Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

Agile Software and Business Development Using Artificial Intelligence

Gurpreet Singh Panesar[1], Dasari Venkatesh[2], Manik Rakhra[3*], Kapil Jairath[4], Mohammad Shabaz[5]

[1]Department of Computer Science and Engineering, Chandigarh University, India.
[2]Department of Computer Science and Engineering, Lovely Professional University, India.
[3*]Department of Computer Science and Engineering, Lovely Professional University, India.
E-mail: rakhramanik786@gmail.com
[4]Trinity College Jalandhar, India.
[5]Department of Computer Science and Engineering, Lovely Professional University, India.

ABSTRACT

In this paper, we discuss about how the quality is maintained while delivering the product to the customer as soon as possible. We are going to be explaining how 6 principles of continuous architecture are going to be helping us with the quality assurance of the final product in the least amount of time possible for the development. Having the quality is just as important as delivering the product in the least amount of time possible. For that, we can use many tactics such as availability tactics that helps us to maintain the maximum quality as the software development team could. He discusses about those tactics, few methods to deliver the product quickly and to implement quality driver software architecture. Food-based economy is a significant aspect of India. Primary livelihood for the majority people of this place is farming, it helps the entire community. Food is a fundamental necessity of existence and is taken care of by the farmers. The sales staffs struggle to correctly attain the sales price for the stocks they are offering. Their damages are higher than earnings. This stock market model allows farmers to offer their output in highest bid prices. In this way, farmers may register themselves and have numerous other facilities like reviews, communication to the wholesalers, market alerts, and much more. Predictive Analytics is being used in a range of contexts including producing expert device, artificial vision, voice recognition, legal evaluation, automated arms system, and precision agriculture and more. The world has a rising food demand and utilizing AI farming techniques will solve this problem. On the basis of AI, it would be easy to identify and immediately to target weed and the decision regarding the herbicide and the necessary buffer zone can be made quickly. Artificial Intelligence (AI) features have been embedded in present article.

KEYWORDS

Component-based Software Engineering (CBSE), Prototyping, Agile, SRS Artificial Intelligence (AI), Agents.

Introduction

One of the most famous types of life cycle model in software development is prototyping. The process of prototyping is used by many software developments companies and organisations. Usually, evolutionary model is commonly used life cycle model when a project of huge size is given by the customer and asked to finish it in a very short amount of time. Evolutionary model is preferred over other life cycle models as it allows us to keep evolving the software given to the customer with bare minimum features which we could simply describe as core features of that software. However, when the user is not sure about his requirements, and keeps changing them as time goes by, it becomes a really big problem for the software engineers and the company to make an SRS (software requirement specifications) that includes feasibility of both economy and technical side. If the software engineers complete the project and deliver the project to the customer, when the customer end up changing the requirements or features of that software, it would cost a lot of money, time and effort for the software developing team. In order to avoid this kind of inconsistency, a life cycle model knows as prototyping is introduced. Prototyping is a method of software development where a small duplicate of the original software is made with bare minimum features and it is verified by the customer whether the software is what he was aiming to get delivered or if he needs a different set of features implemented in that project. This would eliminate any kinds of inconsistencies from the customer side and would help the software developing team to get the perfect requirements from the customer before making the final product. However, prototyping has its own downsides. Every time the software developing team makes a prototype, it costs them some money and time, not the mention effort. But when we weigh the pros against cons in prototyping software development life cycle, it is proved that this procedure yields a lot more profits than the disadvantages it has.

With OOSE, they can simply include new objects without too much hassle, as new objects will acquire the important features of the current ones. However, the classes having the single object are confined to their specific defined task

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

and do not help us to use those components in the design of other computer systems. This is where component-based software engineering (CBSE) comes into play. It allows us to reuse the already existing components to build a new computer-based system. The main goal of CBSE is to construct the system with already existing components instead of creating new ones, and integrating them together. This will provide us the systems with better quality and the product can be delivered to the customer very quickly. The second goal is to support the development of the components as reusable entities. If we generalize these components and define them using well-defined interfaces, then we can implement the component once and reuse it in more than one application.

Artificial intelligence comprises of two terms "Artificial" and "Intelligence", implying it is a piece of innovative work with the aid of which we can create sharp smart robots that are able to simulate itself as an entity (i.e. human), think like individuals and prepare to make judgment (action). Using AI, we not only render machines which can do their tasks, we will build machines which are able to do work independently using their own algorithms. Robots are machines which mimic humans by mimicking the behaviour of human beings and events by the aid of AI. The farmers pack and contact wholesale farmers for selling their produce after harvesting [1]. The manufacturer first offers the wholesale price to the farmer. The wholesale seller tries to increase income, and thus aims to convince the farmer to lower the price. In this case, the business goes bankrupt owing to unfavourable business circumstances or due to its financial weakness. Some farmers who reside very close to the cities sell their stock at the wholesalers where it is distributed to supermarkets and consumers at retail markets. For the farmers who reside in the rural regions, selling their goods in the city centre would be challenging. They have little alternative but to deliver their goods to the wholesaler at the auction. This is complicated because there are countless other aspects to seed planting. These operators hope to receive savings from the problems they encounter. After purchasing bulk goods from producers, wholesalers then market it to consumers at their offered price. And the sellers resell the products to the other customers. Prices changes stage to stage based on how and where it is being measured. The sellers' bargain for the price to as high as possible when customers attempt to purchase lower prices at the lowest extent. From seed development to the crop selling to consumers is a mechanism in which farmers play a crucial role [2]. The lives of farmers are even easier than those of city dwellers. These farmers perhaps took loans from banks in order to buy agricultural material, crops, fertilizer, manure, etc. Some environmental events such as droughts and flooding cause farmers to sacrifice some of their livestock and crops. As long as these stocks cannot be sold, farmers are unable to repay their loans on time and would thus pay high rates of interest. Wholesale vendors are delighted because the farmers sell at below-market rate; and the farmers themselves are satisfied when they get more margin.

A farmer has differing views regarding the benefit when producing the commodity as well as the price which he demands. In this scenario, an individual who purchases products at wholesale price only varies from his intention and totally loses any essential profit due to this. This outcome is caused because of the bargaining and saving mind-set of the customer. In doing so, the wholesale seller strives for high selling price and would not purposely sell for low price assuming this would help him in the long run. As a result, the farmers are unable to make money. Despite farmers' efforts, agriculture is still a huge strain on their livelihood.

Literature Review

1) Stocks Business

Agriculture is the cornerstone of the Industry in India and it plays a decisive role in economic and social growth of the
region. Agriculture sector is a wide field encompassing a range of diverse activities. Agricultural researches in India have a long tradition of initiation and performance. This agricultural research scheme came into being during the colonial period and it exists today at a size that is perhaps the leading research system in the country. The Green Revolution is one of the most important and meaningful technical developments that shifted India from a net food export market in the 1950s and 1960s to a net food exporter in the 1980s. The over application of fertilizers, herbicides, and pesticides will destroy soil and kill biodiversity. There are unique obstacles confronted farmers [3]. Agriculture contributes directly or indirectly as source of subsistence to majority of the Indian population. The system of Indian farming has undergone many improvements over the years. There has been a spurt of agricultural development in India since it goes on to become an agricultural powerhouse. Agriculture has become a significant tool of economic growth for India because production in many other industries is based on it. Since it has used productive backward and forward incorporation of agriculture, its agriculture sector has become internationally

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

successful in cost and quality [4]. Cooperatives are thought to facilitate separation of agricultural resources by improved cooperation at the farm level and value adding at subsequent stages of production. Proper management approaches may have major influence on agricultural sector of India. Currently, in India, agriculture is restricted by numerous problems. We have raised food grain output by 250 million tonnes in 2012-13 which has culminated in making history by record breaking production of grain. Of value is that all the farmers have the most arable property. Our shortcomings lie in low yields, low value added, below optimum preservation, low efficiency in manufacturing, and low post-harvest losses. The writer aims at social problems and the economy of the farming group the agricultural field [5].

2)Stocks Brokers

Speculative investing is a major source of value for the business since it offers price discovery and supplement liquidity. Derivatives have steadily picked up value in Indian stock markets. Index contracts became the first exchange listed instruments in the Indian economy. Within a year and half following the launch of index options, stock options and stock futures started. Since then, the sum of derivatives traded in the asset class has been beyond that in cash markets and have been a form of trading and hedging for market participants, unlike in cash markets [6]. The Native Share and Stockbrokers Society is a non- profit generating organization. In your locality, there is certainly a major demand for vegetables. A financial exchange may also be a location where buyers buy and sell securities. The financial exchange influences the economy by determining the price for which you will purchase or sell products. You have freedom to purchase and sell stocks of your own will. Buyers negotiate with each other to get the strongest bid on a single stock and the highest price quoted on it. As part of the reform phase in economy, the capital exchange has become a significant component of Indian economy. Besides aggregating the money for investment in a more productive manner, financial exchanges often provide stockholders with liquidity such that they can collect funds for investment [7]. Stock exchanges provide an essential platform for mobilizing money for companies and governments, and for consumers, to get liquidity. They also agree that liquid markets can enhance more effective distribution of capital and fuel long-term economic development [8]. High levels of Stock market indexes offered lesser influence of uncertainty. When a nation falls through financial crises and stagnation, the capital price cannot be corrected in the short term. The financial exchange went on a roller coaster trip because of political uncertainty. Stock price uncertainty has clear negative association with economic development. There is a relation between both. So, both countries' economic performance would be adversely affected by financial market fluctuations. Volatility in financial economies is adversely correlated with foreign exchange and spending, contributing to current account and capital account deficits. [9-10].

Problem Formulation

There are a variety of unique factors that specifically influence the performance of the AGROGROW. Bidding is a mechanism depending on time-period. The auction may take place within a certain period of time. Due to perishability, the time limits will emerge for the ordered materials. Then after stock is picked, bidding will take place next day. One of the aims of industry is to maximize the benefit of that business. The method is convenient in and can be grasped by farmers, consumers and mediators at the same time. Convenience is one of the big reasons why consumers would purchase products digitally from the growers. Accessibility is the improvement or creativity what would be introduced here by our project and that is modern innovation. New convenience here is by farmers selling and shipping their stocks online to the customers [12]. A customer's opinion may indicate a business's success or loss. You pay for an object when you have those goals in mind. Many goods and services are expected to encounter fresh rivalry from substitutes or entirely new bundles from market newcomers. For farmers, the software functions as a third-party agent. Customers' perception is a usual feature of ecommerce framework like large basket etc. where they can purchase grocery like food grains and vegetables directly from farmers and retailers on wholesale and retail basis. Customer satisfaction is main driving force that affects company's progress [13]. Our goal is to incorporate a support mechanism for consumer grievances. Customer loyalty would be the biggest key to the company's maintaining customer base. If the client is pleased with the operation, it would have a positive impact on the staff. Satisfaction of the consumers is a must-have consideration for the community.

Cost of quality is a means of calculating how effective service delivered by a system is. The managers of the framework as well as all associated service suppliers can ensure that their standard facilities and management is higher than average. Therefore, the service provided by a device should be secure. The confidence that customers

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

develop for the device can be named as reliability. Then the scheme can accomplish the aim by pleasing the community as well as the consumers [14]. Therefore, businesses can retain these data including customer records, time of transaction. The dataset will be held only for the growers, consumers and the mediators via their address evidence, bank records and personal accounts, thus guaranteeing the validity of any data in a database.

Research Methodology

First, the machine would take details about the stock and then show results appropriately on the system. It will provide details on market price of the stock, source of stock, the price gap between ours and farmer's rate, and place of rising. In the future, the range of stock trading will stretch to 100-200 kms. A supplier will earn 6-8 percent salary from the net benefit. Farmer's benefit from variance in cost from current framework and our system. Purchasing raw materials from farmers and checking them in lab. The price would then be presented to the visitor and offered to the client. Customers put order on non-negotiable price and the key approach for stock market begins [15-17]. The remaining 30 percent stock will be submitted for operation. This 30 percent share will be allocated for the last sale, but farmers may still make full benefit if they get the best price the stocks sell. With AI, defining the problem and proposing the solutions is quite easy. AI will process data and solutions easily. However, AI is often used to produce greater yields for the reducing lead payment. AI can classify a disease with a high degree of precision. This is helpful to the farmers since it allows them to track crops remotely from the distance by manipulating the intensity. As we discussed about the goals of the component-based software engineering, now we are going to be discussing about the essentials of CBSE. The first essential part is Independent components. We need the components to be independent which means that each component we select must be specified by their interfaces. And these interfaces must be completely separated from the implementation of the component.

By this way, we can facilitate the upgrading procedure and maintenance and we can replace an existing component with a new one without changing the other parts of the system. Another important essential are the component standards. These standards are embodied within the component models that help to facilitate the component integration as we know that the components can be provided by different vendors that could be coded in different languages. So, we need those components to stick to one standard which makes the integration possible.

Once we are done with the integration of the component model, we need a model to support the inter-operability or the communication between the components especially when we want individual components to work together. This is where the Middleware support comes into play. It handles this component communication and allows us to focus more on the application related problems. Middleware support is capable of helping us with issues such as resource allocation, transaction management, security or concurrency.

In addition to all these essentials, we need a development process that is geared to component-based software engineering in contrast with the traditional software engineering where the components used must satisfy the requirements we have. The components we have need a software process or component-based engineering process that allows the requirements to evolve and match the available components that we need to integrate to make a new system.

1)Classification of Artificial Intelligence Agents

In the recent study artificial intelligent agents are classified as below.

Simple Reflex Agent

Such experts draw decisions dependent on what they have already learned and ignore what has come before. These experts only experience the visible effects. Complex reflex expert doesn't give consideration to previous experiences in order to make their judgments what more, theirs movement flow. Easy reflex specialist relies on Situation Activation Law, which says of mapping current state to the action. As an instance, a room cleaner, it works only when there is dirt in the room [18].

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

Figure 1 depicts systematic scheme of Simple Reflex Agent.

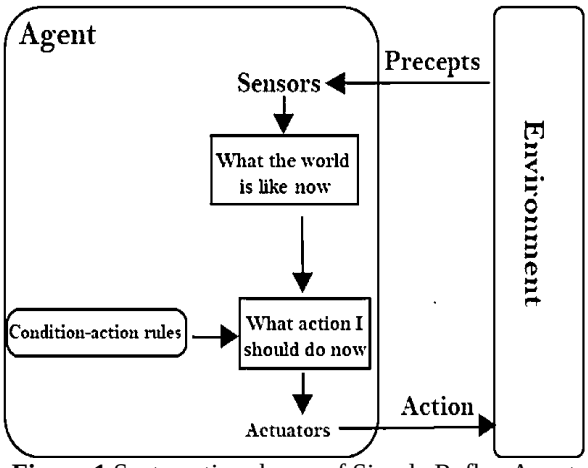

Figure 1. Systematic scheme of Simple Reflex Agent

Goal-Based Agents

In this technique, the expert would first grasp the aims of the project to achieve. The goal focused experts expand the skills of the model-based practitioners [19]. Figure 2 depicts systematic scheme of goal based Intelligent Agent. Related data they chose an operation that would be able to fulfil the targets. This would depend on whether the argument is achieved or not [20]. This way of thought is called searching and planning, which makes an operator proactive.

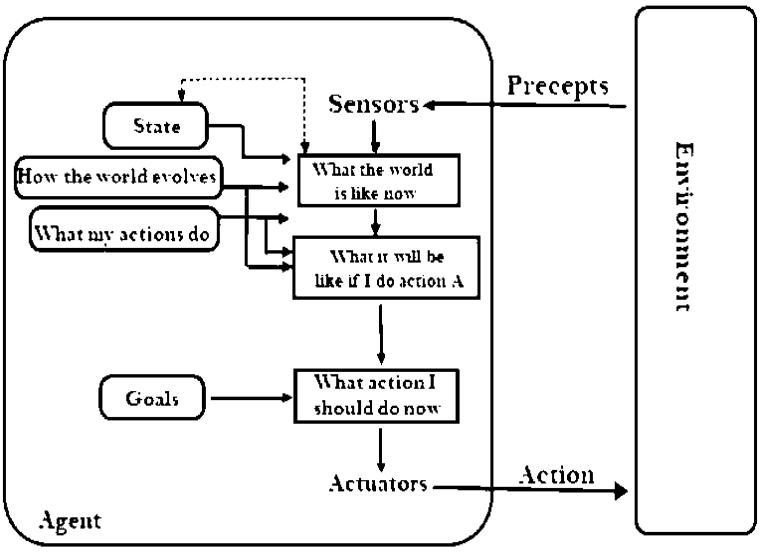

Figure 2. Goal based Intelligent Agents

Applications

Basically, we have six principles and a couple tools in continuous architecture which we define in more detail and all of that is a way of thinking about architecture which we think is valid in today's landscape. The six principles are as follows,

- We should architect products, not just solution for projects.
- When we architect, we should focus on quality attributes, not on functional requirements.
- Delay design decisions until they are absolutely necessary.

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

- We should architect for change-leverage “the power of small”.
- We should architect for build, test and deploy.
- Always model the organisation after the design of the system.

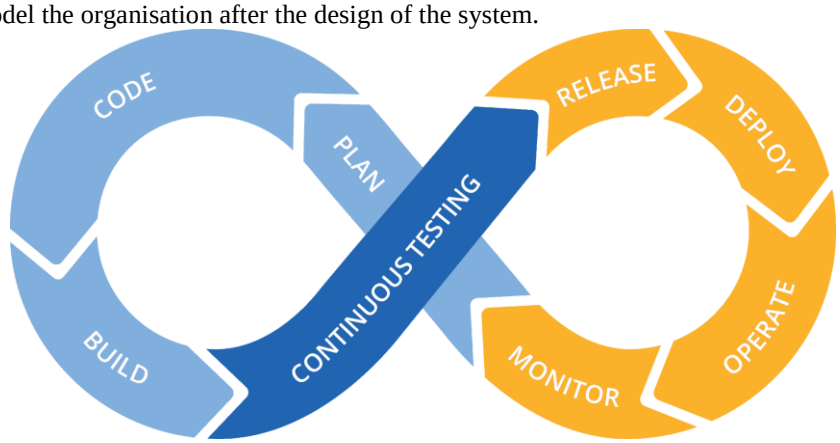

Fig. 3: Step by step cycle of Continuous Architecture

The investigation of information concerning the three mechanical ventures demonstrated that the time spent for preparing individuals is emphatically associated to the estimations of the mean exertion spent for support exercises. This connection can be clarified thinking about that the segments providers propose preparing periods relying upon the inborn trouble in comprehension and dealing with the segments: the more troublesome is the cognizance of the part the higher upkeep costs it requires. Thusly, we can contend that the proposed preparing period is an appropriate trademark for segments choice, in that it gives a sign of the trouble in comprehension, and in this way in looking after it. A positive connection exists between Functional Coverage and support exertion. So, the likelihood an adjustment in the CBS impacts parts is high. This can be clarified thinking about that the higher Functional Coverage for a given part, the higher the likelihood that an adjustment in the CBS impacts that segment. On the off chance that the supplier doesn't develop the part, the effect can have as an impact the need to assemble new programming, planned to practice the segment for new highlights of the CBS. In this current generation, people often tend to make design decisions too quickly which hinders the final product if there are any ups and downs. It means, if we end up with a brittle architecture, if we end up with design decisions too early on, it could damage the functionality of the final product. It is very important that we need to make a minimum viable architecture or product which helps us not to take a step back to the non-functional conventional method during the software development process, like when was say we need a very configurable system, then we need a rules engine. Similarly, there are a lot decisions we jump to because we haven’t understood non-functions and we jump into those decisions due to the sheer pressure to make decisions as soon as possible. The thing here is to keep the system simple and we will only end up making it way more complicated that it has to be just by jumping into these kinds of design decisions.

Conclusion

In this paper, we discussed about the implementation and applications of CBSE and rapid prototyping in the current evolving technology. The use of six principles would help us to make the quality of the software a lot better when we implement agile software development. This could very well extend the usage of agile methodology all over the world in very short span of time. This further improves the standards of agile software development.This method could very well be our best option in the near future once we remove ambiguities that it currently has and problems that the software development team has to deal with. When software is developed and delivered in a real short amount of time, it would have ample of opportunities to get enhancements or further development by adding a lot more features than the ones it currently has. This would change the software development domain to it entirety which is why we should all focus to reduce the downsides that rapid prototyping currently has. Thus, it helps to create a new generation for software engineering and its engineers. The usage of artificial intelligence (AI) technology is beneficial for farmers in analysing their land, soil, health and their crop. AGROGROW is a modern idea to be introduced in the field of online business. The current literature research would be used to accurately classify the idea of producers directly selling their farm's products to customers and buyers purchasing from farmers directly. This work will address the issue of farmers who do not get a return due to wholesalers who quote their own price for the stock and it will further profit the farmers. Our scheme enables farmers to earn enough benefit by direct sales to the

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 1851 - 1857
Received 20 January 2021; Accepted 08 February 2021.

consumers. The method is first suggested for farmers because they are quite unfamiliar to this. The global corporations would be employed to easily carry out transfers of the products provided by the farmers to the consumers. This can be achieved by selling the benefits of the scheme to the farmers. Here we will have two systems: one where farmers auction the seeds and another where the restricted stock was bought depending on offers. A payment account scheme is to be developed for farmers, consumers and middlemen that will be paired with biometric ID[16-17]. Farmers are to do quality test at the laboratory given by us. Laboratory's rates will be dependent on the efficiency after the sequence of tests. Our system is intended to service farmers and customers in a mutually beneficial way which lets both parties' flourish. The mechanism often acts as a way to come up with innovative market ideas such as trading of agricultural goods electronically via an auction method.

References

[1] Chu, L. J. (1948). Physical limitations of omni-directional antennas. *Journal of applied physics*, *19*(12), 1163-1175.

[2] Collin, R., & Rothschild, S. (1964). Evaluation of antenna Q. *IEEE Transactions on Antennas and Propagation*, *12*(1), 23-27.

[3] Wheeler, H. A. (1958). The spherical coil as an inductor, shield, or antenna. *Proceedings of the IRE*, *46*(9), 1595-1602.

[4] Hansen, R. C., & Collin, R. E. (2009). A new Chu formula for Q. *IEEE Antennas and Propagation Magazine*, *51*(5), 38-41.

[5] Kim, O.S., &Breinbjerg, O. (2010). Lower Bound for the Radiation $ Q $ of Electrically Small Magnetic Dipole Antennaswith Solid Magnetodielectric Core. *IEEE Transactions on Antennas and Propagation*, *59*(2), 679-681.

[6] Kim, O.S., &Breinbjerg, O. (2011). Reaching the Chu lower bound on Q with magnetic dipole antennas using a magnetic-coated PEC core. *IEEE transactions on antennas and propagation*, *59*(8), 2799-2805.

[7] Kim, O.S. (2011). Electric Dipole Antennas with Magnetic-Coated PEC Cores: Reaching the Chu Lower Bound on $ Q$. *IEEE transactions on antennas and propagation*, *60*(3), 1616-1619.

[8] Mantysalo, M., Pekkanen, V., Kaija, K., Niittynen, J., Koskinen, S., Halonen, E., &Hameenoja, O. (2009). Capability of inkjet technology in electronics manufacturing. In *2009 59th Electronic Components and Technology Conference*, 1330-1336.

[9] Crowley, K., Morrin, A., Hernandez, A., O'Malley, E., Whitten, P.G., Wallace, G.G., &Killard, A. J. (2008). Fabrication of an ammonia gas sensor using inkjet-printed polyaniline nanoparticles. *Talanta*, *77*(2), 710-717.

[10] Unander, T., & Nilsson, H. E. (2009). Characterization of printed moisture sensors in packaging surveillance applications. *IEEE Sensors Journal*, *9*(8), 922-928.

[11] Brischwein, M., Herrmann, S., Vonau, W., Berthold, F., Grothe, H., Motrescu, E.R., & Wolf, B. (2007). The use of screen printed electrodes for the sensing of cell responses. *In AFRICON*, 1-5.

[12] Lakhmi, R., Debéda, H., Dufour, I., &Lucat, C. (2010). Force sensors based on screen-printed cantilevers. *IEEE Sensors Journal*, *10*(6), 1133-1137.

[13] Al-Chami, H., &Cretu, E. (2009). Inkjet printing of microsensors. In *2009 IEEE 15th International Mixed-Signals, Sensors, and Systems Test Workshop*, 1-6.

[14] Amin, Y., Prokkola, S., Shao, B., Hallstedt, J., Tenhunen, H., & Zheng, L. R. (2009). Inkjet printed paper based quadrate bowtie antennas for UHF RFID tags. *In 11th International Conference on Advanced Communication Technology*, *1*, 109-112.

[15] Shao, B., Chen, Q., Amin, Y., Hllstedt, J., Liu, R., Tenhunen, H., & Zheng, L.R. (2009). Process-dependence of inkjet printed folded dipole antenna for 2.45 GHz RFID tags. *In 3rd European Conference on Antennas and Propagation*, 2336-2339.

[16] Rakhra, M., & Singh, R. (2021). A study of machinery and equipment used by farmers to develop an uberized model for renting and sharing. *Materials Today Proceedings*. https://doi.org/10.1016/j.matpr.2020.11.784.

[17] Rakhra, M., & Venkatesh, D. (2020). Agile adoption issues in large scale organizations: A review. *Materials Today Proceedings.* https://doi.org/10.1016/j.matpr.2020.11.308