

# Literature Survey on NFC and Coin based stationery vending machine

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**Abstract:** Portable vending machines are very useful devices for dispensing small, easily available necessary equipment for the use of man. The aim is to construct an automatic vending machine prototype model, which can be installed in schools, colleges, hospitals other public places to dispense pens, pencils, and sanitary napkins during needs with appropriate mechanical designs for item collection. Also, microcontroller circuitry for coin checking, and dispensing for items is to be proposed and implemented in real time

Since their introduction, vending machines have become an increasingly important distribution channel in the private sector. In Educational institutions and office stationery vending machine is of great importance. This System proposes is based vending machine that dispatches A4 sheets once the RFID card is read. The users can select the required item after the card is scanned and collect the item in the output unit. The system is divided into three parts, the first part deals with the scanning of RFID which provides cashless payment. The second one is the programming unit which is implemented using  $\mu\text{C}/\text{OSII}$ . The third part is the display unit which displays information and delivers the required item based on the information sent from the microcontroller. An embedded system vending machine is designed to achieve and portable machine that can sell items automatically.

Automatic vending machines are not that common in our country. Hence implementing such a machine in real-time will be of great use for people. The advantage of the machine is it requires no manpower, consumes less power, occupies less space maintenance free simple in operation portable. The objective is to develop a vending machine prototype model for vending the items by credit or transaction. The availability of the items is also checked. It finds its application mainly for students.

**Keywords:** Vending Machine, pieces of equipment.

## INTRODUCTION

A Vending machine is an automatic machine that sells food such as canned soups and packaged sandwiches, snacks such as potato chips, chocolate bars, stationery, and candy); hot drinks (coffee, tea, and hot chocolate); cold drinks (juice, bottled water, soft drinks, and in some cases, milk or chocolate milk); or other items such as newspapers and stationery. The first modern coin-operated vending machines were introduced in London in the United Kingdom in the early 1880s, dispensing postcards. The machine was invented by Percival Everitt in 1883 and soon became a widespread feature at railway stations and post offices, dispensing postcards, and notepaper. The Sweetmeat Automatic Delivery Company was founded in 1887 in England as the first company to deal primarily with the installation and maintenance of vending machines. After paying, a product may become available by the machine releasing it, so that it falls in an open compartment at the bottom, or into a cup, either released first, or put in by the customer, or the unlocking of a door, drawer, or turning of a knob. Some products need to be prepared to become available. For example, tickets are printed or magnetized on the spot, and coffee is freshly concocted. One of the most common forms of vending machine, the snack machine, often uses a metal coil that when ordered rotates to release the product. The main example of a vending machine giving access to all merchandise after paying for one item is a newspaper vending machine (also called vending box) found mainly in the U.S. and Canada. It contains a pile of identical newspapers. After a sale, the door automatically returns to a locked position. A customer could open the box and take all the newspapers or, for the benefit of other customers, leave all of the newspapers outside of the box, slowly return the door to an unlatched position, or block the door from fully closing, each of which is frequently discouraged, sometimes by a security clamp.

## LITERATURE SURVEY

**In [1] A mobile robot vending machine for beaches based on consumers' preferences and multivariate methods[2014]**

The paper illustrates how multivariate statistical techniques, namely factor and clusters analyses, can be used to examine the perceptions and preferences of customers and to support the development of a new energetically independent

autonomous mobile robot vending machine for food distribution on beaches. Concerning the initial product assortment to be carried by the robot, nine food product items, many of them healthy, were identified; factor analysis identified that the respondents used seven main design dimensions when they assessed the robot, namely “Convenience”, “Menu”, “Automation”, “Distant Interaction”, “Aesthetics and Proximity”, “Sustainability” and “Sound Warning”. Cluster analysis applied to the respondents’ scores on the seven dimensions allowed five clusters of respondents to be found. Using cluster 3, the “green supporters”, as an example of a target segment, shows how this multivariate methodology can be used to guide the future development of the robot concept, with the suggestion that future work should focus on the enhanced use of renewable energies.

#### **In [2] Vending Machines in Australian Hospitals: Are They Meeting the Needs of the Consumer?[2021]**

This paper explores how well vending machines are meeting the needs of health care organizations and their staff and visitors in Australia. Hospital vending machines often provide the only source of food through the night to staff and visitors and traditionally offer less-healthy options. Findings presented in this report suggest that vending machines are not meeting current statewide policies and guidelines for healthier food environments in health care. This is despite widespread support for healthier refreshments in hospitals by staff, visitors, and patients.

#### **In [3] The association between sugar-sweetened beverage availability in school vending machines and school staff sugar-sweetened beverage consumption[2020]**

Reducing sugar-sweetened beverage (SSB) consumption is a leading strategy to help combat high rates of adult obesity and overweight. Regulating SSB sales in schools has reduced access among youth. However, current federal school nutrition standards are focused on the student rather than staff environments (i.e. school staff lounges). This study examines the association between the availability of SSBs in school vending machines and school staff SSB consumption. The study sample included 51 public schools in California, Oregon, Washington, Maryland, and Washington DC participating in an evaluation of Kaiser Permanente's Thriving Schools initiative in the school year 2017–18. Data collection included: 1) observations of school cafeterias, staff lounges, stores, and outdoor snack areas for the presence of, and content in, vending machines, and 2) an online survey of school staff about their SSB consumption.

#### **In [4] A systems engineering study of integration reverse vending machines into the waste management system of Kazakhstan[2021]**

This study aimed to understand the feasibility of the integration of RVMs into the waste management system of Kazakhstan. This would require gauging the opinions of all stakeholders that would be engaged in the potential integration process. The study aimed to identify the underlining reasons for the low recycling rate, the awareness, and willingness of the public to engage with RVMs, and also to obtain more insights on incentives that would motivate them the most. There are several limitations to the study. First, only Nursultan city's general public participated in the survey. It was limiting the findings to one locality. Second, RVMs in this study were studied only for plastic waste, which could be further extended to other types of waste.

#### **In [5] Snackomat - A Vending Machine To Create Positive Experiences By Bringing People In Contact And Initiating Small Talk In Waiting Situations[2020]**

In this paper, "Snackomat" is a vending machine offering snacks for free, installed in waiting situations, and is designed to initiate small talk and therewith create a positive experience. Here, we experimentally compare the effect on the user experience of the Snackomat to the effect of a coffee machine as a control condition with 58 participants. Participants' behavior was observed in waiting situations where observers were blind to the study's objective. The two experimental conditions were compared with an analysis of covariance. The alpha levels were Bonferroni corrected. Significant results with a strong effect size indicate that the Snackomat was more effective in creating positive experiences than a coffee machine in a control condition.

#### **In [6] Perceived acceptability of and willingness to use syringe vending machines: results of a cross-sectional survey of out-of-service people who inject drugs in Tbilisi, Georgia[2019]**

In this paper perceived acceptability of syringe vending machines was extremely high among PWID not currently receiving any harm reduction or treatment services, with strong support indicated for uninterrupted free access to sterile injection equipment, privacy, and anonymity. Introducing SVM in Georgia holds the potential to deliver significant public health benefits by attracting hard-to-reach PWID, reducing unsafe injection behavior, and contributing to HIV testing uptake and linkage to care.

**METHODOLOGY**

1. The user can drop a coin through the slot provided and press the button of the required item. After the insertion and sense of the coin, the execution of the process starts.
2. A sensed coin waits for the entire process to be completed before getting deposited into the collection box. An un-sensed condition ensures that the coin is given back.
3. The process ends with one item being dispensed to the collection area, the rotation mechanism of the stepper motor and the associated load ensure that proper operation takes place and the item is vented properly.
4. The item as it gets dispensed is made to pass through the infra-red sensor. As the object cuts the infrared rays, we can say that the process is complete. If the item is not dispensed out and if there is no obstruction sensed by the sensor, then it is assumed that there is some problem in the system. In that case, the control goes to the coin stepper motor, and a coin is sent to the rejection area.
5. Coin insertion slot
6. Selection of the item
7. Lock and key
8. Coin rejection slot
9. Control unit
10. Coin section: The coin section consists of three units – the coin insertion unit, the coin sensing unit, and the coin rejection unit. A coin slot is provided at the top of the box to insert the coin. This coin slot will accept only one type of coin. Subsequently, the coin will be directed through a pathway of similar size.
11. The machine will not accept other denomination coins. The coin would be rejected if the coin is not vented properly. The purpose of the infrared sensors is to check if the coin is dropped. Its structure consists of a flat plate to hold the inserted coin. So when a coin is dropped on the plate, then the infrared signal is cut and immediately an output will be generated and thus the sensing will be done.
12. The rejection unit consists of a stepper motor which is coupled to the flat plate. The stepper motor enables the plate to rotate either left or right 90o and return back to its position. So when there is a change in resistance, it checks for the range.

**CONCLUSION**

This project can be used for various applications as listed below:

1. It can be implemented in educational institutions like schools, colleges, and hostels.
2. It can be used in offices and workplaces.
3. It can be implemented in banks and malls.

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