Group 1
INFO8440 – Integrated Case Study
Winter20 – ITBA operations
Project 3 – Production Inefficiency
April 17th, 2020

INFO8840 Senior Business Analyst
Conestoga Design Limited
Conestoga College
299 Doon Valley Dr,
Kitchener, ON N2G 4M4

RE: Final Solution Report

Dear INFO8840 Senior Business Analyst,

We are writing this 'Final Solution Report' for the Project-Production Inefficiency. This report contains all the necessary documents needed for our project. All the information collected and analysed for this project is presented here. In this document you will find the detailed description of the topics listed below,

- Client Background
- Scope
- Tools and Techniques
- Considerations
- Analysis of AS – IS State
- Team performance and Management
- Suggestions Overview
- Project Measures of Success
- Assumptions
- Safety Guidelines

We kindly request you to consider the documents provided and provide us feedback and assistance for future. We look forward to hearing back from you soon.

Sincerely,

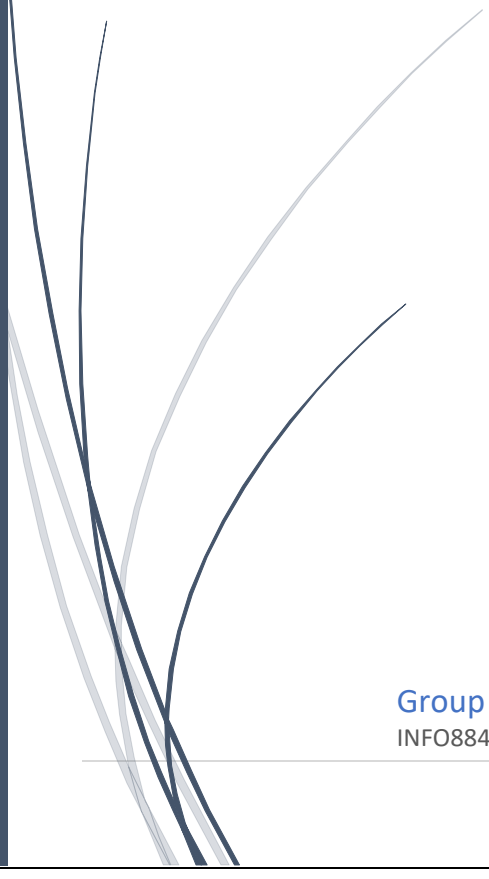
Group 1

Brijesh Patel, Sanket Batra, Hyojin Ahn, Divjot Kaur, Bhupinder Singh

4/17/2020

Project 3: Production Inefficiency

RE: Final Solution Report



Group 1

Document History Chart

Project Management Documents

Version	Date	Author	Description
1.0	01/04/2020	Brijesh Patel	Created the template
1.1	01/04/2020	Brijesh Patel	Added cover letter
1.2	02/04/2020	Brijesh Patel	Added document history chart
1.3	02/04/2020	Sanket Batra	Added client background
1.4	02/04/2020	Sanket Batra	Added scope
1.5	02/04/2020	Sanket Batra	Added tools and technique
1.6	02/04/2020	Sanket Batra	Added consideration
1.7	03/04/2020	Brijesh Patel	Worked on report components
1.8	03/04/2020	Brijesh Patel	Worked on quality of the report

Client Background

Version	Date	Author	Description
1.0	01/04/2020	Bhupinder Singh	Worked on history of CDL
1.1	01/04/2020	Bhupinder Singh	Worked on current business challenges
1.2	02/04/2020	Bhupinder Singh	Worked on brands involved and their status
1.3	02/04/2020	Bhupinder Singh	Worked on the As-Is principles
1.4	02/04/2020	Brijesh Patel	Updated the history of CDL
1.5	02/04/2020	Brijesh Patel	Updated the As-Is principles

Team Contract

Version	Date	Author	Description
1.0	01/04/2020	Bhupinder Singh	Worked on team goal
1.1	01/04/2020	Bhupinder Singh	Worked on roles and responsibilities
1.2	02/04/2020	Bhupinder Singh	Worked on code of conduct
1.3	02/04/2020	Bhupinder Singh	Worked on meeting guidelines
1.4	02/04/2020	Bhupinder Singh	Worked on participation and communication

Project Scope

Version	Date	Author	Description
1.0	01/04/2020	Sanket Batra	Added objectives and client requirements
1.1	01/04/2020	Sanket Batra	Added project deliverables
1.2	02/04/2020	Sanket Batra	Added action plan
1.3	02/04/2020	Sanket Batra	Added project constraints

Risks / Mitigations / Assumptions

Version	Date	Author	Description
1.0	01/04/2020	Hyojin Ahn	Listed down the risks
1.1	01/04/2020	Hyojin Ahn	Added mitigations for the risks
1.2	02/04/2020	Hyojin Ahn	Listed down the assumptions
1.3	02/04/2020	Hyojin Ahn	Updated the risks
1.4	02/04/2020	Brijesh Patel	Updated the mitigations
1.5	03/04/2020	Brijesh Patel	Converted assumptions into RFI

Tools and Technique

Version	Date	Author	Description
1.0	01/04/2020	Bhupinder Singh	Worked on the WBS
1.1	01/04/2020	Divjot Kaur	Worked on the team structure
1.2	02/04/2020	Divjot KAur	Worked on the RACI+
1.3	02/04/2020	Brijesh Patel	Updated the team structure
1.4	02/04/2020	Brijesh Patel	Updated the RACI+
1.5	03/04/2020	Brijesh Patel	Worked on Gantt chart
1.6	03/04/2020	Brijesh Patel	Worked on AS IS for assembling TrackR
1.7	03/04/2020	Hyojin Ahn	Worked on AS IS for Profit/loss Calculations
1.8	03/04/2020	Sanket Batra	Worked on AS IS for component Picking

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Executive Summary

With a positive customer response, Conestoga Design Limited has established itself as one of the leading manufacturers of medical imaging devices. They develop their products using good quality materials. Growing famous with medical imaging devices, they have set their foot in the TrackR, a portable exercise tracker. They had trouble with TrackRs running, and the organisation almost reached midst of bankruptcy.

So, amongst the aid of the BAs, they got their Executive dashboard completed and encouraged all their VPs to address daily meetings. They assured that TrackR came back on track with the updation of the app and the presence of marketing team on social media. The business already has a website that was released in 2004 and was developed by on of Kijiji's freelancer. This site had little business strategy or main objectives for the website and also had specifics of medical imaging products, focusing on other products that CDL no longer produces. But now people began seeking for CDL website (first point of contact) that renders CDL's necessity to develop it.

We, the BAs, have a plan to combat the condition by developing or, if required, redesigning the CDL website. This RFI guide covers questions regarding the development and enhancements required for the website, that is organized according to needs.

Client Background

History of CDL

Conestoga Design Limited (CDL), manufacturer of medical imagining scanners began its business back in 1998 by selling medical imagining scanner to local medical clinic. In 2014 over the time period of more than 10 years CDL celebrates its success as the market leader in commercial manufacturing of medical equipment, after the great success CDL designs their first non-commercial product called TrackR, a wearable fitness monitor for home user. In order to grow the development of TrackR, Billy Bob has opted to skip focus groups, beta testing, and user requirements elicitation for TrackR. This step promised to be cost-saving measure for company.

Reaching a high success of TrackR on the sales volume, they were not concerned with the technical and software application aspects of the product. Consequentially, after the complaints started piling on from customers and major shipments were returned, CDL realized the gravity of the situation as it stared at imminent bankruptcy. Later CDL plans to make better medical imaging business process and how they can support selling TRACKR with the help of website technology. To address this concern, of how website can be beneficial for their business model, Group 2 has a proposal for CDL. (Master Document, 2020).

Current Business Challenges of CDL

- **Production Cost:** CDL's income from the assembly area is less than its production cost.
- **Going Bankrupt:** This is the forthcoming challenge that CDL is facing right now.
- **Inefficient manufacturing process:** CDL's manufacturing process needs to be improved for increased productivity and decrease in cost and errors.
- **Technical support team not present:** CDL needs to recruit/ give contracts to technical resources, so that issues related to technical stuff can be resolved on timely manner.
- **Diminishing customer satisfaction:** CDL found customer complaints in search results and had outdated products on its webpages.
- **Location of assembly operation:** There is increment in the failure rate as assembly work is besides shipping dock. (CDL's Timeline, 2020)

The As-Is / Key metrics of CDL

- CDL is working on their finance, sales and marketing to overcome the situation of bankruptcy.
- CDL has been using Traditional Marketing approaches and strategies since beginning which served them well in the past but is not enough to compete efficiently in the market today. Not having a website or any online presence has served as a major reason which BA's fixed it but now the problem coming is from the manufacturing process like more failure rate for the product and cost of production is high as compared to income.
- CDL has now approached a team of INFO8440 ITBAs in order to obtain a solution for their current situation and crisis so that the organization can be brought back on track.
- CDL continuously wants expand it's business by attracting customers from different age groups and different geographic location.
- Major competitors for CDL at a moment are Fitbit, Samsung and Jawbone. CDL is having 5.42% of market share.
- CDL is using various calculations for finding the profit margin for different products.
- Number of products returned by retailers is a important factor for CDL to determine how their product is performing in real market.

Brands Involved

- Conestoga Design Limited – CDL
  CDL is enjoying the success of an executive dashboard project. CDL found a need to expand the business by means of e-commerce website.
- INFO8440 IT Business Analysts
  Team of junior business analysts working for CDL's project – website. Eliciting, analyzing and researching to provide the best solution to the CDL.
- Fitbt, Samsung, Xioami, Jawbone, Apple, Etc.
  Potential competitors of CDL who are challenging themselves as well as CDL to pioneer the market.
- Siplace Automaton: Sip lace is another brand that would participate in providing automation services.

Stakeholders involved in the project

The following list mentions involved Stakeholders in the project:

- **Executive Team of the CDL**
  - CEO: Billy Bob
  - Marketing Vice President
  - Finance Vice President
  - Human Resource (HR) Vice President
  - IT Director
  - Production Vice President
  - Facilities Vice President
  - Manufacturing VP
  - Social media marketing manager

As INFO8840 Consulting Team

  - Karen Eakins: Senior BA
  - Brijesh Patel: Program Manager/Junior BA
  - Sanket Batra: Project Manager/Junior BA
  - Bhupinder Singh: Junior BA
  - Hyojin Ahn: Junior BA
  - Divjot Kaur: Junior BA

- **Other People**
  - Customers (Purchase the CDL Product)
  - End User (Use the CDL Product)

Project Scope

Project Name	Executive Dashboard
Project Objective	CDL is looking to get financial breakeven in its Track R manufacturing process and to achieve that they want to make necessary changes which can make process more efficient and reduce failure rates by suggesting six sigma techniques.
Project Scope Definition	• Reduce production cost and achieve Financial breakeven. • Implementing Six Sigma techniques and thus Reduce failure rates.
Project Boundaries	• Primary focus of every suggested change should be to meet financial breakeven and to make operations/production smooth. Every change must be proofed with detailed costing and its return on investments. • There are some limitations on changing the floor plan.

Project Requirement	Project Deliverables
1. Current State Analysis	• Identify component picking. • Identify Track R making process • Understand profit loss calculations.
2. Component Picking	• Spaghetti analysis of current state. • Calculate Total time to pick up products • Suggest better and efficient component layout locations. • Develop Future state Spaghetti analysis
3. Track R making Process	• Understand current assembling process. • Calculate time taken to make 1 Track R unit. • Understand Fail rate, different test. • Determine worst, best and average case scenario. • Reduce some unnecessary steps and test cases to bring down assembling time.
4. Profit/ Loss Breakdown	• Provide Excel sheet for direct and indirect labor cost, manufacturing cost for both current and future state.
5. Floor Plan	• Figure out current factory layout flaws. • Provide to suggestion to overcome factory layout flaws.
6. Staffing Schedule	• Prepare excel sheet and plan, assign work to every individual labor.
7. Training Plan	• All proposed change will be supported by implementation and training plan.
8. Six Sigma	• Figure out which six sigma techniques can benefit in companies' current scenario.

	• Suggest 2 best possible six sigma techniques.
9. Effects of change	• Detailed list of benefits of every change suggested.

Project Tools and Techniques

RACI+

A separate file is attached for the better view.

Work Breakdown Structure

A separate file is attached for the better view.

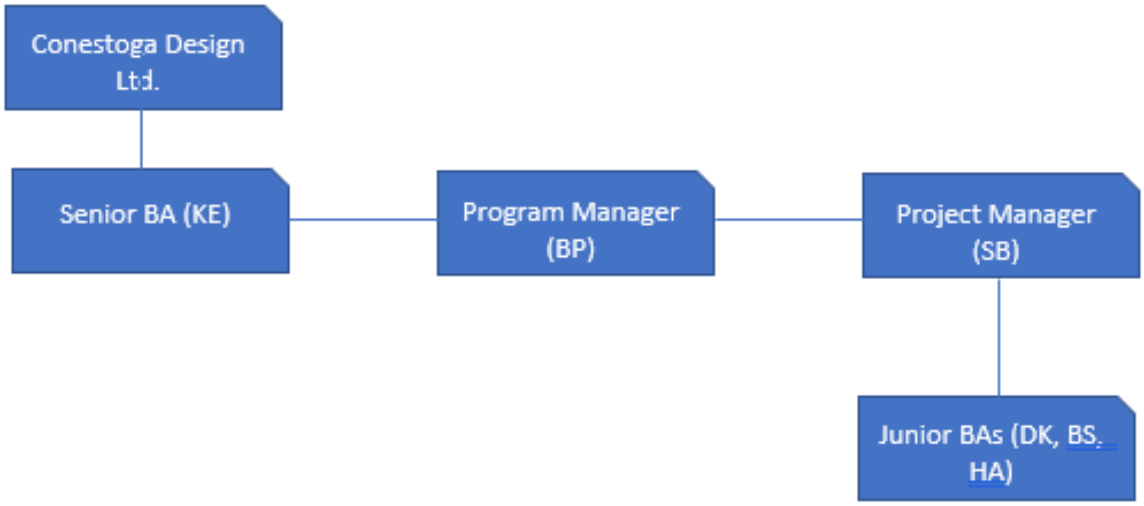
Gantt chart

A separate file is attached for the better view.

Profit and loss Calculation

A separate file is attached for the better view.

Team Structure



Considerations

List of potential Risks and Mitigation Plan

ID	Risk Description	Risk Impact	Risk Probability	Mitigation
1	Loss of components while moving the shelves	Low	High	Boxing and labeling for each bay shelf before moving
2	Excess of equipment cost than profit	High	Low	Calculating systematically of the profit during the applicable period such as the profit via fail rate reduction
3	Adaptation to a new assembly site	Low	Low	Monitoring the assembly workers after moving the tables
4	Staff absences by accident	Medium	Medium	Staffing the schedule for absences

Style Guide

Software used:
Microsoft Word
Adobe PDF
Microsoft Visio for Work Breakdown Structure // Spaghetti Analysis

Page dimensions:
Portrait orientation, 8.5”x11”, Normal margins

Text formatting style and size:
Body text- Calibri (Body), size 11
Main headings- Heading 1, size 12
Sub headings- Heading 2, size 16
Left text alignment

Additional formatting:
Headers and footers: Standard default

Team Performance and Management

Deliverable Standards

- All team members need to research the relevant topic for this project and perform given tasks.
- All the research and help need to be referenced in APA style format.
- Deliverable should meet professionalism and written in structured language.
- Deliverable must be submitted to the project manager on time and update the work log book.

Communication Standards

- Team members strictly use email only as a communication channel.
- All the team member should participate equally for research, development and success of this project.
- Oral and written communication must adhere professionalism and should be the top most priority.

Acceptance Criteria

- Acceptance of any deliverable should follow a cycle of make, review, re-review by management, accept/rework.
- All the deliverables must be relevant to the client needs.
- No ambiguity or vagueness take place in the deliverable.
- All the deliverable will be discussed in the daily scrum and only accepted if majority of the team agrees to carry that deliverable forward.
- Final decision of all the deliverables will be made by management head only.

Proposed TO-BE

Proposed TO-BE is submitted individually through e-Conestoga, in which, we are suggesting changes in staffing, component picking, six-sigma, assembling and applying automation, which can be found in those documents.

Our proposed solution will bring the following upgradations in the already running system:

- It will reduce wait and pick up time.
- It will save a lot of money and increase profit.
- It will reduce the staffing.
- By implementing automation, time taken by certain processes will be reduced.

Suggestions Overview

- Staff Scheduling
  - A more efficient and safer work environment will be created by reorganizing teams and readjusting the schedule
  - The schedule change is more focused on the TrackR division which has a more dissatisfied attitude as a result of analyzing the survey results
- TrackR Assembly change
  - Eliminating and reducing failures at few steps in assembly process will bring tremendous change in time taken to assemble 1 TrackR.
  - TrackR assembly related information in detail can be found in individual report for Assembling TrackR and Excel Workbook Sheets: Sunny Day As Is, Rainy Day As Is, Sunny Day To Be, Rainy Day To Be, Assembly Comparison and Components.
- Component Picking and change suggestion
  - Components should be brought closer to the assembly line which might save lot of time and which indirectly saves lot of money for the company.
  - There should be proper training given to the workers on importance and benefits of following a particular flow. What sequence is followed in picking the components plays a major role in time management for any process.
- Six Sigma implementation
  - Six Sigma is a set of tools which is proven to improve the efficiency and methods of business process. It helps to find the loose ends and helps in to focus on the goal which is to improve the quality of the process. It uses a set of quality management methods, mainly empirical, statistical methods, and creates a special infrastructure of people within the organization who are experts in these methods.
  - Talking more about Six Sigma, it is a top down approach. So, in my project I work on sunny day (when everything goes smooth as per plan) and rainy day (When there is interruption in process, failure occurs, or mislaid solders, etc.) values. So, my focus is on rainy day in which there is possibility to reduce the failure rates in the processes and try to work on the processes which takes more time by using six sigma techniques.

Moreover, I have work on the failure rates and try to use few automations in the soldering process which helps in to increase the reliability of the process and results in profit.

- Siplace Machine Automation
    - One of the workers of CDL proposed improvements which would help reduce the positioning and soldering time to 1.4 seconds.
    - Suggestion includes purchase of an old Siemens Siplace 841AB, which has a cost of about $260,000.

Project Measures of Success

Measuring a project's success once it is finished is a beneficial activity. It offers potential undertakings with a learning opportunity and an incentive to determine the project's true efficacy. To get a holistic view, it is necessary to consider qualitative and quantitative parameters. There are 6 major measures to track the success of any project.

- **Scope**: This is the intended outcome of a mission, and what is needed to complete it. To get a good gauge of the progress of your project you need to evaluate whether it is meeting its targets within the given structure.
- **Schedule:** It's fairly easy to quantify and understand. Is it true it you will meet the targets on time? Will you have your proposal shipped on time? And if not, how much that is off the schedule?
- **Budget:** It is important to CDL that project does not exceed the acceptable cost for development and implementation. In no case project should be discarded for over budget being one of the reasons.
- **Team satisfaction:** This is much more contextual, and is often ignored when assessing project performance. But I have to say Team harmony must be at the peak of your criteria for success. They are the people who were down in the pits, again on the next project journey they will be the ones on your team too. They even have greater insight which even the highest stakeholders would not have.
- **Customer satisfaction:** You also want your customers input, along with your staff. Did they feel satisfied with the results? Did they meet their needs? Find a way to monitor consumer satisfaction throughout the lifespan of the project right through to execution.
- **Quality:** The argument is not just producing the expected job but also exceeding expectations. Tracking quality matters, and making adjustments where appropriate. Even after completion of the product, auditing is often an ongoing step in the process of the business.
  (6 ways of measuring project success, 2020)

Assumptions

We are moving forward to the solution of the project by assuming that,

(Steps mentioned here are from making trackr assembly process)

- Chemical welding in step 23 takes average 20 seconds as mentioned by lead hand.
- If product gets failed in final test all the components gets rebuild.
- Time taken for replacing components is part of fail rate and does not have additional impact on time for building the product
- From Step 6 to 20 builds the internal part of the TrackR.
- Average walking speed of all the workers in the factory is 1.66 seconds per 1 meter.
- Other Charges in purchase orders are mutually agreed between CDL and Suppliers.
- Details for Siplace, are from production need requirements document only.

Appendix

1) As Is - Assembling Trackr components process
2) As Is – Component Picking Spaghetti Diagram with track of route
3) As Is – Profit/Loss Calculations

Safety Guidelines

Safety guidelines should be followed by laborers for secure working environment and to avoid any workplace injuries. All the workers working in the given condition should find ways to minimise any injuries or mishaps.

Basic Safety Guidelines:

1. All the injuries or mishaps will be directly reported to a security official.
2. All the laborers must follow a dress code which includes safety glasses and steel-toe shoes.
3. Not two people should enter the same aisle at the same time.
4. Running or any other urgency must be avoided at all costs.
5. Any outsiders will not be permitted without authorisation and will be accompanied throughout.
6. All laborers will use correct posture for all the purposes.

Future Scope

In future, we will consider part- time employment.

Which will help us in:

1. Reduction of labor cost.
2. Increase in productivity.
3. Increased dedication amongst employees.
4. No need to give fixed shifts and workers can be notified about their schedule two-weeks prior.

Conclusion

After applying suggested changes, CDL would:

1. Achieve greater efficiency with a higher income gained.
2. Help workers in gathering components within a limited time period.
3. Considering the assembly table safe and useable, enabling the staff to use it for assembly.
4. Better and enhanced working environment.
5. Time taken to produce TrackR device will be less.
6. Increase in profits due to higher production rate.
7. Number of TrackRs produced in a day will increase.
8. Failure and loss will be minimum.

References

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