Business Processes Analysis and Analytics

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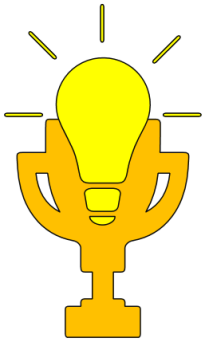
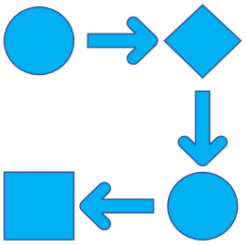
When it comes to improving and analyzing processes a data driven approach should be considered for use to generate clear evidence. By using Process Analytics we can help bridging any significant gap between what management oversees holistically and what specialists know in terms of details. Moreover, given the objective to improve business processes based on data evidence, the right insights into how an organisation's processes actually work are delivered to our clients.

Rapid Time to Productivity when contracted.



Assess to Cutting Edge methods delivered



Best practice incorporated by use of modern commercial software.

Our consultancy spans a range of multiple topics for enhancing profiability of business processes, improving response time, and strenghtening controls in production and governance processes.

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Process Management

The nature of any process is to transform inputs into outputs. Conceptually, an input can be something tangible such as raw materials, but it can also be intangible such as customer service requests. With inputs entering the process, there is flow of units through the process which each unit being subjected to activities that are performed in parallel or

subsquently. To describe any process in terms of its five constituent elements one can use the following **definition**.

> NB: *a process consists of firstly inputs and secondly outputs, thirdly units that flow through, fourthly activities performed on the units (including buffers), and fifthly resources (actors) that operate the activities.*

The outputs, aka products or services, render process deliverables for serving a customers. The effectiveness and efficiency of any process should therefore be assessed from customer perspective. Specifically, customers commonly value delivered products and services along these **four categories** : Cost (Low product cost), Quality (High product quality), Variety (High product variety), Time (Low response time).

Key measures for process flow analysis and management indicate the performance of processes and provide the levers for improvement in terms of net present value or return on assets.

Measure	Lever
▪ **Flow Time** – average time for units to flow through the process, to convert inputs into outputs.	Decrease Flow Time
▪ **Throughput** – average number of units that flow through the process (only for stable process).	Increase Throughput
▪ **Inventory** – average inventory over time for a stable process.	Decrease Inventory
▪ Cost	Reduce Process Cost
▪ Quality	Improve Process Quality

Inventory and therefore in less cost and labour to maintain the Inventory.

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Organizations are typically organized in a functional structure, where specific tasks and employees are allocated to functional teams, e.g. tasks allocted to the inventory management team. By comparison, a business process oriented view concerns the activities that are execcuted in a specific order across functional teams. Such an end-to-end process provides a specific outcome, commonly rendered by delivery of a service or a product. From management perspective, an end-to-end process oriented set-up allows to oversee and steer what matters for an organisation, primarily risk

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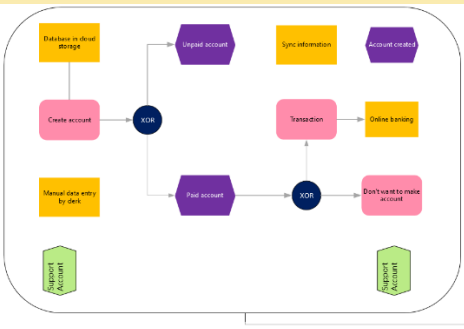
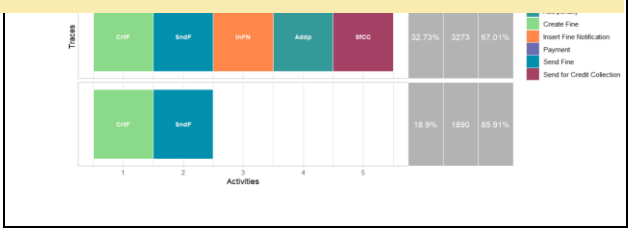


least common.



Methodology

Determining whether a process is effective requires quantification by using

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inputs into outputs, process flexibility, and process quality to produce and deliver quality outputs in terms of products or services - is vital for ensuring effective business processes are in place. Processes are deeemed effective if the delivered product or service leads to customer satisfaction alongside whatseover attributes are valued most by clients.

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the outgoing flow rate. Inventory build up or depletion is not possible over longer times. Stable processes show equilibrium between inflow and outflow rates in the long run, by which a **throughput** is measured as the average inflow (or outflow) rate. Throughput such indicates the average number of products or service outputs produced or delivered. **Capacity** on the other hand defines the maximum sustainable throughput. Since activities are performed by means of ressources limits on ressources leads to limits on capacity.

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For determing the **critical path** of a process flowchart one determines the flow time for each path and screens for the path the with longest flow time.

Process Analytics

Processes used to structure businesses, services and productions have logs with abundance of data. Each event in these logs is associated to an activity of the process. Such event logs not merely record these events and provide data evidence about the operational processes, but also these logs can be subject to data mining techniques to explore important insights about process bottlenecks.

Process Mining

department is displayed in the table below for illustration. Evaluation of

logged process visualizes the flow of activities, .e.g. in process instance ABC001 the activitiy ‘evaluating’ is followed by activity ‘onboarding’.

Case ID	Start Time	End Time	Activity
ABC001	2024-02-15 08:45	2024-02-15 11:30	Request onboarding
XYZ001	2024-02-16 08:45	2024-02-16 09:15	Request onboarding
ABC001	2024-02-17 08:45	2024-02-17 10:30	Request evaluating

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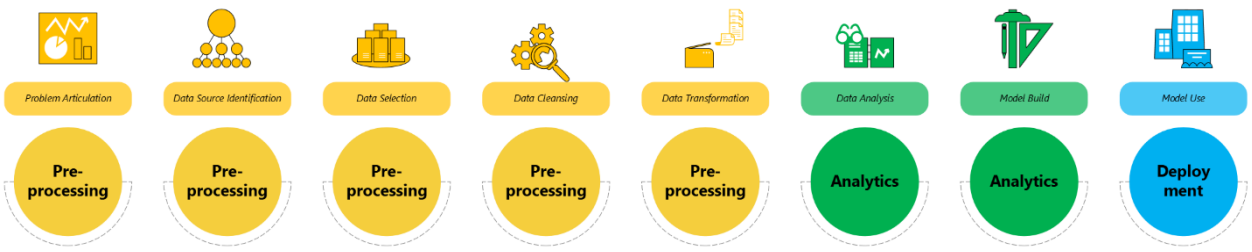
Conformance checking is another technique used in Process Mining. Conformance checking compares the actual data records of activities with a target process model. The result of actuals to targets guides in identifying deviations from targeted process efficiency and compliance. Therefore, conformance checking is perfectly suited to uncover root causes of efficiency deviations and breach of compliance rules.

Marketing Analytics

As with all analytical methods derived from data, a structured approach commencing with preparing and analyzing data and ending with building and approving the final model is required. This approach is illustrated in the below diagram, with data preprocessing steps used to find outliers, missing values, and interesting patterns in the data.



To illustrate the Pre-processing process **denormalisation** is a case within. A common approach is to structure data for use in development in a single

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What – Used in Marketing Analytics to understand customer structure.

Why – For targeted advertising based on customer segments.

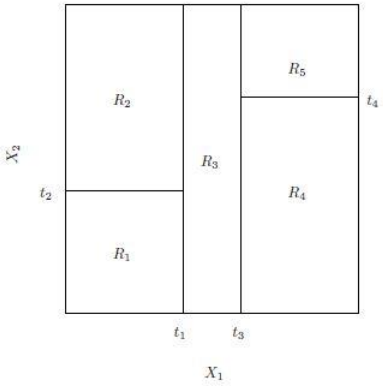
Data – Internal Fraud data.

Approach – Automation of Expert based approach and rules based on internal fraud experience in the business.

Outcome – Predicting / detecting fraud based on customer behaviour.

Corrective Action – Implementing updates on expert rules and adapting fraud detection processes to automated alerts.

Consequence – Reducing fraud rate and learning from historical fraud patterns.



Churn Prediction

What – Used in Marketing Analytics to predict customer churn.

Why – More beneficial to retain existing customers than to spend significantly on attracting new customers.

Data – Product & Service data, complaints data, demographic data.

Outcome – Identifying why the issue did arise to allow devising measures to counter customer churn.

Corrective Action – Implementing corrective actions based on the insight obtained from churn prediction.

Consequence – Reducing or removing churn to stabilize customer base over time.

Customer Lifetime Value

What – Quantifiable as a metric CLV defined as the present value of the expected return from customers less the costs of building and maintaining the customer relationship.

Why – For targeted advertising based on customer segments.

Data – Product, Service and Sales data, demographic data.

Outcome – Identifying profitable customers or potential new customers.

Corrective Action – Implementing corrective actions based on the insight obtained from churn prediction.

Consequence – Reducing or removing churn to stabilize customer base over time.

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Profit Evaluation of Classification Models

What – Used in Marketing Analytics to evaluate performance of classification models from profitability angle.

Why – More beneficial to retain existing customers than to spend significantly on attracting new customers.

Data – Classification Model data.

Outcome – Calculation of average misclassification cost.

Corrective Action – Implementing corrective actions based on the insight obtained from churn prediction.

Consequence – Reducing or removing churn to stabilize customer base over time.