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PORTFOLIO

Sai Teja Vanamala

Industrial Engineer

Contents (sorted in order of relevancy to Industrial Engineering)

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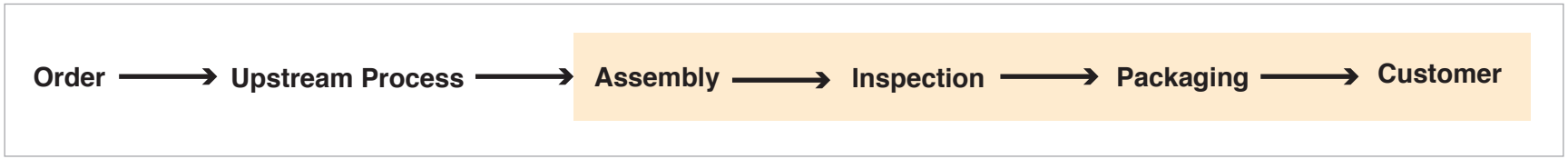
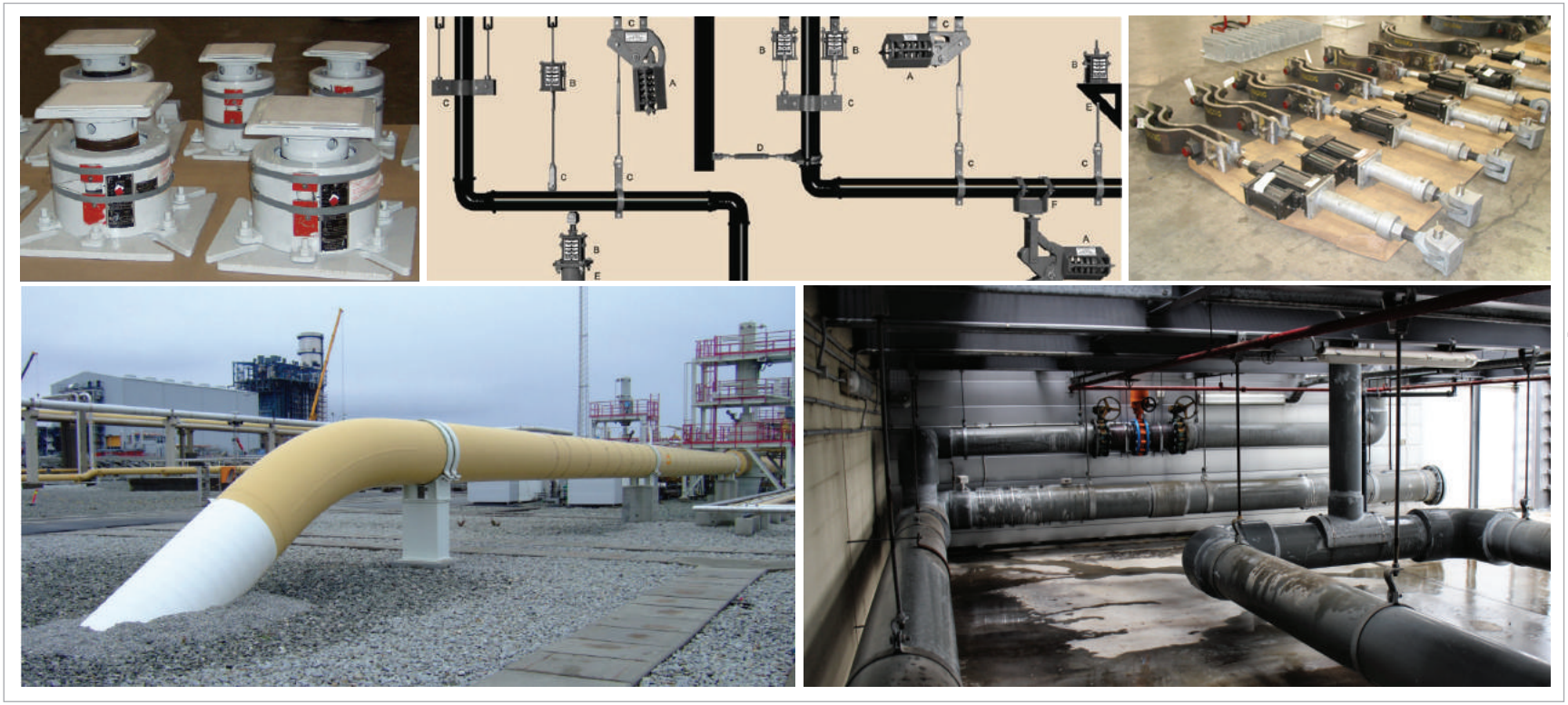
Production Manager, Assembly Department (Oct 2018 - Jul 2019)

Industrial Engineer, Galvanizing and Structural Supports (Jul 2018 - Oct 2019)



Assembly Department High Level Process Map



(Source: Wikipedia, Non Commercial, Shareable License)

Assembly Department Product Line

Production Manager, Assembly Department (Oct 2018 - Jul 2019)

Industrial Engineer, Galvanizing and Structural Supports (Jul 2018 - Oct 2019)

Goals

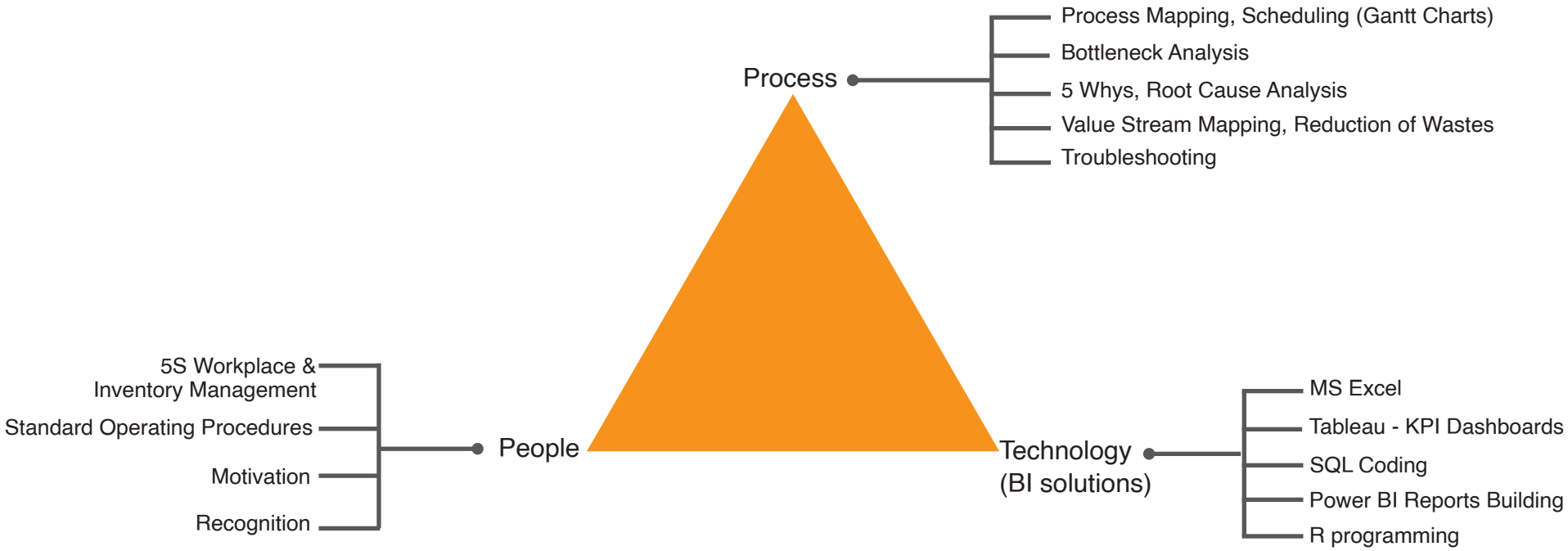
1. Productivity KPI (Increase from 2.5 lb/hr/emp to 10 lb/hr/emp)
2. On-Time Delivery (Increase from 40% to 100%)

Solution

$Y_{outputs} = f(x_{intputs})$; Y = Productivity and On time delivery

$Y = f$ (Process, People, Technology)

Transformation Triangle



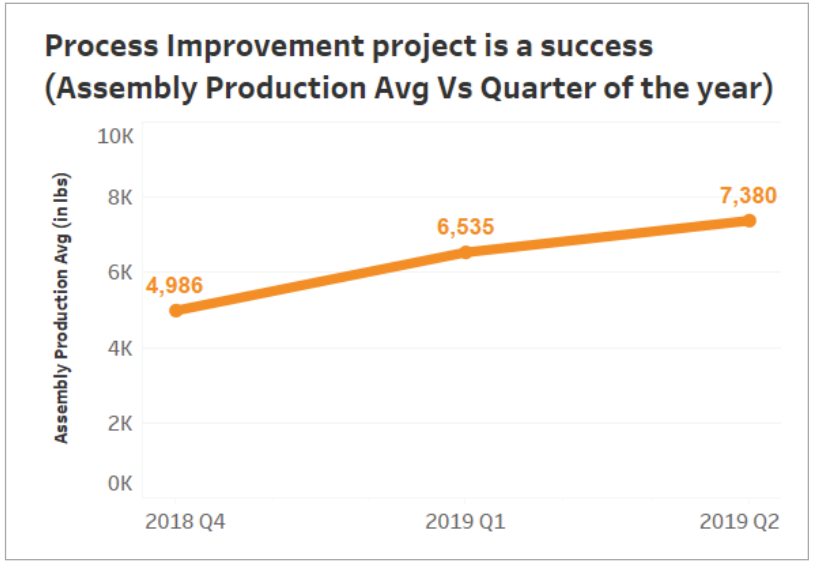
Production Manager, Assembly Department (Oct 2018 - Jul 2019)

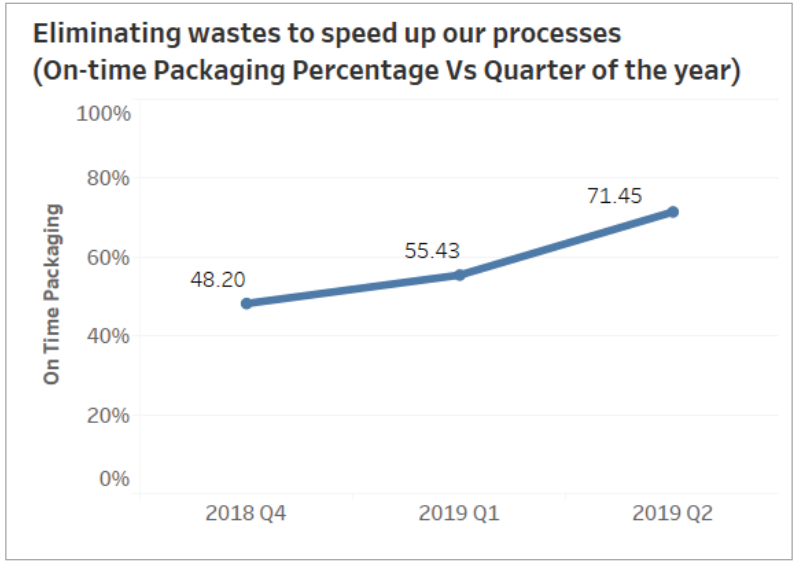
Industrial Engineer, Galvanizing and Structural Supports (Jul 2018 - Oct 2019)

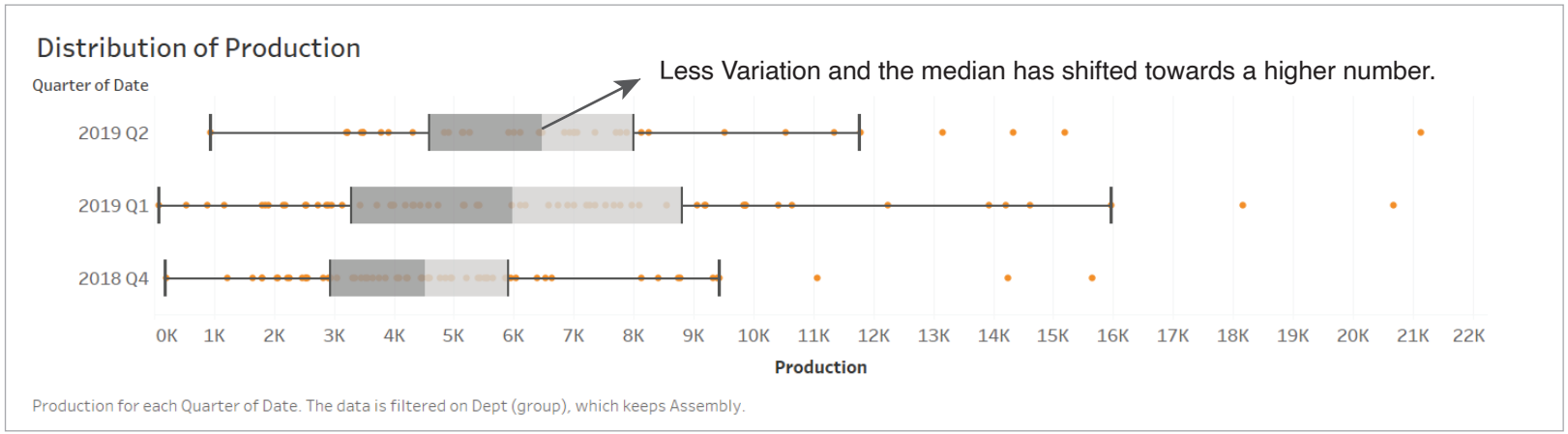
Results:

1. Productivity (Increased from 2.5 lb/hr/emp to 7.3 lb/hr/emp)

2. On-Time Delivery (Increased from 48% to 72%)







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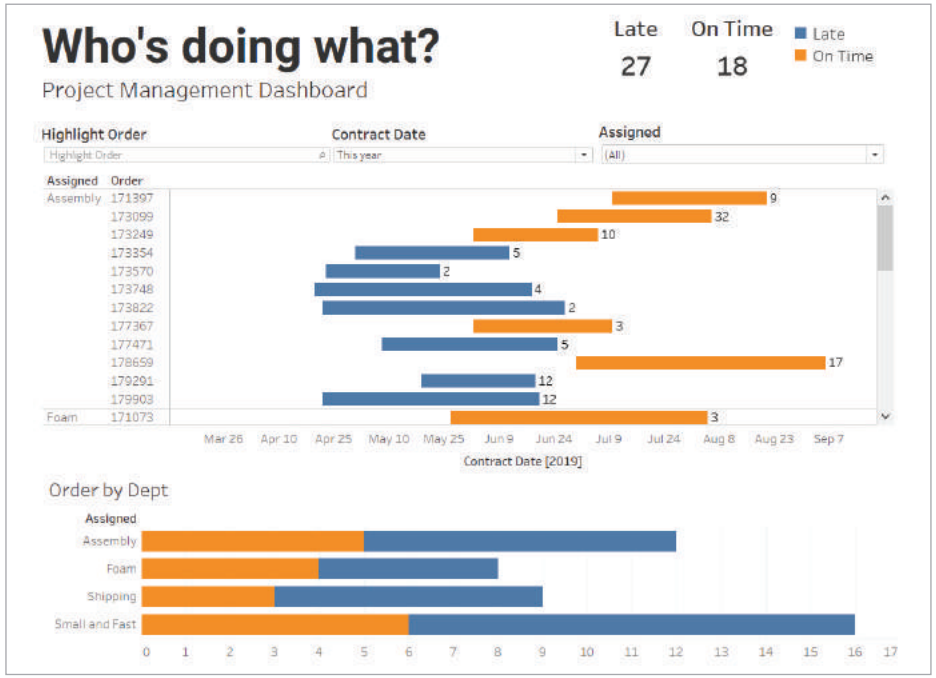
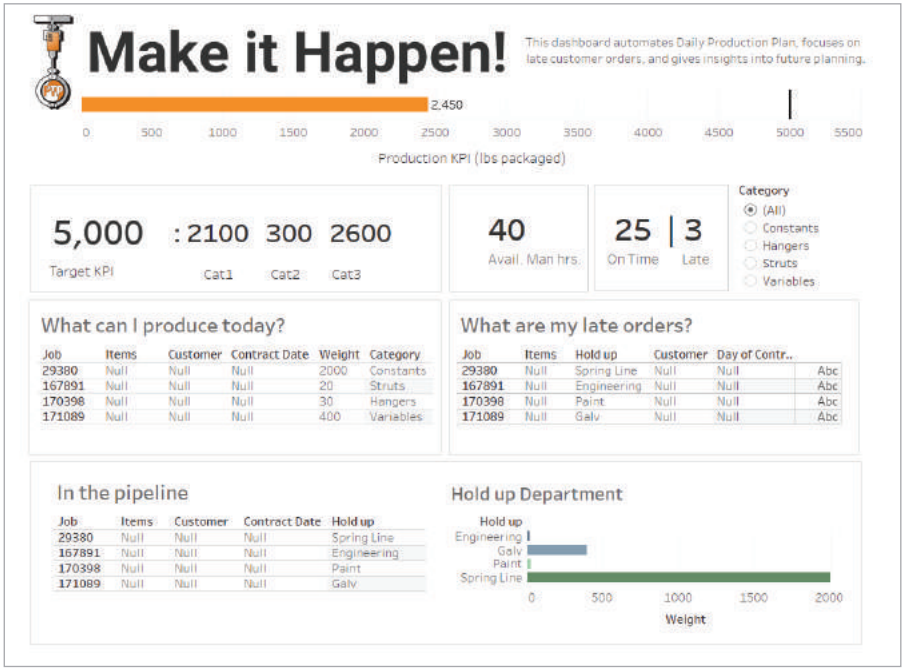




Project Management Dashboard Advantages:

1. Eliminates confusion and increases transparency regarding which department is working on which items in a particular Job/Order.

2. Aids in prioritizing Jobs/Orders based on the Due date.

Production Planning Automation Dashboard:

1. Sorts Job's items among different departments with respect to categories.

2. Presents opportunities to increase present day's production by notifying when an item is ready to be assembled and packaged.

3. Notifies when an operation is complete at one department and is ready to move to the next department.

4. Avoids Inventory build up and increases throughput.

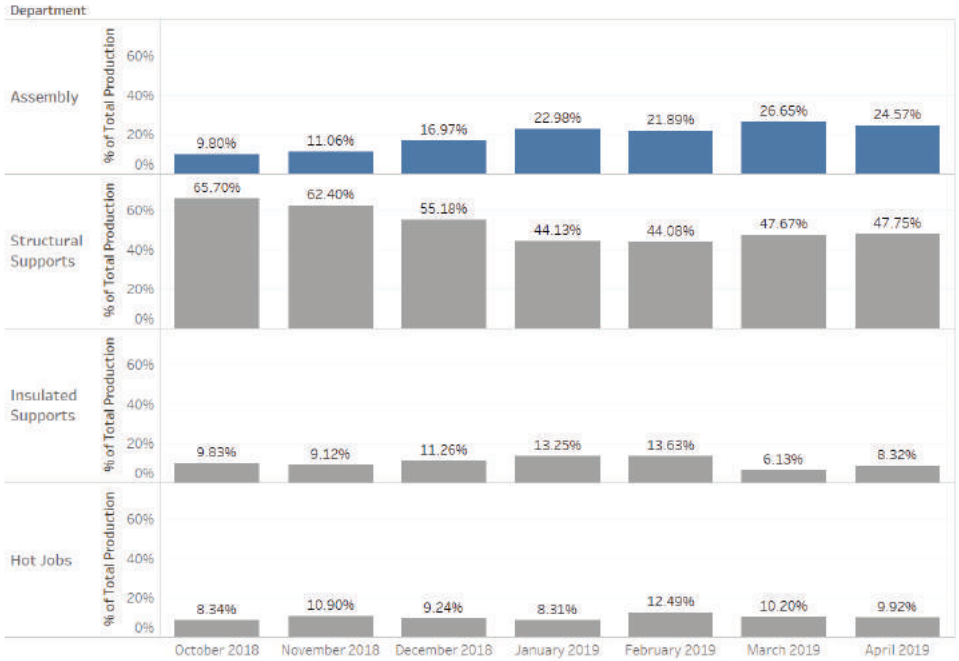
Tableau Features used -
Filtering, Sorting, Groups, Sets, LOD expressions, Parameters, Data Blending, Joining, Table Calculations, Dashboards, Stories, Reference Lines, Box Plot, Line graph, Gantt Charts

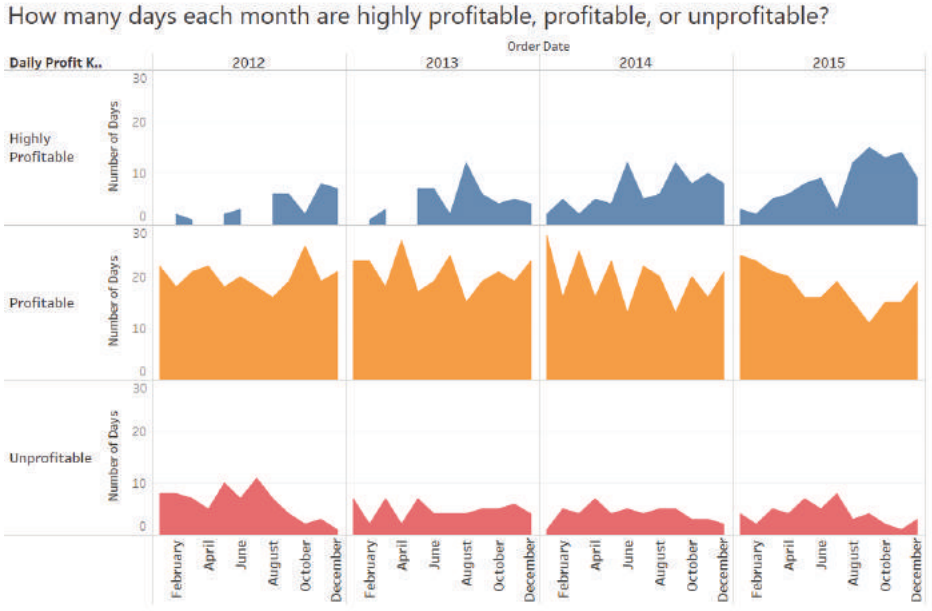
PIPING Technology & Products

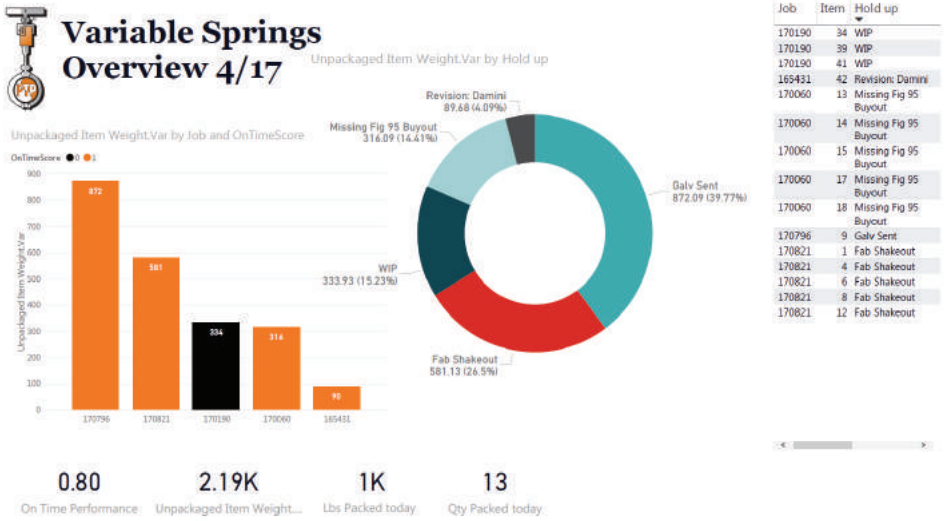
Production Manager, Assembly Department (Oct 2018 - Jul 2019)

Industrial Engineer, Galvanizing and Structural Supports (Jul 2018 - Oct 2019)

Assembly department's contribution to the company's production increased from 10% to 25%







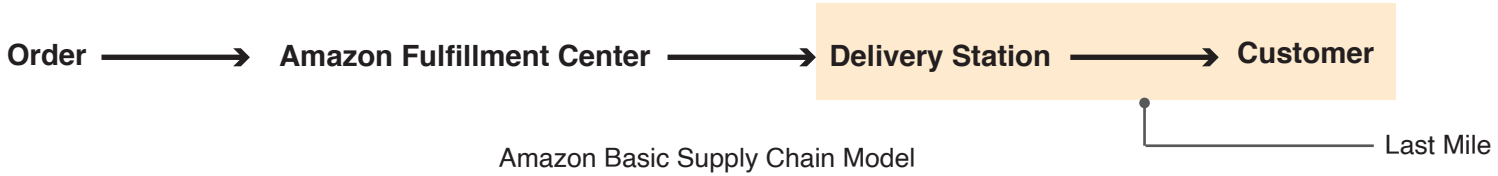
Job	Item	Hold up
170190	34	WIP
170190	39	WIP
170190	41	WIP
165431	42	Revision: Damini
170060	13	Missing Fig 95 Buyout
170060	14	Missing Fig 95 Buyout
170060	15	Missing Fig 95 Buyout
170060	17	Missing Fig 95 Buyout
170060	18	Missing Fig 95 Buyout
170796	9	Galv Sent
170821	1	Fab Shakeout
170821	4	Fab Shakeout
170821	6	Fab Shakeout
170821	8	Fab Shakeout
170821	12	Fab Shakeout

amazon

Transportation Operations Specialist (Oct 2016 to Dec 2016)

What did I do? (Implementation of Lean in Downstream Supply Chain)

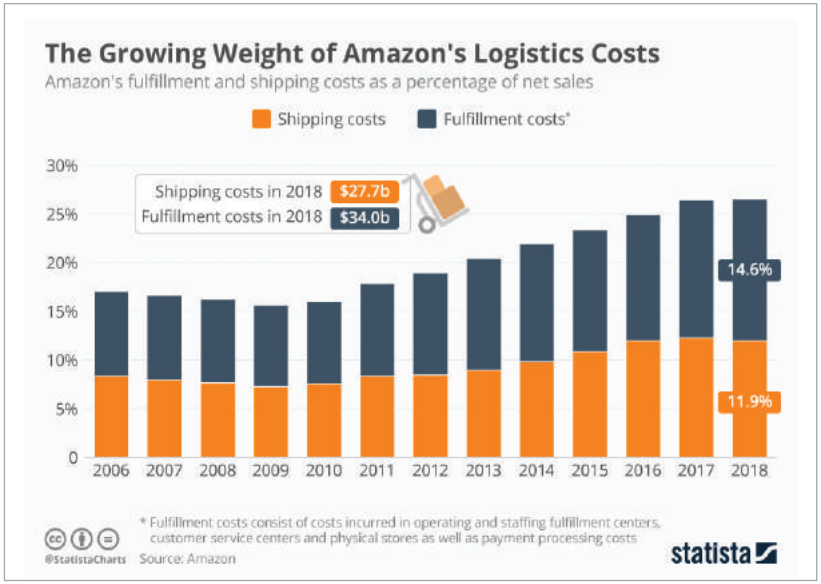
I worked at Amazon as a Transportation Operations Specialist with the Last mile transportation operation team. Last mile delivery is defined as the movement of packages from a transportation hub to the final delivery destination. The focus of last mile logistics is to deliver packages to the customer as fast as possible. I performed Ad hoc root cause analysis and troubleshooting to solve issues that prevent on-time delivery. Implemented lean concepts such as poka-yoke to prevent errors and standardized work to streamline problem solving.



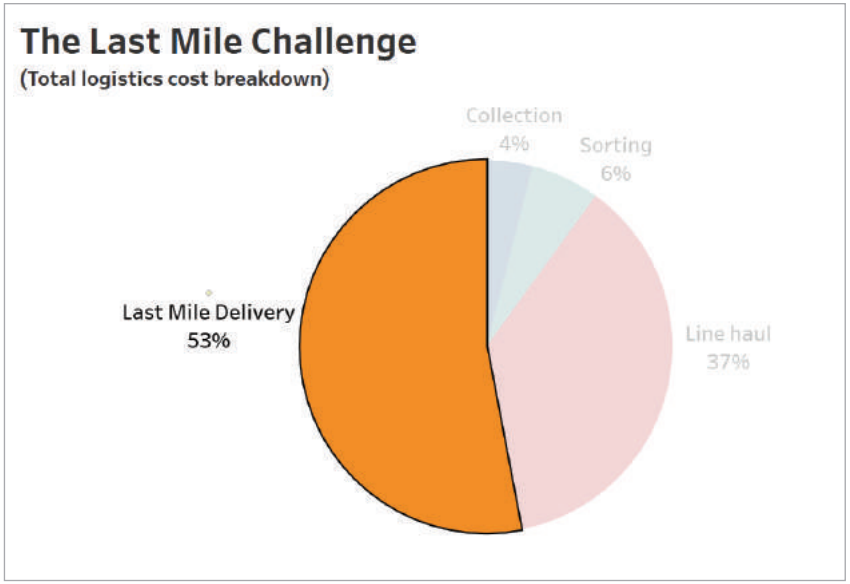
Amazon Basic Supply Chain Model

Why is it Important? (Wastes due to Transportation, Motion, and Rework increase Operational Expenses significantly)

When a package is not delivered on time, the customer satisfaction decreases, and the outbound shipping cost increases. The average cost for outbound delivery is about $3.70 per piece in US and up to $4 in Canada. When a package is re-routed to the delivery station or fulfillment center because of an unsuccessful delivery, the costs of delivery multiples because of labor and fuel costs that go towards the consecutive attempts. If the issue preventing the delivery is not rectified, the costs keep on increasing, and leaves the customers unsatisfied.



(Source: Statista)



(Source: Honeywell)

UNIVERSITY of HOUSTON

Master of Industrial Engineering (Jan 2017 to May 2018)

1. Optimization of Manufacturing Facility Layout (Class Project)

Problem Statement: OA Metal Fab's existing facility is experiencing a 10% growth on 2017 and expecting a 7% increase for every year thereafter until 2021.

Mission Statement: Optimize the layout of the Existing Facility and design an entirely New Facility in order to meet the future business growth. Take into special consideration the manufacturing process, overhead lifting equipment requirements, and product variability due to job-shop operation type.

Solution: To find the optimal layout of the facilities, we utilized Matlab for coding, AutoCAD for designing, and Autodesk Inventor for 3D Modeling. The optimal solution was to not to change the layout of the existing facility as the savings in transportation costs are not justified when compared to the costs of redoing the layout. A new facility with similar departments was redesigned with a Minimum Cost of $700,690. Plans for overhead material handling equipment installation was also done: the difference in cost from having overhead cranes in the New Facility vs costs on the Old Facility is of $362,000 (a 27% saving) and the New Facility will have a higher production capacity.

CRAFT Algorithm – Existing Facility

Algorithm Procedure:
-CRAFT is an improvement algorithm (requires centroid inputs)
-MATLAB software was used to run the algorithm
-Calculate Rectilinear Distances
-Calculate Transportation Costs (Flow between chart)
TransCost = (d) x (f) x (c)
d: rectilinear distance b/w departments
f = flow value (flow between table)
c = transportation costs estimated to $1

Base Layout Assumptions:
1) CRAFT Constraints only – only adjacent and equal size departments can be interchanged
2) CRAFT Constraints & fixed the locations of Receiving, MatPrep, Machining, and Shipping

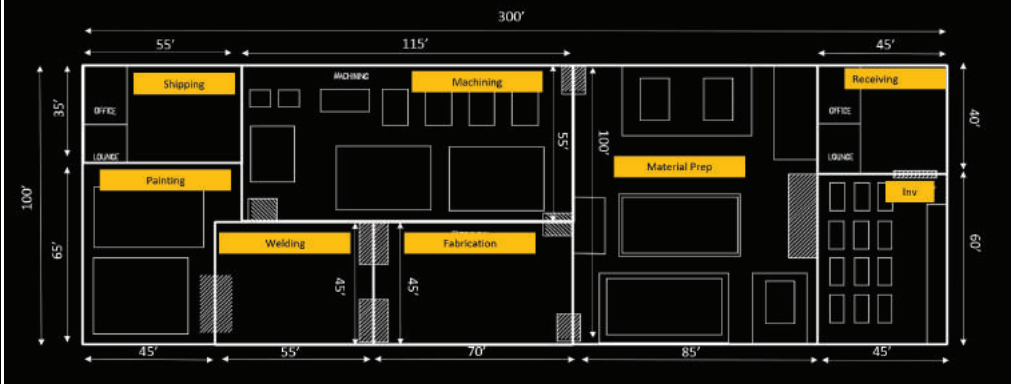
Results:
1)Minimum Cost = 1,248,900
2)Minimum Cost = $1,477,500

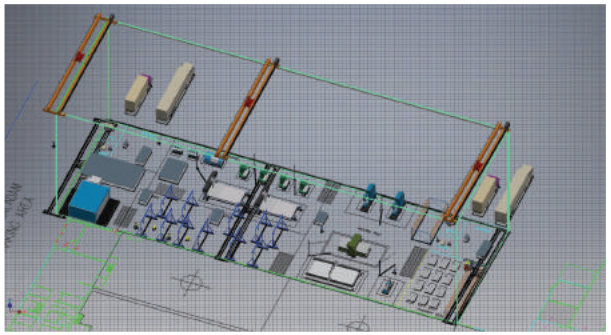
-Algorithm Results: Same base layout
-Departments in red are were fixed for the algorithm

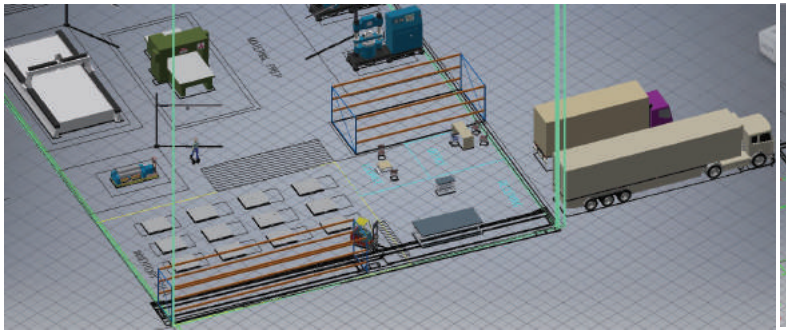
From \ To	Material Prep	Inventory	Receiving	Machining	Fabrication	Welding	Painting	Shipping
Material Prep	0	600	0	300	300	0	0	0
Inventory	0	0	600	0	0	0	0	0
Receiving	0	0	0	0	0	0	0	0
Machining	0	0	0	0	4025	6025	0	0
Fabrication	0	0	0	0	0	0	325	0
Welding	0	0	0	0	0	0	325	0
Painting	0	0	0	0	0	0	0	650
Shipping	0	0	0	0	0	0	0	0

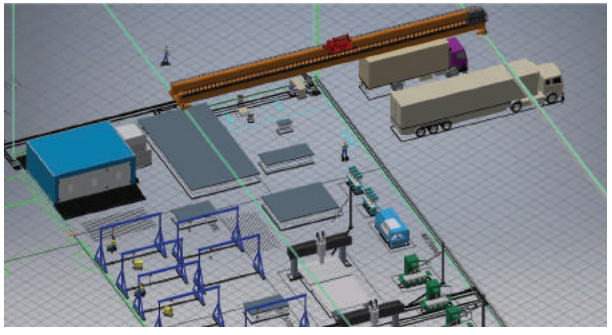
New Facility 2D Layout

Receiving	1800 sq ft	Fabrication	3150 sq ft
Inventory	2700 sq ft	Welding	2475 sq ft
Material Prep	8500 sq ft	Painting	3125 sq ft
Machining	6325 sq ft	Shipping	1925 sq ft









Learn That Word! Mobile App - Personal Startup Project Idea

The Pitch

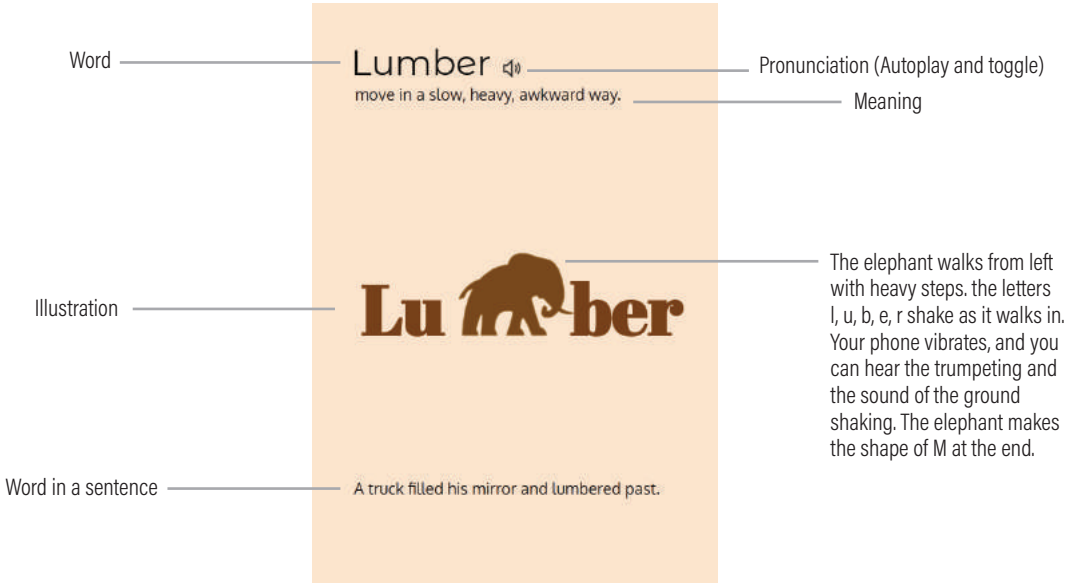
Learning vocabulary can be fun. Don't believe me? Check out LearnThatWord App. It is built out of graphic design, super cool animations, and fantastic animations to convey the meaning of a word. I'd say it's the best there is, and it's one of it's kind.

Customer Base

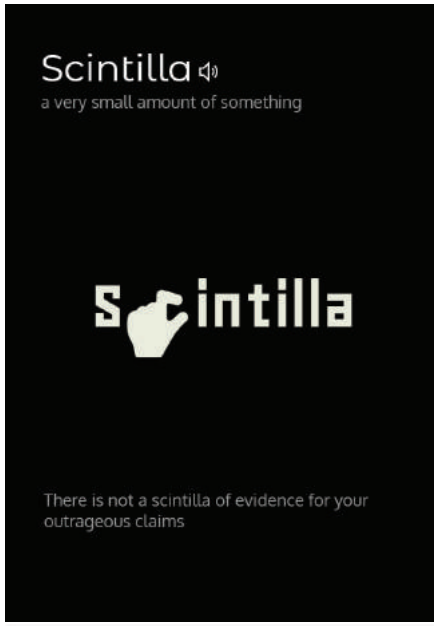
Learning vocabulary to gain knowledge? To up your game on the standardized tests such as the GRE, TOEFL or IELTS? To write that awesome blog post but never had the words to speak your mind? LearnThatWord is here to help you.

Traditional learning methods Versus LearnThatWord

Flashcards, Mnemonics, and vocabulary books on word origins are what you have been learning from. And some of you have been just by-hearting meanings, synonyms, and antonyms. I was in the same boat while I was prepping for my GRE. I found these traditional learning methods boring, time-taking and confusing.
I created this app to leave all the flashcards, and menomincs behind and take this learning game twenty step further. LearnThatWord has cool illustrations and thoughtful animations, along with voice clips besides the text: these will engage you much more than traditional learning methods to master every single word.



Some samples from the App



Learn That Word!

Analysis

To measure the quality and effectiveness of the App, the following methods are performed:

1. Quality Control
Tested all course content for instructional effectiveness, grammatical accuracy, and stylistic clarity. Evaluated the course for usability. Verified the functionality of the course with respect to user interface, navigation, multimedia elements such as audio, graphics and animation.

2. Four levels of training evaluation (The Kirkpatrick methodology):

Level 1 - Learner Reaction

Level 2 - Learning Evaluation

Level 3 - Behavioral Change Evaluation

Level 4 - Evaluation Results

3. Determination of Return On Investment, or ROI
Identitifed hard data elements and soft data elements to determine the financial benefit of the App.

Level 1 - Learner Reaction Survey Results

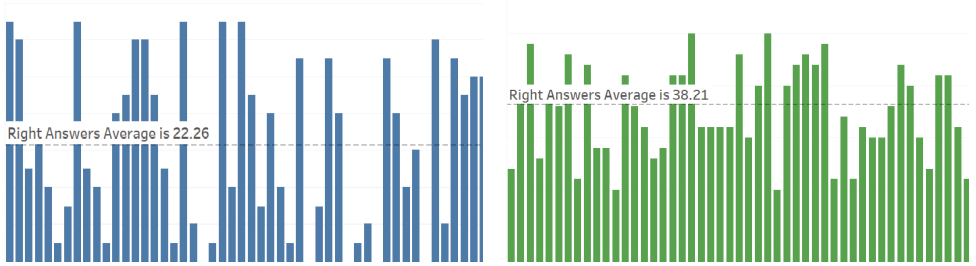
After the participants were shown the App, a survey was conducted to inquire about their reaction in terms of interest, motivation, and applicability of the content in the App. The results of the survey?

100% of the participants say they are motivated to learn, the App is interesting, and can apply the knowledge gained from the app in their exams and in life.

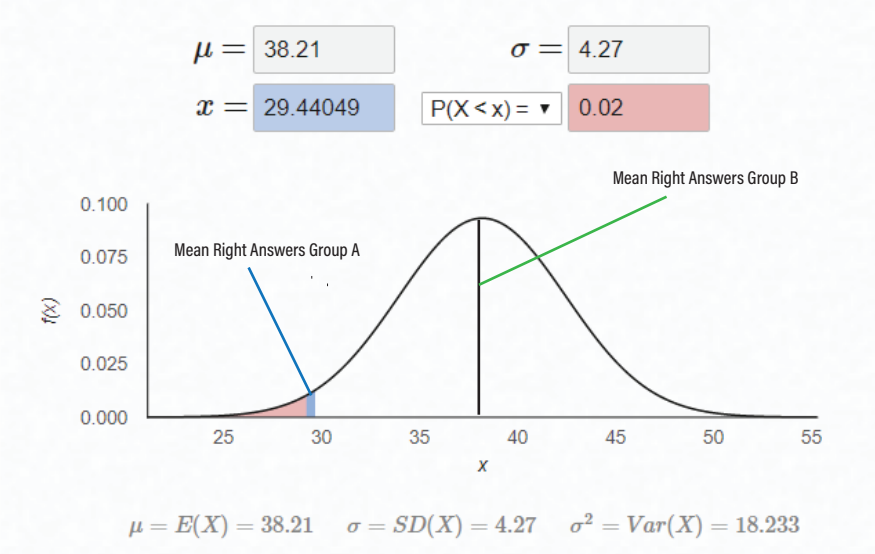
Level 2 - Learning Evaluation

Number of groups: 2 (A and B)
Number of participants in each group: 100
Alloted time to learn: 60 min
Number of questions asked after learning: 50

Group A (Participants provided with a book) **Group B** (Participants provided with App)



Random samples are drawn from each group and Mean Right Answer Values are calculated for each sample. We use Central Limit to theorem make the data normally distributed to perform Hypothesis Testing.



Using Normal distribution, we observe that more than 98% of participants in Control Group B, the ones provided with the App do better than the participants from Group A. We can conclude that the App makes a significant contribution to learning vocabulary.