

# Executive Summary

The rapid development of e-commerce calls for an immediate need of an autonomous and robust agent system with market intelligent that offers various types of services to both buyers and sellers. In this thesis, Agent-Based General Environment with Market mechanism (ABGEM) is proposed with intention to provide a feasible solution to it. In contrast to traditional market Multi-Agents System, which is constricted in simply giving suggestions and decisions supports, ABGEM enables smarter rational agents to behave like human, purchasing and selling goods autonomously in e-market to pursue goals set by their users. This general agent environment designed to be an open framework for a wide-range of purposes can be used in many fields, like conducting market behavior research in academy, or building platform where pricebots and shopbots are deployed for commercial aim. The key conceptual elements of ABGEM includes an agent interaction model inspired from the idea of "Forum", a set of standard agent types with market mechanism, and conventions to structure agents into a hierarchy and control their activities. The concrete components comprises built-in market agents providing services such as auto pricing, powerful facilities for system control and monitoring, and application interfaces that facilitate integration and expansion of the system. To demonstrate the feasibility of the proposed solution, an application is developed on ABGEM simulating two market scenarios. In the experiments, special interest is put on agent learning of pricing strategies. It generates certain valuable byproducts, which shows great potential in the usage of ABGEM.