LEVERAGING DATA FOR REAL TIME SUPPLY CHAIN INSIGHTS

KAUSHIK YATHINDRA
HEAD – ANALYTICS & DIGITAL SOLUTIONS
ABOUT ME & ECOLAB

WHY WE NEED TO CHANGE?

CHANGE MANAGEMENT SET-UP

CASE STUDY

AI, MACHINE LEARNING & USE CASES
CIPS EU YOUNG SUPPLY CHAIN PROFESSIONAL OF THE YEAR 2018

DIGITAL ENTHUSIAST | KEYNOTE SPEAKER

BEROE, HSBC & NOW ECOLAB
We Are a Global Company with Global Reach

Founded in 1923

Headquartered in St. Paul, MN

48,000+ global associates*

FORTUNE 250 company

119 manufacturing facilities

1M+ customer locations

$13B in 2016 sales

19 global technology centers

8,100 patents

Serving customers in 170+ countries

*26,500 sales-and-service people, 1,600 R&D scientists, engineers and technical specialists
Every year, Ecolab helps:

- Conserve 188 BILLION gallons of water
- Save 19 TRILLION BTUs of energy
- Prevent more than 1 MILLION foodborne illnesses
- Produce 42% of the global processed milk supply
- Clean 1 BILLION+ hotel rooms
- Generate 22% of the world’s power
- Avoid 2.4 BILLION pounds of CO₂ emissions
- Make 25% of the world’s processed food safe
- Serve 45 BILLION meals
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WHAT REPRESENTS FOR SUPPLY CHAIN...

INCREASED SUPPLY CHAIN DISRUPTIONS

- Global Demand Increasing
- Speculation
- Currency Fluctuation
- Global Debt Crisis
- Government Policies
- Natural Catastrophes
- Consumer Demand
- Trade / Price War
- Global Pandemic

40% BUSINESS CLOSED

€5bn REVENUE LOST

10% TARIFF PRICE WARS

50% TRUCK TRAFFIC DOWN
Changing Customer Expectations

Outsized Operational Gains

Intuitive Experiences

Deeper partnerships and expertise
Core capabilities that drive the best results/lowest total costs for customers.

CHEMISTRY & DISPENSING

ON-SITE SERVICE

OUR CORE CAPABILITIES

DATA-DRIVEN INSIGHTS

TRAINING & CERTIFICATION
Positioned to Capture Value from Digital Technology

2,800,000 Wired Customer Sites

6B unique monthly measurements

1,800 Digital Tech Professionals

27,000 Field experts
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## Water Safety Intelligence

### Problem:

<table>
<thead>
<tr>
<th>4x</th>
<th>$2.6M</th>
<th>$8M</th>
<th>$715M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in reported cases over the past 18 years</td>
<td>Average cost per outbreak</td>
<td>Estimated impact on brand and operations per case</td>
<td>Annual spend in hospitality and healthcare testing for and remediating legionella&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
Water Safety Intelligence: Mitigating Legionella Risk

DATA COLLECTION
Water quality, legionella growth data and analytical results collected from multiple sources

ALERT AND ACTION NOTIFICATIONS
Site level alerts and action plans generated to reduce legionella growth risk

CUSTOMER PORTAL
Rolls up data at an enterprise level and calculates a risk index for each location

COMPLIANCE AND PERFORMANCE
Monitors compliance to SOPs and measures program performance

Resulting in...

44% reduction in Legionella test positives
10% decrease in program costs
50% reduction in incident response time
It is not (only) about technology...

PP  +  NT  =  EPP
Poor Process  New Technology  Expensive Poor Processes
ECOLAB PLANT ORDER MANAGEMENT
DE-RISKING DASHBOARD

CLICK ON PLANT REPORT SUMMARY TO SEE HOW ARE OUR PLANTS PERFORMING ACROSS EACH OF THE HIGHLIGHTED METRICS!

PO CREATION (ON TIME / LATE)

NOT OK

URGENT PO'S

OK

PO RELEASED

NOT OK

CHECK MASTER DATA & AMEND / ESCALATE

PO CONFIRMATION (YES / NO)

YES

CHECK CONFIRMATION CONTENT

OK - END

1. CHASE MISSING SUPPLIER CONFIRMATIONS
2. AMEND PO'S ACCORDING TO ORDER CONFIRMATION

OK - END

OTIF (ON TIME / LATE)
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MACHINE LEARNING SHOWS THE POTENTIAL TO REDUCE LOGISTICS COSTS

### Breakdown of the incremental benefit

<table>
<thead>
<tr>
<th>Incremental benefit, by driver (%)</th>
<th>Range (%)</th>
<th>Economic Impact</th>
<th>= Driver’s share of revenues (%) X Optimization possible (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.02</td>
<td>0.17 to 0.26</td>
<td>Inventory holding costs ↓</td>
<td>Inventory carrying costs: 2.0 to 2.5</td>
</tr>
<tr>
<td>0.42</td>
<td>0.28 to 0.56</td>
<td>LC fees ↓</td>
<td>LC transaction fees: ~0.56</td>
</tr>
<tr>
<td>0.02</td>
<td>0.01 to 0.02</td>
<td>Blocked working capital ↓</td>
<td>Average share of goods damaged per shipment: ~2.3</td>
</tr>
<tr>
<td>0.03</td>
<td>0.00 to 0.06</td>
<td>Brokers’ fees ↓</td>
<td>Customs brokerage per shipment: 0.01 to 0.13</td>
</tr>
<tr>
<td>0.11</td>
<td>0.07 to 0.15</td>
<td>Pilferage and fraud ↓</td>
<td>Probability of theft per shipment: 0.14 to 0.19</td>
</tr>
<tr>
<td>0.02</td>
<td>~0.02</td>
<td>Container costs ↓</td>
<td>Container cost per shipment: ~0.2</td>
</tr>
</tbody>
</table>

Share of revenues (%)

- 0.8
- 0.6
- 0.2

Driven by cost reductions

ECONOLAB
IBM WATSON IMPACT ON LOGISTICS ASSETS
THE FUTURE IS NOW !!
THANK YOU!