THE INTELLIGENT SILATURRAHMI GAMIFICATION MECHANICS FRAMEWORK TO IMPOSE SMALL MEDIUM ENTERPRISE COLLABORATION

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in fulfillment of the requirements for the degree of
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DECLARATION

I declare that this thesis entitled " The Intelligent Silaturrahmi Gamification Mechanics Framework to Impose Small Medium Enterprise Collaboration " is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date : 5 April 2023

APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Doctor of Philosophy

Signature : 

Supervisor Name : ASSOCIATE PROFESSOR DR. SHARIFAH SAKINAH SYED AHMAD

Date : 5 April 2023

DEDICATION

I dedicate this thesis to my family, to whom, without them, my thesis will not finish earlier.

ABSTRACT

The SME sector plays an essential role in improving the country's economy, but SMEs face several challenges, including weak information exchange and reluctance to collaborate. Meanwhile, SMEs cannot be separated from the influence of local wisdom as one of the roots of thought and behavior. "Silaturrahmi" is one of the local wisdom that applies in the community and is proven to influence the mindset of each individual. Meanwhile, gamification is a trend in today's society that is proven to increase motivation in various activities. So, this research aims to develop an adaptive collaboration model, provide a suitable partner reference, measure collaboration performance with the proper parameters, and increase motivation in collaboration. The method is built into three groups of activities. The first is constructing the collaboration gamification mechanics based on "Silaturrahmi" with a linear regression approach, Fuzzy AHP, and Octalysis measurement. Second, constructing intelligent system mechanics for knowledge extraction needs collaboration with K-Means, and Fuzzy AHP approaches. Third, perform expert validation and evaluation using a gamification analysis approach and Technology Acceptance Model (TAM). This thesis produces three main contributions. The first is the collaboration parameter based on "Silaturrahmi" which has been ranked based on the motivational weight of "core drive" octalysis to measure collaboration performance. Second, the "Silaturrahmi"-based intelligent collaboration gamification mechanic model translates the performance of collaboration parameters as a guide to measure player retention in collaboration and is equipped with an intelligent system to provide recommendations for appropriate partner references and SME segmentation. Furthermore, the third is the proposed "Intelligent Silaturrahmi-based Gamification Mechanics (ISb-GM)" framework which has been validated by experts and evaluated using the Technology Acceptance Model (TAM) method. It was also evaluated with gamification analysis using a gamification characteristic measurement approach involving six octalysis's core drive. The knowledge that can be concluded from the results of the TAM evaluation is that the proposed framework can be accepted and used as a reference for SME collaboration. It is evidenced by the acceptance of twenty-nine (29) out of thirty-six (36) hypotheses in the experiment. However, the rejected hypothesis may indicate that users need to interact in collaboration for a longer time to feel the benefits of collaborating. Meanwhile, the evaluation of gamification analysis resulted in four (4) accepted hypotheses (Propose/Epic Meaning, Development, Social Influence, Avoidance) but two (2) rejected hypotheses (Ownership, Unpredictability). It has resulted in the knowledge that the types of motivation that affect collaboration include the desire to play a role in the environment, stimulated by the role of others, stimulated by specific rewards/achievements, and worry about missing out on good opportunities. In contrast, collaboration is not strongly influenced by ownership of achievement nor the expectation of getting opportunities from uncertainty.

RANGKA KERJA MEKANIK GAMIFIKASI SILATURRAHMI PINTAR UNTUK MENAMBAH BAIK KERJASAMA PERUSAHAAN KECIL SEDERHANA

ABSTRAK

Sektor Perusahaan Kecil Sederhana (PKS) memainkan peranan penting dalam meningkatkan ekonomi negara, tetapi PKS berdepan dengan beberapa cabaran, termasuk pertukaran maklumat yang lemah dan keengganan untuk bekerjasama. Sementara itu, PKS tidak terlepas daripada pengaruh kearifan tempatan sebagai salah satu akar pemikiran dan tingkah laku. "Silaturrahmi" merupakan salah satu kearifan tempatan yang berlaku dalam masyarakat dan terbukti mempengaruhi pemikiran setiap individu. Sementara itu, gamifikasi kini menjadi trend masyarakat masa kini yang terbukti dapat meningkatkan motivasi dalam pelbagai aktiviti. Jadi, tujuan penyelidikan ini adalah untuk membangunkan model kolaborasi adaptif, menyediakan rujukan rakan kongsi yang sesuai, mengukur prestasi kolaborasi dengan parameter yang betul dan meningkatkan motivasi dalam kerjasama. Kaedah ini dibina dalam tiga kumpulan aktiviti, yang pertama ialah membina mekanik gamifikasi kolaborasi berdasarkan "Silaturrahmi" dengan pendekatan regresi linear, Fuzzy AHP dan pengukuran Octalysis. Kedua, membina mekanik sistem pintar untuk pengekstrakan pengetahuan memerlukan kerjasama dengan pendekatan K-Means dan Fuzzy AHP. Ketiga, melaksanakan pengesahan dan penilaian pakar menggunakan pendekatan analisis gamifikasi dan Model Penerimaan Teknologi (TAM). Tesis ini menghasilkan tiga sumbangan utama, pertama ialah parameter kolaborasi berdasarkan "Silaturrahmi" yang telah disenaraikan berdasarkan berat motivasi oktalisis "core drive" untuk mengukur prestasi kolaborasi. Kedua, model mekanik gamifikasi kolaborasi pintar berasaskan "Silaturrahmi" menterjemah prestasi parameter kerjasama sebagai panduan untuk mengukur pengekalan pemain dalam kerjasama dan dilengkapi dengan sistem pintar untuk menyediakan cadangan untuk rujukan rakan kongsi yang sesuai dan segmentasi PKS. Dan ketiga, adalah cadangan rangka kerja "Mekanik Gamifikasi Berasaskan Silaturrahmi Pintar (ISb-GM)" yang telah disahkan oleh pakar dan dinilai menggunakan kaedah Technology Acceptance Model (TAM) dan analisis gamifikasi menggunakan pendekatan pengukuran ciri gamifikasi yang peraturannya melibatkan 6 oktalisis "core drive". Pengetahuan yang dapat disimpulkan daripada hasil penilaian TAM ialah rangka kerja yang dicadangkan boleh diterima dan dijadikan rujukan untuk kerjasama PKS, ini dibuktikan dengan penerimaan dua puluh sembilan (29) daripada keseluruhan tiga puluh-enam (36) hipotesis dalam eksperimen. Walau bagaimanapun, hipotesis yang ditolak mungkin menunjukkan bahawa pengguna perlu berinteraksi dalam kerjasama untuk masa yang lebih lama supaya mereka dapat merasakan faedah bekerjasama. Sementara itu, penilaian analisis gamifikasi menghasilkan empat (4) hipotesis yang diterima (Propose/Epic Meaning, Development, Social Influence, Avoidance) dan dua (2) menolak hipotesis (Ownership, Unpredictability). Ini telah menghasilkan pengetahuan bahawa jenis motivasi yang mempengaruhi kerjasama termasuk keinginan untuk memainkan peranan dalam persekitaran, dirangsang oleh peranan orang lain, dirangsang oleh ganjaran/pencapaian tertentu, bimbang terlepas peluang yang baik. Sebaliknya, kerjasama tidak dipengaruhi dengan kuat oleh pemilikan pencapaian, mahupun jangkaan untuk mendapat peluang daripada ketidakpastian.

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LIST OF ABBREVIATION

ISb_GM - Intellgent *Silaturrahmi*-based Collaboration Gamification Mechanics

Octalysis - Gamification framework

SDLC - System Development Life Cycle

SME - Small and Medium Enterprise

TAM - Technology Acceptance Model

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