

Application of IoT for Counterfeit Prevention in Fast Moving Consumer Goods

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Abstract. The current research provides research into the techniques used and in making fraudulent identification of fast-moving consumer goods, which can be used to combat the distribution of counterfeit goods in various domains. Different strategies can be used to identify and control the distribution of counterfeit goods at different levels. The list of strategies and methods explored in this report include: asset verification technology, which can be used to distinguish between real and counterfeit goods, tracking and tracking technology, which can be used to control the purchase and distribution of chains to make it easier to find counterfeit goods in the supply chain. and marking ecommerce web analytics technology, which can be used to identify fraudulent product vendors and set up organizations and processes. Each method may not be a valid solution to the problem of production and distribution of counterfeit products. The fraud problem is related to many different domains and assets..

Keywords: FMCG, Top Companies, Counterfeit Prevention, Brand Protection, smart labels.

1 Introduction

Long haul market stuns, abrupt changes in standards of conduct, and sensational vacillations sought after, have made issues in the store network, particularly shopper products chains (FMCGs). There are contrasts between the organic market for fundamental food sources (e.g., oil, flour, sugar, salt, milk, meat). There are postponements and blunders in conveyance, item shakiness, upset stockpiling conditions, and so on Proficiency, straightforwardness, and soundness of the FMCG store network are addressed.

The truth of the matter is that this is a market where the assistance area overwhelms. Of the complete number of enlisted lawful elements, 35% to 40% of enrolled organizations are in the FMCG distribution stage. As a rate, the most noteworthy number of representatives is in the FMCG situation class (about 10%), with the FMCG deals income share in WB absolute GDP of 11%. What's more, the WB district is fascinating in research since it is a business

opportunity for in excess of 20 million purchasers, portrayed by critical financial and social contrasts in all areas, making it serious.

Settle, Procter and Gamble, and Coca Cola are among the biggest buyer products organizations on the planet. Settle in Switzerland, for instance, works in excess of 2,000 brands that incorporate everything from nutrients to cold food sources. Critically, inside the quick buyer merchandise area, piece of the overall industry rivalry is high. Accordingly, organizations center more around bundling not exclusively to pull in clients, however to keep up the timeframe of realistic usability and item trustworthiness.

2 Related Study

The top Indian FMCG organizations with their subtleties available

Hindustan unilever limited company – Debt to equity - 0, Cratioefficiency – 1.31, yield – 1.08, Price – 11.66, sales – 11.87, PE – 74.16, ROE – 86.11, ROCE – 117.25, MCAP – 543560.

ITC company– Debt to equity - 0, Cratioefficiency – 4.02, yield – 4.55, Price – 4.77, sales – 5.61, PE – 21.07, ROE – 25.66, ROCE – 31.55, MCAP - 274588.57.

Nestleindiacompany – Debt to equity - 0.03, Cratioefficiency – 1.78, yield – 1.22, Price – 55.32, sales – 13.35, PE – 76.14, ROE – 70.27, ROCE – 98.16, MCAP - 158549.38.

Britanniacompany – Debt to equity - 0.28, Cratioefficiency – 1.45, yield – 1.01, Price – 33.6, sales – 7.53, PE – 46.7, ROE – 35.94, ROCE – 41.47, MCAP - 83488.56.

Marico company– Debt to equity - 0.03, Cratioefficiency – 1.71, yield – 2.32, Price – 8.15, sales – 12.5, PE – 46.88, ROE – 28.95, ROCE – 35.69, MCAP - 51008.02

3 Methodology

Current section contains the materials and methods of this research work. The dataset collected from UCI repository and tradebrains. The data set contains laboratory values of companies profile with detailed information. The below information have given about the list of the attributes.

1. Mass Serialization Technologies
2. One dimension-Bar Code
3. QR code
4. Physical Fingerprint Technology
5. Other overt technologies
6. Other covert technologies
7. Radio Frequency Identifier

The Weka 3.8.9 has implemented to get the optimal solution of the above dataset. The below approaches have implemented and got optimal solution.

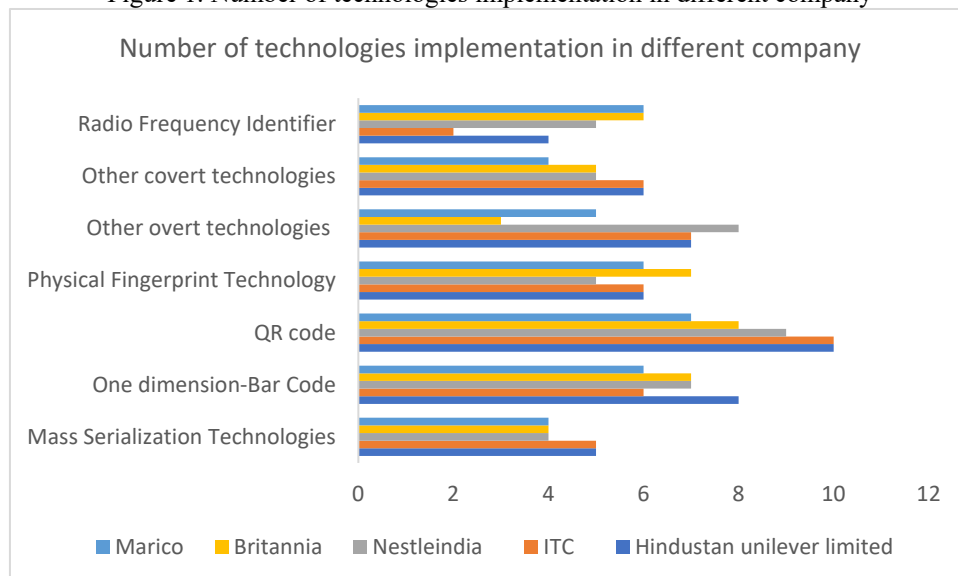
4 Results And Discussion

Study results indicates the significance of IoT implementation in FMCG for counterfeit prevention based various technologies. Quality analysis of various parameter including Mass Serialization Technologies, One dimension-Bar Code, QR code, Physical Fingerprint Technology, Other overt technologies, Other covert technologies, Radio Frequency Identifier.

Table 1. Number of technologies implementation in different company

S.No	Techniques	Hindustan unilever limited	ITC	Nestleindia	Britannia	Marico
1.	Mass Serialization Technologies	5	5	4	4	4
2.	One dimension-Bar Code	8	6	7	7	6
3.	QR code	10	10	9	8	7
4.	Physical Fingerprint Technology	6	6	5	7	6
5.	Other overt technologies	7	7	8	3	5
6.	Other covert technologies	6	6	5	5	4
7.	Radio Frequency Identifier	4	2	5	6	6

Figure 1. Number of technologies implementation in different company



QR code based technologies in implemented in almost all top companies. Still there are technical and logical issue in implementing.

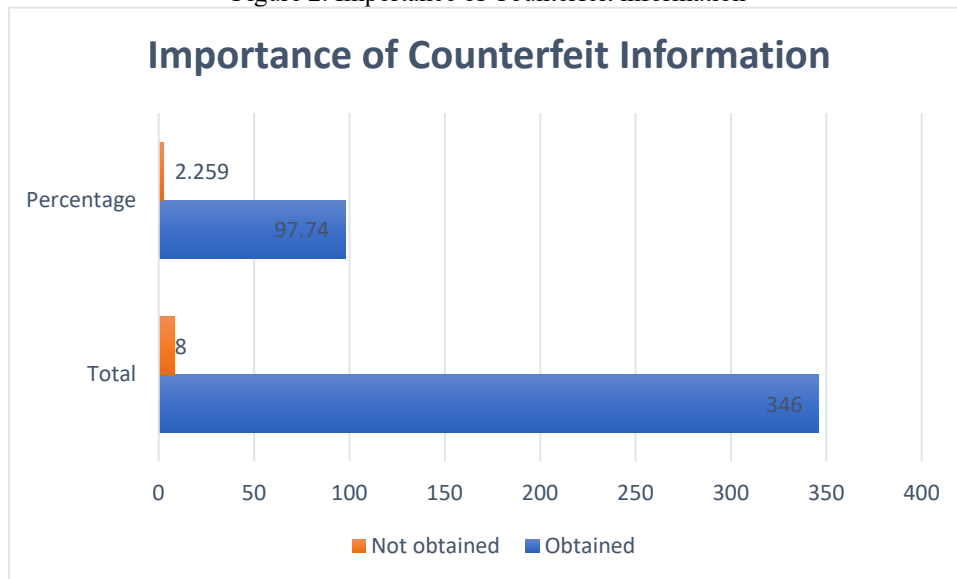
5 Importance of Counterfeit information

Counterfeit information should be known be the consumer in general. Information on counterfeit products enable consumer for choosing good products. The statistical analysis of Counterfeit information on products identification on smart tags is 97.74, 2.259 percentage incounterfeit information obtained by consumer is higher than not obtained consumers (Figure 2& Table 2).

Table 2. Importance of Counterfeit information

	Total	Percentage
Obtained	346	97.74
Not obtained	8	2.259

Figure 2. Importance of Counterfeit information



The need to combat counterfeiting in the global manufacturing network is widely recognized and various alternatives and approaches have been proposed to address this issue [1,2]. These processes apply to the product business [2,14]. There are arrangements based on the IoT based technologies that may be below the lower stage, as IoT based technologies users are less available [15,16]. Then again, preparations based on ink are highly adaptable to the point of execution [11,15], but they are easy to imitate [14]. A few experts suggest the use of preparations based on glittering materials [9] or unusual examples [10], but there is a need for more help with these methods. Product tracking and tracking arrangements based on the use of single product bottle numbers using the OCR method can be considered, but the disadvantage

is that the accuracy of the reading and use of different text styles and numerical programs for different product types [7-11]. Frameworks of object identification and anti-fraud based on the use of QR codes are generally accepted by consumers and often require a camera with a camera [2-6]. The naming of Blockchain similarly finds its use in the production network of application managers [15,16], and its new record recording could allow for the selection of cloud-based frameworks soon.

6 Conclusion

This paper outlines the implementation of a pilot project that uses a variety of methods to create a product validation framework and false arguments in the product business. This method is powered by IoT, distributed by archiving and investigating information, mobile applications, and randomly labelled based on unique QR codes. The use of awesome labels creates a parallel space, where everything that happens is visible, using the new techniques provided by Horizon 2020 TagItSmart! project [1-4]. If it is not a very common problem, note that the standard standard tags distinguish the type of object that currently does not provide data for the same item [5-7]. It is worth noting that the GS1 Digital Link Standard has been redesigned in TagItSmart! making and donating marks the use of QR code, (IoT based Smart Tags), closed field communication (NFC), and Bluetooth to transmit information to their customers [8-10]. The common idea is to provide limited web-enabled provision to improve consumer purchasing experience, strengthen product reliability, and improve store network availability and efficiency.

Surprisingly the use of smart labels is that the general protests of the massive market that are not considered part of the IoT biological system can be provided by sharp labels that allow them to radically change their individual status by relying on environmental changes [11-14]. Another important part of this method used to detect human-enabled detection is cell phone access everywhere with their cameras [15].

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