Team Name	flipflop
University	University of Peradeniya
Product Name	Caliber - Manufacturing Productivity Analysis Tool
Category	Industrial Manufacturing

Problem Definition, Analysis, and the Solution

Provide a brief introduction to the domain, the problem and the context that your product will address. Provide a qualitative and quantitative analysis emphasizing why your product is significant as a solution to the problem. State how you are going to apply the solution to the real world.

Manufacturing and industrial production is a continuous process that requires time-based analysis to improve product quality. Millions of productions exist in fields such as agriculture, medicine, information and communication technology, automobile, electronics, etc.

To meet the profit margin, improve the quality of the product and reduce wastage and industrial pollution, the factories require considerable investment in the analysis of manufacturing productivity. Manufacturing productivity analysis depends on availability, performance, quality, and overall equipment effectiveness (OEE). These are the building blocks of the LEAN tool and six sigma methods. More than 30% of Fortune 500 companies have not deployed six sigma, which significantly refined production processes. The current methods used to follow quality

measurement have conventional data collection techniques and static analysis tools such as MS excel in most industries. These methods cost more time for data acquisition and analysis, workforce, skilled employees, and paper.

It is efficient, cost-effective, and eco-friendly for companies to use the software. (To enter data to a centralized server from different sections of the production line (to reduce paper waste). Process data to monitor the statistically analyzed visuals (charts, plots) and access historical data.)

Product overview and Uniqueness of the Product

Brief description about the proposed product, give a clear picture of the product providing key features. Provide details about similar products in the market and state how your proposed product is unique in terms of functionality, applicability and accuracy compared to other similar products.

*"C*aliber" is a software tool for manufacturing productivity analysis. It focuses on three main functionalities, that are;

1. Collecting defects and downtime data of the production process in real-time using a user interface.
2. Automatically generates statistically analysed quality measure visuals using a database
3. Give suggestions to improve the production process and product quality.

Similar products in the market:

- Applications developed by IT teams of specific companies,
- ActivTrak – productivity management & measurement software that boosts team productivity,
- Lean six sigma companion apps,
- personal productivity apps (HourBuddy-Time tracker & productivity).

Our product is different than the existing products in the sense of customization and normalization, where a wide variety of manufacturing industries can use the application. (Ex: tea, food, electronics, safety products, medicine, energy, etc.) Data collection is done via a user interface based on lean management to ensure a practical user experience for any level of labour in a manufacturing unit. Our product will facilitate data analysis, statistical representation of the availability, performance, quality, OEE, and visualize Pareto charts and failure mode and effects analysis (FMEA). Our product will reduce the use of paper in the data acquisition stage of the quality control process and leads consumer companies to be eco-friendly.

Business Model and Marketing Plan

State Business viability and Economic feasibility of the proposed product, necessary marketing and business strategies followed or planning to follow. Forecast how your product will reach success in next 5 years

As the consumer market expects more consistency in product quality, our automated product quality analysis and suggestion tool have a good demand at the manufacturers' end. After the covid outbreak, many companies, including Sri Lanka, transitioned to digitized data analysis in their factories. Even though work from home is being encouraged by many companies, our digitized solution will attract their current requirements.

Since the software application is customizable for various industries, we will initially target a few manufacturing companies. Then provide them software service based on customization and technological integrations with our software. Then, using them as our sample market, we will reach out to other companies in a few years. In the initial two years, our financial model will be based on installation and setup fees, continuous integration, and continuous development service charges. After that, we will focus on making the financial model based on subscriptions.

In the first year, our current team will work on product development and expand the group according to the requirements.

Technical Overview and Implementation

State Technologies/Platforms/APIs and methods used or planning to use for your proposed product implementation, development plan of the product highlighting necessary development stages in brief.

State the planned methods of deployment.

Planned method of development & deployment:

- Developing algorithms to represent statistical data according to six sigma.
- Developing the minimum viable product through the agile (scrum) methodology.
- Integrating valuable functionalities to the application by empathizing.
- Get feedback on satisfiability from the actual users in the problem domain.
- Integrating and implementing required features to the software.
- Iteratively developing and optimizing the application.

Technology stack & design concerns:

- Desktop application (broader use in the industry) - Java, SQL, JavaFX
- Cloud integration (for data accessibility)
- LAN networking option (for privacy concerns)
- LEAN concept to design user interface

User Scenario

State how an average consumer consumes your product in a specific situation.

(Ex - Smith is an employee who receives a middle income and he must maintain his family. He loves traveling to different countries. However, he is not financially strong in order to afford high-end tour packages. He got to know about a new mobile app called “TravelME”. He got it installed and created a profile then he searched for affordable packages to visit Sri Lanka which can be customized according to his preference…)

Smith is a manufacturing company process engineer with sound knowledge in computing, data analysis, and strategy. He acquires data from plant staff manually as spreadsheets and hard records. Then processes it to generate an executive summary report to make better strategies to improve production quality. Once he is unavailable in the company due to covid, management needs his juniors to accomplish that job. Since they are not good at computing and data analysis and are quarantined, the company seeks technical assistance. They got to know about our new software called “Caliber.” They approached us to install and configure the requirements to automatically generate executive summary reports and suggestions to look after in the production process. Then they ask Mr. Smith and his juniors to regularly verify the correctness of the statistics and make proper strategies to improve product quality, working from home.

Team Details

Please provide necessary details of your team. All fields including photographs are required.

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