

# Design and Development of 'The Bhel Maker and Vendor Machine'

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**Abstract** - The purpose of this research is to prepare a machine that makes and serves food which is contactless, effortless and standardize the ingredients of food. In the COVID 19 pandemic we need to serve Hygienic food to customers which is possible with this machine. The presented paper will provide a brief idea in designing new machine with some of these instruments.

## 1. INTRODUCTION

Almost everything in this world is getting automated such as dispensing water by just inserting coin in the coin box, Chocolate/toffee dispensing machine, etc. The main aim of this project is to make standardization of Indian food all over the world, i.e. Indian Brands should serve our food and snacks all over the world with the same indian taste. In this COVID-19 Pandemic, everyone is trying to make less contact with everybody. Due to this machine, we can serve food by not making any contact between shopkeeper and the customer. So, in this crisis, this machine is an important need so that we can have the healthy and safe food.

### 1.1 Literature Review

#### Varun Vaid

It is difficult to handle customers in fast moving cities and fast pacing life by just a small bunch of people. So we thought of making a machine which prepares food faster than man and serves. There will be no interference of man in the whole process of bhel making and vending. On other hand also to standardise the quantity of ingredients for same taste of food every time.

#### Kwangsoo Kim

We adapted the idea of how he made Automatic coffee vending machine by the help of sensors and actuators. People found it more clean and convenient in daily life. So we used Dc motors with the time delay sensors to adjust the timing of the ejection of ingredients. Only ejection of ingredients was not enough, but the preparation of bhel was the actual challenge for us. So by using those DC motors and time delay sensors, we made mixing chamber with blades in it which possessed rotary motion.

#### Amanda Grech and Margaret Allman-Farinelli

India is an over populated nation. It is Difficult to serve food to customers in the rush of metro Politian cities like Mumbai, Bangalore, Delhi etc. The vending machine can play an important in this situation. It can replace many labours. The food made in maker\vending machine is Hygienic, because there will be no interference of human hands which may be unhygienic. The food vending machine works faster than man so the daily productivity will also increase.

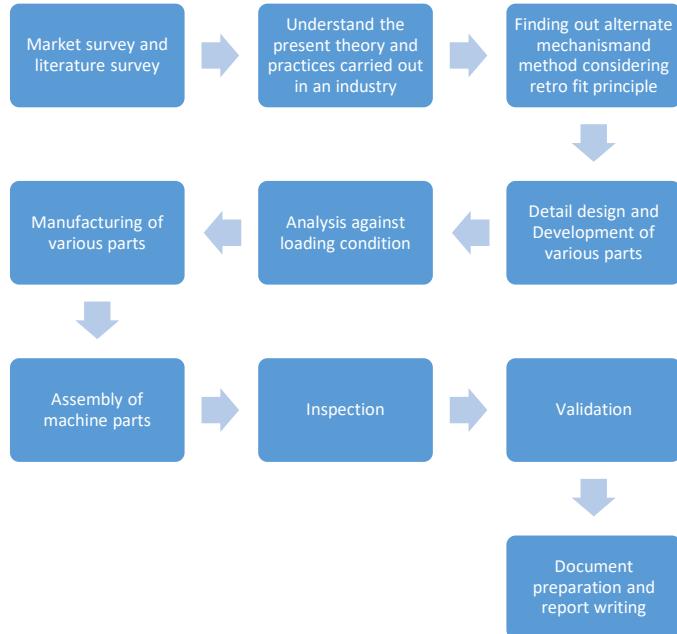
#### Matthews MA and Horacek TM

The contributing and factor to the development is the nutritional and healthy quality of food products sold in the vending machine. Grabbing food from the Food vending machine should not be a complicated process. We made a machine only need to press a button that is mounted on a machine and the food gets served. It is a user-friendly machine.

### 1.2 Problem Definition

Technology is developing in food industry with the help of automation. Usually, there is tremendous crowd at Snack Centers, Bhel Stalls near gardens, hospitals, and colleges. It is required to deliver Bhel in time. However due to manual operation of preparing Bhel, it is not possible to deliver in time. This kind of scenario can be changed by providing Automatic Bhel Vending Machine that will work faster and can serve more people as compared to conventional Bhel makers. It has both mechanical and electronic systems. Whenever we eat food and we like it, we expect the same taste next time and we can't get it because it is manmade. But when it comes to a machine it only allows the quantity of ingredients that is preset to its memory. So everytime we eat food that is made with food maker/vender, we will get same taste. In this COVID-19 Pandemic, everyone are trying to make less contact with everybody. Food making machine human contactless process. So it is very safe. And in this crisis, we have huge need of such machines.

## 2. Proposed Methodology of solving Identified Problem

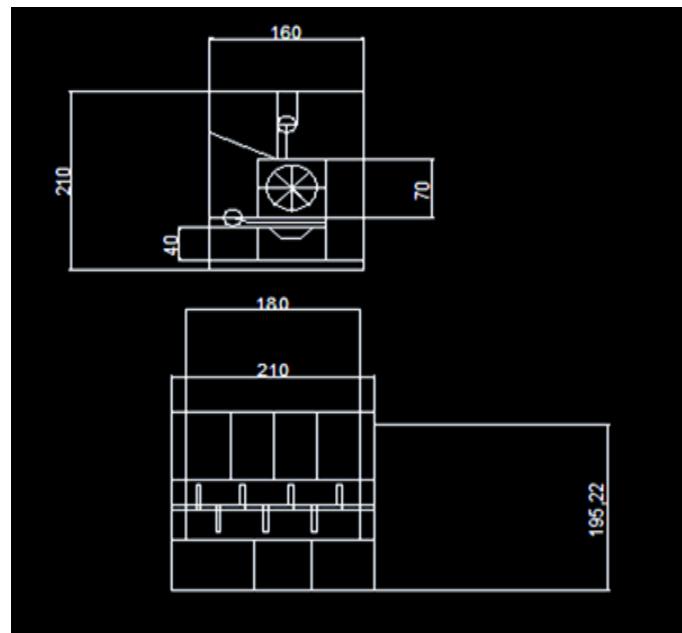


**Fig -2:** Flow chart of experiment Methodology

### 3.In case some prototype has to be fabricated then its tentative design and procedure for making.

The 'Bhel maker and vendor machine' is designed in such a way that, on one click of button whole process of bhel making will take place. At first place we will pour all the ingredients differentially into the 3 chambers. Then we should supply power to machine and press the button. After pressing of button, the valve of the chamber will open and the ingredients will pass through it. (The time delay of 3 seconds for the valve of the chambers is programmed with arduino and the motor used is servo motor 13kg). The ingredients will pass through the valve from all chambers and will meet at one point called 'Mixing chamber'. The mixing chamber is a chamber in which all the ingredients get mixed by the help of blades which have rotary motion and enables when all the ingredients gather into it. One chamber is separated from main chamber which is for Chutney .We can add as per requirement of customer. A button is provided in front of Machine .which we can use for pouring the chutney manually .It is used when the ingredients are mixing in the mixing chamber. (A Hydraulic pump 5v DC is used to extract fluid (Chutney) and the other end of pipe directly connected to the mixing chamber) After the neat mixing of ingredients, the valve of the mixing chamber will open. And the Bhel will get served

into the plate. (The time delay of 20 seconds of the valve of mixing chamber used is Arduino and the motor is Servo motor 13kg).



**Fig.3.1 proposed setup of 'bhel maker and vendor'**



**Fig.3.2 front view of 'bhel maker and vendor'**



**Fig.3.3 Side view of 'Bhel maker and vendor'**

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