CHAPTER 1

INTRODUCTION

In the recent world most persistent technologies used in Marketing Research tools are software agents. Software agents are now used to support various e-business and network control applications processes. In the recent past software agents get control on the technology which is related to intelligence. The agents collect information from company database, third party, and multiple commercial sites and then filter it and provide appropriate responses for client tools. The agent image, due to its correctness for open environments, has recently become popular with distributed, large-scale, and dynamic, multidirectional applications. In the recent past, lot of methodologies has been proposed. They offer a range of modeling concepts, elaboration and analysis techniques, and opportunities for tool support. They diverge in maturity and scope of coverage. The marketing research tools is concerned specifically about handling marketing processes and help in control markets problems, so that they get maximum business and maximum profit from this business and they work all these by smoothly and highly efficient. In the marketing research tool development there is lack of systematic methods and intelligence approach, and normally all traditional marketing research tools are single application handlers and unidirectional, these type of lacking can be removed by using agent technology. The traditional marketing research tool is very slow in process execution and they have lack of automation and decisions. By Using the Agent base architecture of marketing research tools it over come the limitation of traditional marketing research tools. Use of Agent - Based Role Modeling (ABRM) and Multi Agent in Case Base Reasoning (MA-CBR) approach provides the better designs in agent technology. Marketing research tools are useful in gathering information about markets or customers and their competitors in the market.
1.1 PROBLEM STATEMENT

Before work is carried out it is necessary to state the problem in clear words so the problem can be understood by the everyone. So the statement of the problem is “Approach of Agent Oriented Technology in Designing of Marketing Research Tools”. The purpose of work is to design marketing research tool’s architecture so that can be used in various business activities and which have multidirectional approach.

1.2 RESEARCH OBJECTIVES

1.2.1 Primary research objective:-

- To design and develop an agent-based marketing research tool’s prototype system using agent-programming tool based on the conceptual model and to validate the system via face validation to examine its efficacy and usefulness.

1.2.2 Secondary research objective:-

- To develop an agent-based negotiation model to facilitate market research.

- Overcome the limitation of traditional marketing research tools like (Unidirectional, Lack of Automation).

- Provide the solution to handle the Complexity of real-world systems in business activity.

Traditional software systems often cannot cope with the intricacy of complex real-world domains due to the presence of uncertainty and approximate knowledge as is commonly the case in environmental, industrial, and, medical areas. This motivates the use of Artificial Intelligence (AI) techniques in order to confront such complexity and thus support the decision-making process. First, companies face a huge number of problems, such as how to make decisions concerning production planning, inventory management, forecasting and vehicle routing. These decisions are managed separately in most organizations because making each individual decision is very difficult, since many
constraints have to be satisfied. Secondly, the problem is yet harder in reality because the decisions concerning production planning, inventory management, forecasting and vehicle routing are interdependent. Hence, these three decisions should be taken together, which makes the planning problem harder. Third, companies are not isolated, but impact on and are impacted by their partners. As a result, when a company maximizes its profits, it may disturb.

Our purpose therefore is to demonstrate how agents are able to manage the complexity of real-world domains and successfully deploy a MAS (Multi-Agent System) incorporating CBR (Case-based Reasoning). We believe that this supports our conclusion that an agent-based framework is capable of supporting the decision-making process in market research activities.

The aim of this work is to develop a marketing research tools frame which is capable of performing the various business activities in complex real-world domains, such as environmental, industrial domains using an Intelligent Agent approach with Case-based Reasoning. The validation of the Marketing Research Tool is done in the environmental domain.

1.3 COMPLEXITY IN REAL WORD SYSTEM

Complexity of real-world systems as given below:

1.3.1 Inherent complexity of the systems: -

These processes involve a huge amount of knowledge containing complex interactions between physical–chemical, biological, ecological, social and, economical processes. Furthermore, they are stochastic and very often spatial and temporal dependent processes.

1.3.2 Uncertainty or approximate knowledge:-
These processes generate a considerable amount of qualitative information. Some of the sources of this uncertainty can be tamed with additional data or further research however, in other cases.

1.3.3 **Heterogeneity and scale:**

Because the media in which these processes take place are not homogeneous and cannot easily be characterized by measurable parameters, data are often heterogeneous. Moreover, the different scale times inherent to different measures in the process have to be properly integrated and managed.

1.3.4 **Multiplicity of scales:**

Environmental and medical problems have been associated traditionally with distinct spatial scales (i.e., local, national, global), each associated with specific timescales. However, interactions among these scales are becoming increasingly clear. Therefore, advocating a single perspective that encompasses everything in a system is becoming increasingly difficult and ineffective.

1.3.5 **Huge quantity of data/information:**

These domains tend to produce a great volume of data and information

1.4 **SCOPE OF RESEARCH**

Approach of agent oriented technology in designing of marketing research tools, Enhance the efficiency and capability of traditional Marketing research Tools. The traditional marketing research tool is very slow in process execution and they have lack of automation and decisions. By Using the Agent base architecture of marketing research tools it over come the limitation of traditional marketing research tools. This designing system solves the critical domains where incorrect management decisions may have disastrous social, economic and ecological consequences. The complexity of this system requires the development and application of new tools capable of processing not only
numerical aspects, but also experience from experts together with wide public participation, which are all needed in designing of Marketing research tools.

1.5 RESEARCH METHODOLOGIES

Quantitative approaches mainly involve the collection of data for making measurement and testing hypothesis in a deductive way; while qualitative approach focuses on theory building and is therefore inductive. Both type approaches have strong integration due to the use of different kinds of thinking involved in the positivist and interpretivist approaches makes a fuller understanding of topics more likely. Qualitative and quantitative data collection in a single study has four types of methods to support research combining data collection and analysis. They are historical method (literature review), descriptive survey method (interview) for finding the limitation of traditional marketing research tool, experimental method (modeling, prototyping) and result evaluation by face validation (questionnaire).

1.6 DATA COLLECTION

For developing and designing of marketing research tools the data is taken from various industries, mainly data is collected from the L.P.S.B Pvt. Ltd and S.P. Pvt. Ltd.

1.7 BRIEF OUTLINE OF THESIS

Chapter 1:

In this chapter, the problem statement and objectives of the study are defined and describe. The scope and limitations of the research as well as the overall structure of the thesis are also outlined in this chapter.

Chapter 2:

In Chapter 2, the review of literature is described.
Chapter 3:

In Chapter 3, the agents are described. The basic characteristics & classification of agent is presented. The structure & environment of agents are studied.

Chapter 4:

The detail of Java Agent Development Environment is presented in Chapter 4. In this chapter, basic packages of JADE are discussed. This chapter describes how to compile & launch JADE.

Chapter 5:

Case based reasoning Role of cases in business intelligence, Utilizing Business Cases through Case Based Reasoning is discussed in Chapter 5.

Chapter 6:

The designing of marketing research tools and its prototype is discussed in chapter and the development process of the prototype to testify the conceptual model. After introducing the agent development platform-JADE and the implementation environment, the programming is conducted. This includes: the agent role, communication level protocol, knowledge database and GUI. Then the prototype is tested using a real application scenario.

Chapter 7:

This chapter describes the basic results of applying the business management process. In this chapter a Face validation is conducted in the industry to validate the efficiency and usefulness of the prototype. It also discusses the effect of marketing research tools.
Chapter 8:

The conclusions and contributions of this thesis and the outline future work is discussed in Chapter 8.