

University of Macau

Abstract

A RESEARCH ON VIRTUAL MONEY EXCHANGE
SYSTEMS

by Angelina Chow

Thesis Supervisor: Assistant Professor Guo Jingzhi
E-Commerce Technology

A dramatically increasing number of virtual communities emerged together with a large population participating economic related activities in recent years. Virtual money, as a vehicle of these activities, is of great importance to both e-commerce and e-society fields. Unlike real world money, virtual money is not exchangeable among the virtual communities, which significantly interferes the healthy development of the virtual economies. The thesis acts as a pioneer research, has attempted to make a phenomenal analysis on the existing virtual money systems. By the analysis, the features of existing virtual money systems are abstracted and their problems are summarized. Driven by the motivation of utilizing and improving the existing virtual money systems, and to protect the virtual wealth that the virtual world inhabitants accumulated, the research has outlined a novel virtual money exchange system called *virtual money exchange regime* (VONEX) to resolve the observed problems.

Establishing an open virtual money exchange regime is a novel idea but rarely discussed. The VONEX approach, proposed in this thesis, aims to facilitate the exchange of virtual currencies among a variety of heterogeneous virtual communities. It has contributed to the definitions of the intrinsic value and exchangeable value of virtual currencies and suggested a redistribution strategy, constituting the theoretical foundation of the virtual exchange rate system, by which a novel *VONEX exchange rate algorithm* (VERA) is derived. Further to the contribution of the algorithm, a proof is given to ensure its correctness. Several related existing exchange systems are

also studied and their pros and cons are concluded by comparing with the proposed VONEX approach.

In order to consolidate and realize the concept of VONEX and VERA, a simulator is implemented for demonstration. The implementation details and its evaluation are also included in the thesis in order to make the research more comprehensive