**Online Market Trading Platform**

**Proposer:** Antoine Bagula

**Abbreviation: OMTP**

**Research type: Intelligent Systems and Advanced Telecommunication (ISAT)**

1. **Brief Description:**

Mechanisms that advance efficient information management in any organisation play a significant role in ensuring business success. Equally, technologies that lead to low production costs for the producer; through cutting off unnecessary middle man expenses, in most cases result in reduced purchasing costs for the customer. Thus, improving customer`s propensity to buy the product. Invariably, by introducing an Online Market Trading Platform (OMTP) considerable benefits will be accrued by the various stakeholders in the trading sector. The Fresh Produce Trading is an example of market that can benefit by such platform. Currently the main participants contributing to the fresh produce value chain include: the producers who are the growers or farmers; the fresh produce markets, the market agents, the retailers, the buyers who are the small retailers and end users, the re-packers and speculators as well as the consumers.

The producers grow and supply through the following channels: fresh produce markets, the retailers, the farm markets, export agents and processors. Fresh produce markets and market agents play important roles in the value channel and are rewarded 5% and 7.5% of the producer`s turnover.

Fresh Produce Markets provide space - trading facilities, security – guarding and marketing administration systems (money flow, buyers purchase a card from the FPM and use the card to buy products from the market agents).

On the other hand, Market Agents provide price discovery – by fixing the daily selling price based on their experience, administer the transactions flow – by reconciling the money GP –Net so as to settle the producer, solicit the supplier and the buyer(they own the buyers), market intelligence, maintenance of the fidelity funds, product knowledge and communication and relationship management.

The implication of this process therefore is that at the end of the day, FPMs earn 5% of the producers turn over as their reward and the Market agents earn a 7.5% commission on the producer turnover. In total the producer pays 12.5% commission on the products turnover through the FPM. Thus, the producer tends to lose out more in terms of profit and the customer tends to pay higher for the product due to the nature of the current value-chain process.

The main objective of this project is to design and implement an online fresh products trading platform (OFPTP) improving value to the customer as well as reducing the costs to the producer. In order to achieve this objective, various users will be impacted by this proposed approach as illustrated in the figure below.

**Figure 1: Online Fresh Producing Trading Platform**



The figure above illustrates an online trading platform that will link producers directly to buyers of their products and integrate to the market agents systems and to the FPM systems. As a new innovative solution that aims at revolutionizing the fresh produce value-chain process within the South African markets, the OFMTP to be developed presents the following key benefits to the producers:

* Price discovery will be scientifically determined on the basis of supply and demand.
* The producers will own the customers and maintain an extensive clients` database.
* The producers will have direct access to market intelligence.
* The virtual link between all the value channels; farm markets, FPM, major retailers and staging places will be established.
* The producers will be able to market directly to the buyers and influence sales volumes.
* Reduced commission paid to the FPM’s and MA’s , to be accurately calculated (objective could be MA’s 3-4%, FMA’s 3% including premises lease and the OFPTP 0.5- 2%, max commission 8.5%), the producers could save 4% of commission currently paid out or more depending on negotiations.
1. **The Main Tasks:**

The main tasks involved in this project are:

**Task1: Front end design and implementation.** This project will start with a survey of different market based trading platforms to find their strengths and weaknesses and build upon these findings to design an improved trading platform. This design phase will require qualitative evaluation in order to build a user friendly front end prototype for mobile devices and the internet.

**Task2: Back end design and implementation.** Besides the front end, the proposed system will be endowed with a back end where different trading algorithms will be included and compared in order to select the most suitable for the fresh produce market. This phase of the project will also require a survey of different trading algorithms in order to build upon the most efficient to design and implement an efficient trading prototype.

**Task3: Situation awareness and prediction.** Situation awareness and prediction are two key features of a situation management that may be implemented following different techniques. These include visual representation using methods borrowed from the computer graphics field, statistical analysis and machine learning techniques taken from the artificial intelligence field. As a first step toward situation awareness, data publishing using Web services based on PHP and graphing tools will be used to recognize hidden patterns in the massive datasets collected from trading platform and predict future patterns reflecting the evolution of the market.

1. **Computer Science Content:**

Mobile computing, Distributed systems, Machine learning techniques, Web services, Market based algorithms.

1. **Specific Learning Outcomes:**
* **Task 1:** Web services, mobile computing and computer graphics.
* **Task 2:** Distributed systems, market based mechanisms and algorithms.
* **Task 3:** Machine learning techniques and/or statistical methods for situation awareness and prediction.
1. **Skills Required by the students working on the project:**
* **Theory:** Statistical analysis methods, machine learning techniques and web services and computer graphics.
* **Implementation:** Implementation intensive project.
1. **Facilities Needed:**
* A computer server.
* Mobile phones will be used as end-user devices.
1. ***Supervision:***
* Joint supervision by CS department researchers and potentially Business school
* Regular meetings will be scheduled for interaction with the supervisor and co-supervisors.

1. **Maximum number of students**: 3
* One student for task 1
* One student for task 2
* One students for task 3:
1. **Related work [3]**

**REFERENCES.**