and increase overall capacity by 15%.
6. *Implement and Monitor*: Based on these predictions, you implement the changes in the real world. You continue to use process mining to monitor the actual results and feed this data back into your digital twin for ongoing optimization.

By combining process mining and digital twins, you've not only identified profit leaks but also found and tested solutions, all while minimizing risk. The result is a significant increase in efficiency and profitability, turning hidden inefficiencies into a competitive advantage.

What processes in your business could benefit from this level of analysis and optimization? Share your thoughts and experiences in the comments below.

For more strategies on optimizing your business operations, contact me:

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