

IOT in Improving the Standards of Food and Farming

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Abstract— Information & communication technology give tremendous services to all the sectors including food technologies. On the other hand, this world fighting against hunger, food wastes, health and nutrition-less food. There are way further technologies increase not only the profitability, but also quality and product rate. IoT technologies use by the food technologies in numerous countries for food safety, transportation, packaging, temperature monitoring, nutrition analysis, and find the imperfect foods using IoT bias and operations via smart phones and computers in real time. This studies concentrated on IoT in food technologies in terms of the food product, security issues and possible results for those issues. For that, a methodical literature review was conducted and anatomized using qualitative and quantitative system. Findings have verified that, IoT and applicable technologies appreciatively give its full support to increase the demand and quality of food product process. Meanwhile, The data sequestration issues and give immediate specialized results were the major security issues faced by those IoT bias and operation. In addition to that, neither of these papers plant conducted in Sri Lanka related to this study and none of the studies plant related to IoT, Food- destroying blankets. Piecemeal from these all, this study suggested developing IoT system and operation grounded on pall computing to drive down from the food- destroying blankets. Eventually, it's planned to conduct a statistical analysis to find the prospects of food scientists, food product industrialists, and growers. This paper purely grounded on exploration workshop from notorious Journals and conferences.

I. INTRODUCTION

Internet of Things (IoT)

IoT is an arising technology advancement in this period, which can help produce a bigger vault ahead in the Information and Communication Technology (ICT) sectors in the in the being and future. IoT is the extension of networking and web technologies into the physical realm via detectors, selectors, and digital bias for the betterment of robotization services (Miorandi et al., 2012). IoT- enabled bias are used in all sectors and diligence similar as transport, healthcare, husbandry, commerce, tourism, food product, education, and engineering. While the number of connected objects to the wireless bias increases and data handed by those objects also increase, which may increase the quality and trustability of the results of those collected data, all these processes could be without mortal intervention. All these collected data shoot to the pall by the connected bias. Cloud Computing (CC) furnishing unlimited, on- demand storehouse, and jackass times (Botta et al., 2015; Rojas, 2015).[1] This IoT creates a superhighway that enables possibilities to integrate any sectors with ICT to increase productivity and effectiveness without mortal commerce. The following figure 1 illustrated the theoretical illustration of IoT.

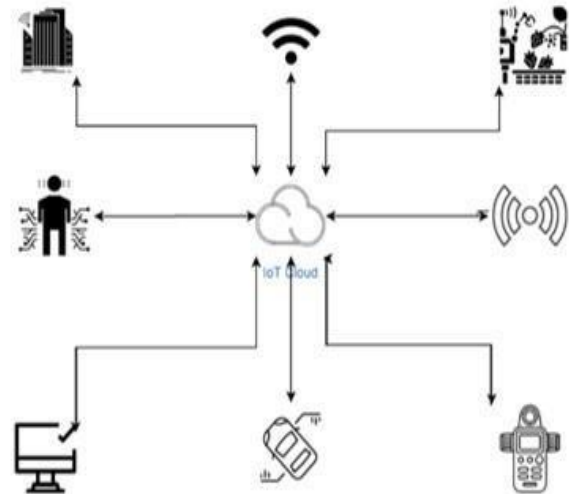


Figure 1. Theoretical illustration of IoT

II. FOOD TECHNOLOGY (FT)

This earthmoving toward hunger and poverty but the Food technology generalities fight against these matters a bit like the speed swell to avoid this case. therein sense, FT plays a serious part within the food product process (FPP); like product, preservation, control, and exploration and

development are the most a part of Food technology. Nutrition analysis, control, conservation are the sole manufacturing practices within the food diligence (Meghwal et al., 2016). Food diligence are the crucial factor to form a choice the country's process. Thus, cash in of those diligence substantially depends on the quality of the foods. But, on the contrary hands, profitability depends on increase the labour productivity (Thenabadu M et al., 2020).[2] As banded beforehand, good norms of any food depend upon those 4 factors. people are giving precedence to healthy foods rather not only than taste food products (Hsieh Ofori, 2007). These quality deciding factors are developing substantially with the help of mortal backing, and incompletely digitalized kinds of ministry. But, food products might be suffering from these diligence substantially depends on humans, which is due to homemade food development procedures. Thus, food product diligence awaiting automatic ministry to gauge back the mortal trouble within lower time, which could develop differing types of food product without losing its rates to extend the client. Food safety are frequently increased by the ICT- enabled traceability systems (Setboonsarng et al., 2002).[3] The advancement of

ICT operations introduces multiple technologies to extend edge in IoT, CC, drones, and AI (AI). These technologies working in colorful way during the FPP; like nutrition analysis, control, quilting, force chain, and food safety. IoT enabled systems food distribution can help to supply food force chain process during the tactic (Bhushan et al., 2016) (Accorsi et al., 2017). Meanwhile, food safety and its newness are frequently covered using mobile grounded IoT operation in real time (Witjaksono et al., 2018). And, an IoT grounded operation used to dissect the food constituents which uses detectors for food nutrition quantification (Sundaravadivel et al., 2018). Also, detector technologies are employed in AI-grounded quilting (Popa et al., 2019). Motorized systems employed in food diligence to ascertain weight and find leakages of the foods that goes down the road (Srivastava et al., 2015). But, all the technologies using by the food diligence are needed to development in terms of safety and give process. Likewise, maturity of the conducted inquiries associated with IoT and Food wisdom till moment were not give needed development way in food technologies. Likewise, IoT are frequently enforced with husbandry. Precision husbandry is understood together of the sustainable, ecological, and economic approach to progress husbandry yields and quality, and can ultimately come true with the farther prosecution of IoT practices in husbandry (Ruan, Jiang, et al., 2019). also thereto pall computing are frequently accommodated with IoT to make sure the quality and sustainability of smart husbandry (Rojas, 2015).

There were numerous exploration and development workshop conducted and it's still counting the figures. therein sense, this study that consider chancing the upper result to strengthen the food technology (FT) via IoT supported being studies. This study banded numerous arising technologies within the respect of food technologies and husbandry that are leading to smart husbandry or the smart food assiduity, especially related to IoT. also thereto, cyber security and sequestration problems with IoT indeed are banded. Thus, a scientific literature review was used to collect the needed data. Lately published papers were collected from colorful indexing databases in several perspectives like used technologies, developed IoT operations, and security enterprises independently in terms of food technology and husbandry. the posterior section explained the methodology used for the methodical literature review. and thus the final part concludes that the study with limitations of the study and unborn workshop.

Three ways to transfigure food technology

1. Food sanitation:

Food and drug administration of the US has taken many measures to improve food safety under an act proposed in the year 2011 called as food safety modernization act. Due to this act it has helped FDA to take measures on food safety rather than replying to food impurity issues after overcoming with the help of these acts many big

MNC'S have improved their food quality by providing top quality products. Many detectors like temperature moistures detectors are used to keep track of shipping time time, temperature to preserve the quality of food and helps in increasing the shelf life temperature tracking detectors help in increasing are decreasing temperature which help to preserve dairy products.

2. Streamlined logistics

Food and libation logistics help in shipping food from one place to another without sacrificing the quality of food. This help companies to provide their products across the world in faster and efficient way technology also plays a vital role in automating delivery and shipping of products, these transport systems have built in temperature controller to increase shelf life of food With the help of these technologies companies could understand clients problems in shipping their products.

3. Transparent force chains

Due to the transparent mode of communication it has helped companies to gain clients trusts. due to the transparent mode it has helped customers to keep track of the their products

Farming & agriculture technology (FT)

With the help of technologies farming was more efficient and productivity of husbandry increased Farmers can't work

for 24 hours each day. farmers may not have knowledge to use new technologies as they arise with help of IOT automation it makes their job easy.

Benefits of smart farming:

People are still identifying new technologies for performing smart ways of farming. remote monitoring for farmers and other water supply technologies and farmers helped farmers for the cultivation of plans.

Faults of digital farming:

Husbandry completely relies on nature unpredictable rains can cause damage to crops use of excess pests causes crop damage. smart husbandry requires internet continuously which is difficult to provide in rural areas. smart husbandry causes farmers to learn new technologies which is difficult to learn in rural area.

A. Results of using technology in agriculture

1. *Accuracy in agriculture:* Due to new approaches with the help of digital technologies efficiency in growing good quality of crops increased by detectors we could predict rainfall are soil quality ,crop health.
2. *Crop monitoring:* Many drones satellites detectors are used to monitor to crop health. it also includes temperature crop quality .
3. *Livestock monitoring:* Livestock monitoring it helps track health of cattle track milk production and to track condition of their breast. with the help IOT it minimizes labor cost.
4. *Technology for irrigation:* With the help of technologies providing water to the crops was increased significantly and efficiently with less wastage of water which yields good crops.
5. *Smartpest control:* With smart pest control we can the usage of pesticides and prevent direct contact for farmer from pesticides which would keep them healthy as well as land less polluted.
6. *forecasting:* Satellites are used for predicting rainfalls which would help farmers to know when to harvest plants which decrease the wastages of crops.
7. *proper use of fertilizer:* Detectors are used to detect toxic level in the soil fertilizers help in balancing the toxic level which prevents crop damage and soil erosion. technologies help in keeping track of toxic levels.

B. Uses of IOT in husbandry

Data plays important role in IoT husbandry. Growers can keep track of all the details from soil quality to crop quality. The data is used to keep track of soil fertility for next harvest. Automatic irrigation system helps to water plants more frequently and reduce the amount of labour. Remote

monitoring helps farmers to grow crops and monitor the crops 24/7. Drought Monitoring helps farmers to track any unpredictable events that is in case of natural disaster.

III. CONCLUSION

This paper investigates the part of Internet of Effects (IoT) in Agricultural Sector. Moment husbandry is bedded with advance service like GPS, detectors that enable to communicate to each other assay the data and also exchange data among them. A country's profitable growth depends on numerous factors, in that sense food product is the core part of that. Still, a stage alone mortal resource only isn't enough to develop the needed quantum of food with advanced quality nutrition. Thus, this study aimed at how technologies help the food diligence to achieve the produce the needed quantum of food, food safety, nutrition conservation, food force chain, and food transportation. On that base, this study concentrated on how IoT provides services for food technology.

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