A Research on Satisfied Virtual Money Exchange Rates

by

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Supervisor

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DECLARATION

I sincerely declare that:

1. I and my teammates are the sole authors of this report,

2. All the information contained in this report is certain and correct to the best of my knowledge,

3. I declare that the thesis here submitted is original except for the source materials explicitly acknowledged and that this thesis or parts of this thesis have not been previously submitted for the same degree or for a different degree, and

4. I also acknowledge that I am aware of the Rules on Handling Student Academic Dishonesty and the Regulations of the Student Discipline of the University of Macau.

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Abstract

A RESEARCH ON SATISFIED VIRTUAL MONEY EXCHANGE RATES

by Meilan Xie

Thesis Supervisor: Associate Professor Jingzhi Guo
E-Commerce Technology

An important research problem in designing an open virtual world is how to enable virtual currency exchange between multiple virtual worlds and guarantee the exchange fairness when multiple virtual currencies are adopted as virtual payment instruments in virtual trades between virtual worlds. While an existing VMX theory solved the fairness problem in a VERA algorithm based on a Pareto exchange point, a new expectation problem has been found such that exchange requesters might submit minimum acceptable rates (MAR) to determine whether to accept VMX systems-generated virtual currency exchange rates. When exchange requesters think the systems-generated rates are lower than MAR, they select not to accept the systems-generated rates. The withdrawal of systems-generated rates creates the expectation problem such that the fairness has been lost due to Pareto exchange point no longer exists. To solve the expectation problem, this thesis has developed a new VERA-RS algorithm by extending the existing VERA algorithm based on a newly developed formal expectancy model and a novel m-stage and n-phase three-level computing framework. VERA-RS algorithm has solved expectation problem by achieving a set of satisfied virtual money exchange rates (SERs). Experiments that simulate to find a set of satisfied virtual money exchange rates are done in a specially-designed and implemented simulator. This simulator applies both an existing VERA algorithm and the newly-developed VERA-RS algorithm. The simulation results show that VERA-RS has solved the exchange requestor's expectation problem and provided less fluctuation in exchange rate generation than the existing VERA algorithm.

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LIST OF ABBREVIATIONS

MAR. Minimum Acceptable (Virtual Money Exchange) Rate

PER. Performance (Virtual Money) Exchange Rate

RER. Reward (Virtual Money) Exchange Rate

SER. Satisfied (Virtual Money) Exchange Rate

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DEDICATION

The author wishes to dedicate this thesis to I would like to dedicate this thesis to my families and friends for the encouragement they provided.

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