Grocery 3.0-A future not too far

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Abstract

With the rapid advancements in the field of Information & Communication Technology, consumers have always been bestowed upon with multiple benefits in terms of value for money for the products they have bought or the services they have subscribed to. This exponential growth has also given rise to digital grocery shopping services, a phenomenon that the Indian market has yet to witness. Augmented with other technological breakthroughs viz. RFID, Ubiquitous Computing, Data Mining and Artificial Intelligence, the world will soon witness systems that can communicate, remind and predict the day-to-day grocery needs of the consumers, seamlessly and almost on real-time basis. Such, almost non-interventional systems will take technology based procurements to their next level, offering its users with ample convenience and comfort.

Keywords: Online grocery shopping, ubiquitous computing, artificial intelligence

1. Introduction

The paper is designed with a view to bring forth and provoke new ways to explore technology models for digital shopping. It also intends to propose a unique approach through systems integration to seamlessly connect intelligent devices that inquire and assist the grocery consumers to manage their grocery items stock. An evolutionary path of grocery buying process is depicted by presenting the offline and online mechanisms revealing more advanced stage in the future, consisting of an intelligent system. An architectural view for such an intelligent system is proposed, with certain presumptions in the existing device functionalities.

Various challenges and limitations pertaining to the implementation and scope of such a system is also deliberated upon in brief, in this paper.

2. Evolution – PAST & PRESENT

Below is a brief overview on the different stages of Grocery evolution from offline to online and beyond:

1. **GROCERY 1.0**

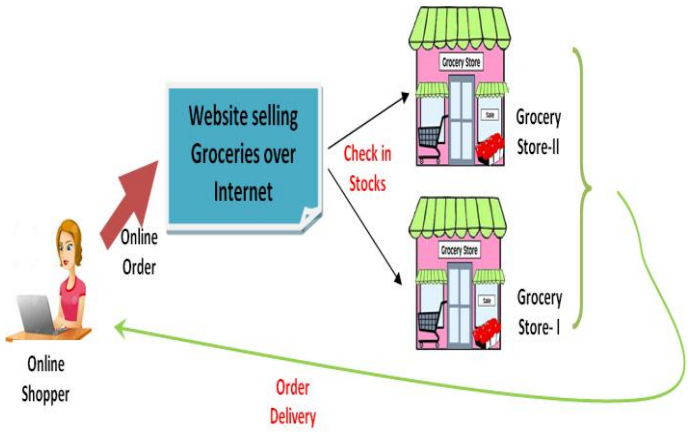
This is now a decade old grocery buying process in India. Walking into a grocery mall, filling the shopping cart and making payments through debit/credit cards or cash is a routine situation now.

[Fig.1 Grocery 1.0]

Traditional Grocery (Grocery 1.0) that involves the customer to visit the grocery store physically, buy the items and carry them home. This is the most commonly used method for grocery shopping today in the world. It tends to be more time consuming and requires more physical efforts. Only the back-end processes like ordering, tracking & billing are automated.

2. GROCERY 2.0

The number of mobile Internet users in India are expected to rise upto 314 million by 2017, which nearly double it had in the beginning of 2015. This increased diffusion of Internet in the urban and sub-urban India, has given rise to the phenomenon of offering grocery products over websites and apps with home delivery & COD options.



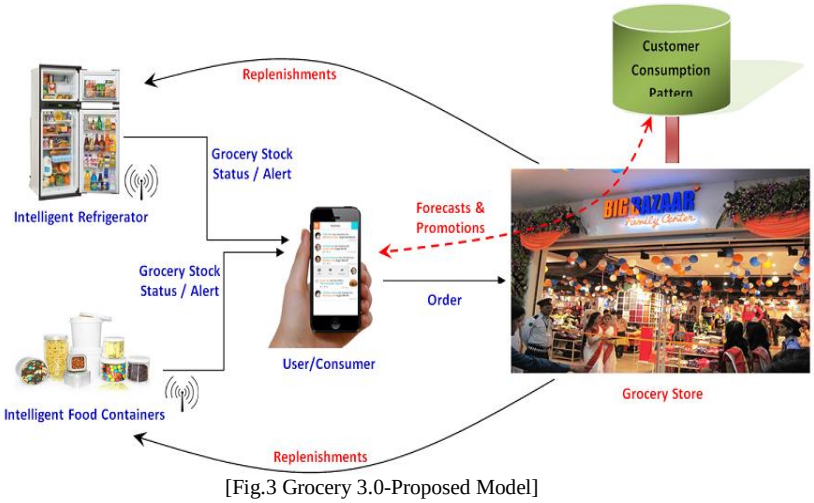
[Fig.2 Grocery 2.0]

In context of the diagram above, any grocery vendor (neighbourhood grocery store) can register on the website to offer the services to the consumers. The grocery website can have customized commission structure as a part of its revenue model.

Grocery 2.0: Wherein the user / consumer puts an order to a website, which in turn routes that order to the nearest grocery vendor in the consumer's vicinity. The grocer then delivers the goods & a small commission is being paid to the website providing the services.

3. Grocery 3.0

This concept is based on intelligent sensing, communication, analysis and auto replenishment of items.



[Fig.3 Grocery 3.0-Proposed Model]

3.1 ARCHITECTURE OF THE PROPOSED MODEL OF GROCERY 3.0

The proposed model of Grocery 3.0 is based on the integration and interconnection of various intelligent devices viz. intelligent refrigerators, intelligent containers etc. This intelligent storage containers would have built-in weight, gravity and motion sensors to detect movement of grocery items, in and out of these storage containers.

Any shortage of grocery item would be sensed on real time basis. These quantity details would be communicated through in-built RFID transmitters to the nearby grocery superstore. The grocery superstore servers will then automatically plan the logistics to transport these grocery items to the customer's residence at different scheduled times for timely replenishments.

The applications deployed at the nearby grocery superstore can not only replenish, but also predict the future grocery requirements of the consumer based on his/her past consumption. This prediction can be achieved by the underlying Artificial Intelligence based algorithms and data mining techniques both working together for precise forecast.

Such forecasts based on consumption patterns will be communicated to the customer on his smartphone for a single one touch approval. Once the customer approvesthese grocery items can be delivered at any scheduled date.

The consumer can also interact with the system through the smartphone app to order any other grocery item; check the grocery levels at home or even modify the scheduled delivery of grocery in the future.

3.2 Limitations

The proposed system may pose certain limitations in terms of the implementation. A few of which are as below:

i) Intelligent equipment like refrigerators and containers are still in their developmental stage and initially may be expensive for the customers.
ii) Integration of the intelligent containers, grocery superstore servers, smartphone app and other intermediate components could pose constraints in terms of universal standards for communication.
iii) Customer's personal consumption data and other information may become accessible to the grocery super store system which may be exploited for cross selling /up selling.

iv) Customer may lose the thrill of shopping experience while physically touching & feeling the grocery products also putting a impeding their bargaining power.

3.3 Future Scope

Further on these lines, new advancements in technologies combined with strategic alliances amongst stores can be applied to reap the combined benefits of all grocery superstores offering various products or services. The Smartphone app and grocery superstore can be built on open architecture whereby integration of new devices and small to midsized neighborhood grocery stores can become easier.

Extending further, a backward integration can also be worked out whereby the manufacturers can directly check the inventory levels at different user locations and plan their dispatches in a more efficient manner.

Bibliography

- Nielsen (2009), Analyst Spotlight: Online grocery shopping: Ripe timing for resurgence, [Online], Available: http://www.nielsen.com/content/dam/corporate/us/en/newswire/uploads/2009/10/Nielsen-OnlineGroceryReport_909.pdf, [last accessed on 05/01/16].
- Kotler, P. (1997). Marketing management: Analysis, planning, implementation and control. Ninth Edition, New Jersey: Prentice Hall.
- Sinha, P.K., Mathew, E. and Kansal, A.2005, "Format Choice of Food and Grocery Retailer", Working Paper No. 2005-07-04.IIM Ahmadabad
- Thomas, A. & Garland, R. (2004) 'Grocery shopping: list and non-list usage', Marketing Intelligence & Planning, vol. 22, nº 6, pp. 623-635.
- Venkatesh, V. & Davis, F. (2000a), "A theoretical extension of the technology acceptance model: Four longitudinal field studies", Management Science, vol. 46, no. 2, pp. 186-204.
- AC Nielsen's *"The future of Grocery" Report, Apr 2015.*
- *"The Five New Rules of Technology-Enabled Sales & Marketing in Consumer Goods" Gartner Report, Mar 2015*
- *"The Future of Shopping" Forrester'Report, Apr 2015*
- *Business Insider's "Grocery Stores in the Future", Jun 2014*