

# Usurping Double-Ending Fraud in Real Estate Transactions via Blockchain Technology

Atefeh Mashatan, Ryerson University, Canada

Victoria Lemieux, University of British Columbia, Canada

Seung Hwan (Mark) Lee, Ryerson University, Canada

Przemysław Szufel, SGH Warsaw School of Economics, Poland

Zachary Roberts, Ryerson University, Canada

## ABSTRACT

This paper discusses the problem of double-ending fraud in real estate transactions – a type of transactional fraud wherein agents handling real estate transactions unfairly benefit (e.g., by simultaneously representing both the buy and sell side of a real estate transaction in a manner that unfairly boosts the commission they receive, or colluding to increase their commission in a real estate transaction at the expense of the buyer and/or seller of the real property). The paper proposes a unique blockchain solution design that leverages blockchain's properties of transparency and ability to create tamper-resistant audit trails to reduce opportunities for double-ending fraud and increase real estate market participants' trust in the handling of their transactions. The paper discusses the implementation of a prototype of the solution based on hyperledger fabric and sails; it presents the results of an agent-based modelling simulation validating that the inherent transparency of the proposed design offers optimal allocation for both sellers and buyers.

## KEYWORDS

Agent-Based Modelling, Blockchain Technology, Double-Ending Fraud, Hyperledger Fabric, Real Estate, Transparent Transactions

## INTRODUCTION

Blockchain is a decentralized peer-to-peer technology that can be seen as a ledger of records representing transactions (Peters & Panayi, 2016). It is a type of distributed ledger technology which was originally developed for cryptocurrencies (Brühl, 2017; Nakamoto, 2008). While still in its infancy, there has been optimism surrounding blockchain's capability to positively impact economies and disrupt traditional business models (Nowiński & Kozma, 2017). Beyond the early applications of blockchain in cryptocurrencies, the value exists in blockchain's ability to record transactions that are shared across a network of users. Blockchain technology is also said to shorten transaction times and make systems more transparent and reliable (Pinna & Ruttenberg, 2016). As such, the functionality

DOI: 10.4018/JDM.2021010102

and application of blockchain technology has evolved from a trade currency to secure, decentralized smart contracts that can record and track asset ownership (Bal, 2017).

Blockchain platforms are beneficial to markets where technology helps accelerate the different processes that bring more safety and transparency into the market. Thus, blockchain technology has continued to be developed for use in numerous different fields and industries. By creating a digital economy, this technology has the potential to disrupt existing markets. One market that can benefit from the integration of blockchain technology is the real estate market. Traditionally, the real estate market has been labeled as an inefficient market that suffers from lack of transparency, high transaction costs, and slow transaction processes (Shiller, 2007). A paper-based real estate transaction system has been depicted as slow due to the repeat process of validating information and the manual components that are involved in verifying the transaction; it has also been described as inefficient and error-prone (Graff & Webb, 1997; Marsh & Zumpano, 1988). The industry is also susceptible to fraudulent activities that may include title fraud, double-ending, paper-flipping (property scalping), and mortgage fraud (Cardoso & Annett, 2017; FCT, 2017; Malik & Foxcroft, 2016).

Typically, a real estate transaction occurs in five steps: listing, searching, evaluating, negotiating, and execution (Crowston & Wigand, 1999). Unfortunately, in any one of these steps, an agent representing both sides, buyer and seller, (i.e., a dual agent) may take advantage of either party to benefit their own interests. With listings, a dual agent can restrict or be selective in the types of listings that they show to potential buyers. During the search process, a dual agent can influence buyers to view certain properties that are directly under the agent's portfolio. And throughout the evaluation process, a dual agent may induce subtle or undue pressure to sway clients, such as encouragement to commit to a price that is above market value. When negotiating with either party, a dual agent may set a price point that maximizes their own commission. And finally, in the execution stage, a dual agent may inappropriately accelerate the transaction process to fulfill their own interest of moving on to the next client.

In attempts to reduce such occurrences, ethical codes of conduct have been created across jurisdictions to educate and oversee agents' behaviors and roles as transaction agents (Jennings, 2011). Due to the principal-agent relationship, real estate agents have a fiduciary and moral responsibility to represent and advance the interests of their clients (Rutherford, Springer, & Yavas, 2005). The current brokerage system model is not immune to fraudulent activities because it relies on a percentage-based commission system that may generate a bias between the agent and the principal client. For example, a seller typically wants to maximize the housing price. And while the agent representing the seller may also want to maximize the price of the house being sold (i.e., higher commission), they do so while trying to minimize the time the house is listed on the market. Thus, such quandary may create a diversion of interest between the seller and the agent.

Moreover, real estate agents often incur expenses in the form of advertising, conducting open houses, accompanying visits, and negotiating offers (Levitt & Syverson, 2008). However, because these agents only receive a small percentage (typically 1.5%-3%) of the negotiated price, there is often a concern among agents that they are not able to recoup the time and effort associated with selling or finding a house for their clients (Levitt & Syverson, 2008). As such, this may encourage some agents to engage in unethical behavior to maximize their income; one such method is to engage in the practice of double-ending.

Depending on jurisdiction, double-ending may not constitute as an illegal activity. The double-ending fraud (or dual-agency fraud) occurs when a real estate agent represents both the seller and the buyer to potentially double his or her commission at the expense of the seller (Jennings, 2011; Malik & Foxcroft, 2016). Double-ending can lead to unethical sales behavior, service quality issues, and cause strain to agent-client relationships in service-based transactions such as real estate (Lee, 2012). It is a form of deception that is often not discovered until after the transaction has been completed (Galaty, Allaway & Kyle, 2008). Further, since people are predisposed to maximize their utility, double-ending may create opportunistic temptations for agents to increase profits while minimizing

20 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/article/usurping-double-ending-fraud-in-real-estate-transactions-via-blockchain-technology/272505](http://www.igi-global.com/article/usurping-double-ending-fraud-in-real-estate-transactions-via-blockchain-technology/272505)

## Related Content

---

### An ER Based Methodology for Modeling User Views and Detecting Derived Relationships

Dinesh Batra and Jeffrey A. Hoffer (1994). *Journal of Database Management* (pp. 3-17).

[www.irma-international.org/article/based-methodology-modeling-user-views/51128](http://www.irma-international.org/article/based-methodology-modeling-user-views/51128)

### Methods for the Identification of Data Outliers in Interactive SQL

Ronald Dattero, Edna M. White and Marius A. Janson (1991). *Journal of Database Administration* (pp. 7-18).

[www.irma-international.org/article/methods-identification-data-outliers-interactive/51083](http://www.irma-international.org/article/methods-identification-data-outliers-interactive/51083)

### Issues in Transaction-Time Temporal Object Database Systems

Kjetil Norvag (2001). *Journal of Database Management* (pp. 40-51).

[www.irma-international.org/article/issues-transaction-time-temporal-object/3271](http://www.irma-international.org/article/issues-transaction-time-temporal-object/3271)

### Agile Development Methods and Component-Oriented: A Review and Analysis

Zoran Stojanovic, Ajantha Dahanayake and Henk Sol (2004). *Advanced Topics in Database Research, Volume 3* (pp. 1-22).

[www.irma-international.org/chapter/agile-development-methods-component-orientation/4351](http://www.irma-international.org/chapter/agile-development-methods-component-orientation/4351)

### COGEVAL: Applying Cognitive Theories to Evaluate Conceptual Models

Stephen Rockwell and Akhilesh Bajaj (2005). *Advanced Topics in Database Research, Volume 4* (pp. 255-282).

[www.irma-international.org/chapter/cogeval-applying-cognitive-theories-evaluate/4378](http://www.irma-international.org/chapter/cogeval-applying-cognitive-theories-evaluate/4378)