AI/ML for Commercial Excellence
A Stanley Black and Decker Perspective

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Stanley Black & Decker
Speaker Profile

- Data Scientist | Artist | Architect | Consultant | Problem Solver | Coach

- AI and ML experience in the healthcare, automotive, industrial distribution, manufacturing, digital marketing and services industries.

- Specialize in operation research, pricing science, machine learning, artificial intelligence, advanced analytics, architecture, strategy development, business intelligence, process improvement, and data.

Prabhakar Narasimhadevar

Senior Director of Data Science
Stanley Black & Decker
Who is Stanley Black & Decker?
Wait there’s more!

Stanley Security Solutions

Hospital & Healthcare

Fastening Solutions

Infrastructure Products

Pipeline Services
Stanley Black & Decker in numbers..

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<tr>
<th>30+</th>
<th>$15.6 Bn</th>
<th>Over</th>
<th>#30</th>
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<tbody>
<tr>
<td>Globally recognized brands</td>
<td>2020 Revenues</td>
<td>100,000 different products made with Stanley Fasteners</td>
<td>Most sustainable company in the US</td>
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<tr>
<th>122</th>
<th>50,000</th>
<th>50</th>
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<tr>
<td>Manufacturing facilities and warehouses globally</td>
<td>Miles of oil and gas pipeline laid</td>
<td>tools sold per second</td>
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<tr>
<th>70+</th>
<th>59k+</th>
<th>#8</th>
<th>Over</th>
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<tr>
<td>Enterprise Resource Planning systems</td>
<td>employees across 740 sites in 50 countries</td>
<td>most innovative durable goods company with 13k+ patents</td>
<td>500,000 Products commercially available</td>
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# Mogul #1 Company for Diversity & Inclusion
Definition of **Commercial Excellence** at SBD
How do all the pieces fit together
What are commercial actions?
So Commercial excellence is...

Optimizing commercial actions to balance the needs of an end consumer while maximizing value generated for all parties on the way is commercial excellence.
Architecture of AI driven Commercial Excellence
Commercial Excellence Strategy

- **Product Portfolio Optimization**: Ensure product portfolio and new product pipeline maximize profit and minimize complexity.
- **Pricing & Margin Recovery**: Ensure List Price, G2N, Cost to Serve capture maximum value.
- **Segmentation & Channel Optimization**: Understand the market drivers to differentiate by channel/segment to maximize customer delight.
- **Sales Force & Market Coverage**: Optimize size and structure of salesforce and ensure its incented to grow business profitably.
- **Promotion Planning & Execution**: Ensure new and existing products are promoted without eroding value.
- **Sales Process & Operations**: Optimize size and structure of salesforce and ensure its incented to grow business profitably.

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**Margins Transparency**

**Market Transparency**

**Operations Transparency**
Data Ecosystem

Customer POS Data

Promotion

Shipment

Sales Order

Competitor

Marketing

External Driver Data

Market Risks

Customer Inventory

Financial Allocations

Strategy Matrices

Business Hierarchies

Commercial Excellence Solution
Solution Ecosystem

System of Mappings

System of Analysis

System of Visualization

System of Action

Strategy Grids

Allocations + System of Record
Some places to start..
Measurement Architecture (contd.)
Why Artificial Intelligence or Machine Learning?
Modeling Challenges

- Past models are not reflective of how the business should be run
- Past data generated does not enough variation to drive active insights about customer
- Modeling Covid-19 impact on business
- Data hierarchies in systems of record are not sufficiently detailed or managed
- Data hierarchies in systems of record are not aligned to business decision makers
Organizational Challenges

• Organizational alignment not conducive to AI/ML
• Data systems not agile or performant enough
• AI/ML driven decision fatigue due to lack of deployment program
• Product owners see dashboards as outcomes not system integration of actions
• AI before strategy not the other way round
• Decision making and deploying structure is missing
• Mechanisms for funding projects are not sophisticated enough
• Supporting talent development not aligned to AI/ML solutions
AutoML… to use or not to use...

Every engine comes with the habits of designers and assumptions made in favor or product releases to drive sales.

Best way to drive values:
- Understand formulation of problem in AutoML engine
- Take advantage of automation of robust algorithm and feature transformation patterns aligned to your problem
- Leverage deployment capability
AI/ML Problem Formulation Archetype

Loss Function

\[\text{[(List Price} - \text{Brand Discount} - \text{Other discounts} - \text{Service Costs}) - (\text{Total Std. Cost})] \times \text{Quantity}\]

Response

POS Quantity Sold

Brand Premium or Brand Discount

Discount%

Product brand + Category1 + Platform

Brand A
Product 123
20V platform

Product brand

Brand A
To Experiment or to Model?
Are you done once models are built?

Business

Data Scientists

Meta Analysis

Measurement
Note on integration with Supply Chain
The Organization that builds the AI to drive Commercial Excellence
Portfolio Delivery Model

Data Science Project Lifecycle

Project prospecting → Portfolio integration → Minimum Viable Solution definition → Project Execution → Value capture definition → Project productization (Optional) → Product Project maintenance, upgrade & value reporting

Did not pass a Quick Fail Gate

Redefine and record change to project
### AI/ML Solution Portfolio Example

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<tr>
<td>Core Process</td>
<td>Customer, Product, Channel, Sales and Pricing Strategy</td>
<td>Customer Segmentation</td>
<td>Margin Resilient Commercial Excellence</td>
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<td>Price &amp; Promotional Guidance</td>
<td>Product Portfolio Optimization</td>
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<td>Commercial Action Administration – Execution &amp; Automation</td>
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<td>Conjoint Analyses</td>
<td>Deal Scoring</td>
<td>Segmentation Models</td>
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**AI/ML involvement**

**Business involvement**

*StanleyBlack&Decker for those who make the world*
Portfolio Prioritization Model

Degree of Org. Transformation (People, Process, Contracts)

Complexity of delivery (Data, Knowledge, Algorithm)

ROI of solution (Incremental Revenue or Incremental Margin)/Investment in solution
Insight as a Service Roadmap

- **Crawl**: Insight driven basic process automation and integration into current commercial workflow
  - 0-6 months

- **Walk**: Recommendation driven strategic automation
  - 1 - 2 years

- **Run**: Insight to Recommendation-as-a-service integrated into commercial planning workflow
  - 2+ years

**Insight-driven Basic Process Automation and Integration into Current Commercial Workflow**

**Enhanced Recommendations**
Recommendation driven strategic automation

**Cognitive Automation**
Insight to Recommendation-as-a-service integrated into commercial planning workflow
Design for Insight Assurance

Design for low manual overhead to maintain and upgrade

- Monitor the Ecosystem and all depend components
- Test thoroughly
- Invest in quick failure and faster pivots and pilots
- Document potential failures in advance
- Create end user risk mitigation plan
Organization Structure Example

People Capability Areas

- **Data**
  - Use case driven sandboxes
  - Strategic centralized source of truth
  - Democratized, federated, secure source of truth

- **BI**
  - Key reporting solutions
  - Business intelligence
  - Self service, adaptive business visibility

- **Decision Science**
  - Selective high value MVPs
  - Strategic portfolio of models driving decisions
  - Cognitive decision support as a service

- **Robotic Process Automation**
  - Selective high productivity MVPs
  - Strategic process automation driven human in loop
  - Cognitive delegation of authority and approval

- **Product AI/ML**
  - Industry driven product MVPs
  - Centralized deployment architecture for faster GTM
  - AI as scalable service

- **Technology**
  - User driven focused to support use cases
  - Centralized, monitored services and compute
  - Scalable service oriented architecture

Business Capability Areas

- Supply Chain & Operations
- Sales & Marketing
- Finance
- Corporate
- Human Resource
- New Product Innovation

P&L Streams

- Asset A
- Asset B
- Asset C
- Asset D
- Asset E
- Asset F