NON-FUNGIBLE TOKENS: ITS POTENTIAL ROLE IN COMBATTING CERTIFICATE FRAUDULENCE IN MALAYSIAN EDUCATION

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ABSTRACT

Non-Fungible Tokens (NFT) are blockchain-based tokens representing a particular asset, such as a piece of media or digital data. A digital or physical asset can have an NFT as an irrevocable certificate of ownership and authenticity (Wang et al., 2021). Digital forms of certifications can consider using NFT and blockchain technology (Franceschet, 2021). Technological advancement enabled people to create fraud certificates, such as university degrees, that the buyers do not possess. This is unethical and alarming. The current credentials from certificates are difficult to verify as legitimate, which encourages educational fraud. Blockchain technology with NFTs empowers a solution to certificate fraudulence. This study scrutinizes the demand of a handful of Malaysians towards buying fraud certificates and the ideas behind those supplying such certificates. Potential use cases and challenges on how NFTs can combat certificate fraudulence and enhance education systems are studied by gathering information from past literature and conducting interviews with people involved in certification fraud. The ethnography approach focuses on the occurrence of fake certificates in society that consists of using certificates to seek employment or income permits. Convenience sampling is applied to access respondents' perspectives, who are also aware of NFT technology. The lack of coordination in Malaysia between multiple parties, such as certificate issuers, companies hiring employees and government authorities, allows certification fraud to occur. An increase in NFT public penetration and blockchain technology can counter this issue.

Keywords: *NFT, blockchain, certification, fraudulence, verification*

INTRODUCTION

The current system of education tends to be geared towards providing certification to people who have completed certain programs to validate skills and qualifications possessed by individuals. A certificate is an official document awarded to participants who complete a thorough training programme on a particular subject and successfully demonstrate that they have met the course's learning objectives (Rops, 2007). Certificates are official documents awarded to participants who complete a thorough training program on a particular subject and successfully demonstrate that they have met the course's learning objectives (Rops, 2007). However, this system has certain flaws, as certificate fraudulence is rampant. Certificates can be bought illegally but easily without needing individuals to undergo the programs, which is unethical. Advancements in technology such as Adobe Photoshop, Canva and high-quality inkjet printers can allow people with digital skills to make fraud certificates easily. Fraud poses a serious risk to society, especially involving the forgery of credentials and certifications. This phenomenon has grown into a multibillion-dollar industry; it is a crime that challenges our understanding of competence, merit, fair competition, diligence, and the present and future (Mourasillo, 2021). According to Mourasillo (2021), many illicit businesses and websites provide incredibly low prices on fake certifications in paper and digital forms. Searching for "Buy Fake Certificate" on Google alone produces more than 25 million results, and some vendors even brag about producing their illegal

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and fictitious products in less than a day. The ease with which these phoney certifications can be produced and sold is quite concerning. The prestige and credibility of the education offered by the mentioned colleges and universities might be badly damaged by some suppliers. This can be unjust to individuals who got the degree legitimately. Some providers even succeed in making them similar to the original (Mourasillo, 2021). When employers conduct a background check on a possible employee's education to certify they are a genuine graduate, some suppliers go even further and collaborate with dishonest organizations that authenticate fraudulent degree certificates. As written by Mourasillo (2021) in a news article, according to UNESCO research directed by Dr George Brown, "30% of senior executives globally present qualifications they do not hold." When people with false degrees are employed as directors, officials, and other positions of authority, it poses a huge threat to civilization.

According to Sim (2016), data from 2012 by the Selangor police of Malaysia said they were looking for 525 people who purchased fake certificates from a syndicate around since 2003. Some of them are medicine degrees. Sim (2016) mentioned that a person with a fraud PhD qualification was hired to teach at a local university. Not only did he teach, but he also mentored post-graduate students and applied for research grants. This resulted in students not learning effectively and the university wasting money. People who work with fake certificates affect the people around them by taking jobs away from people who have legitimate certifications. Such issues of fake academic qualifications, marriage certificates, and medical permits are rampant in Malaysia (Sim, 2016). All these are easily obtained online or via personal contacts in Malaysia.

PROBLEM STATEMENT

Fake certificates can bring harm to society in several ways. Firstly, they undermine the credibility and value of genuine certificates, causing employers and institutions to question the legitimacy of all certificates. This can lead to a loss of trust in the education system and make it harder for people with genuine qualifications to find jobs or gain admission to educational institutions (Mourasillo, 2021). Secondly, fake certificates can give individuals with unearned qualifications an unfair advantage over those who have worked hard to earn their qualifications honestly. This can lead to incompetent individuals being given important positions or accepted into prestigious institutions, which can seriously affect society. For example, a doctor with a fake medical degree may provide substandard care to patients.

In contrast, a fake engineering degree may result in faulty construction that can put people's lives at risk. Thirdly, fake certificates can also have financial consequences for society. For example, people with fake qualifications may be paid more than they are entitled to, which can lead to an unequal distribution of wealth and resources (Sim, 2016). In addition, institutions and employers may waste money on verification processes to ensure the legitimacy of qualifications, which can divert resources away from more productive uses. Fake certificates can harm society by undermining trust in the education system, giving unfair advantages to individuals, and potentially leading to financial and societal losses (Sim, 2016). Educational institutions must take steps to prevent the proliferation of fake certificates and ensure that qualifications are earned honestly and accurately reflect an individual's abilities. Therefore, blockchain and NFT may be the answer that so many reputable institutions and organizations have sought to combat fake certifications.

To combat certificate fraud, any certificate system, including university certificates, may apply the NFT system built upon blockchains. A blockchain is a distributed ledger that securely and directly records transactions between two parties. It is a decentralized, self-maintained, quick, economical, and open method for recording (Mourasillo, 2021). Blockchains are distributed digital ledgers impenetrable and immune to tampering, implemented without a central repository and typically without a centralized authority (i.e., a bank, company, or government). At their most basic level, they allow a group of users to log transactions in a shared ledger so that, as long as the blockchain network is functioning normally, no transaction can be modified after it has been recorded (Yaga et al., 2018). NFTs built upon blockchain are digital forms of data where the data source can be identified and verified. This function of source verification is not possible for forms of digital data such as images and files of certificates that any party creates without the integration of NFT and blockchain technology.

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This study's research questions are to know the ideas behind buying and supplying fake certificates in Malaysia and the potential of introducing NFT and blockchain technology to combat certificate fraud in education.

LITERATURE REVIEW The Importance of Certificates in the Access of University Graduates to the Labour Market

In the era of growing competitiveness in the labour market, it has become common for students and graduates of higher education institutions to participate in various training courses and obtain certificates, which are additional assets when applying for employment (Bartosik, 2021). Graduates should also be able to demonstrate some professional experience. Therefore student apprenticeships and practical education profiles are crucial. Employer respondents stressed the issue of university graduates' lack of practical application abilities, citing the pervasive excess of theory over practice (Bartosik, 2021). This is a major flaw in the current system of emphasis on paper certifications in employment. Regarding the perspective of employers in Poland, employers are most interested in hiring university graduates who have completed studies with a practical profile (Bartosik, 2021) and possess certificates that validate their abilities. According to the results of company surveys by Bartosik (2021), employers give the certifications, qualifications, courses, and pieces of training that a university graduate has completed the most consideration when hiring them.

A university's relationship with the work environment necessitates continuous monitoring of the expectations of university graduates as changes in expectations and skill requirements become noticeable in the labour market. As a result, managing the educational offer must consider the prospect of obtaining extra competencies and skills, which would add value to university graduates in a market for competitive jobs (Bartosik, 2021). Certificates prove that the university student that obtained them possesses the said skills. Institutions in Poland intended to determine what competencies companies expected from university graduates when recruiting them. The main discussion topics centred on the skills, predispositions, and individual characteristics expected of employed graduates (Bartosik, 2021). This ensures that the training provided by the certificate issuer (education institutions) is coherent with job market requirements. Employers strongly emphasise certificate possession by job applicants who have completed their tertiary education.

Some universities, such as Deakin University Australia, offer university students a digital credential option in addition to traditional academic transcripts. Digital credentials allow evidence of achievement to be more detailed than is possible through grades and can be shared more broadly than is possible through the academic transcript (Miller et al., 2020). Digital credentials recognize students' achievements who exhibit great attainment of particular graduate traits. Involving students in digital credential programs encourages experiential learning, and permitting public sharing can help foster university students' growth. The specified credentialing method was created to increase employability, and the award's requirements and criteria were created in partnership with business partners to allow students to stand out in the graduate job market (Miller et al., 2020). Such digital credentials make graduate profiles available to public access on the internet and can be easily attainable by potential employers. The data shared proves that the certificate holder part of the digital credentials truly possesses the skills and qualifications mentioned in the tertiary education certificates. Many critics believe that higher education needs to be redesigned in light of the changing nature of the workplace to ensure that the skills and knowledge produced fulfil industry expectations and prepare graduates for an uncertain future (Norton, 2016). Universities must build broader transferable skills that will help graduates find jobs, contribute to society, adapt to change and uncertainty, and provide graduates with knowledge and skills specific to their chosen fields (Kinash et al., 2016). Traditional classroom learning that emphasizes facts regurgitating and academic grades without digital data that proves learning experiences and reflections of students is no longer considered to be the best method for fostering employability or flexibility, and the value of exposure to industry and real-world experiences is rapidly being recognized (Thompson et al., 2013).

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According to the European Commission, micro-credentials are digital confirmations of brief and evaluated learning opportunities, such as courses or modules. These proofs, including documentation of the knowledge and abilities picked up through learning opportunities, are currently being proposed as digital credentials. Both academic and informal learning are related to these digital credentials (Kiiskila, Hanafy & Pirkkalainen, 2022). The importance of digital proofs of learning is given importance by both academic institutions and employers. A supporting ecosystem for micro-credentials consists of the following: (a) an issuing organization, such as an educational institution; (b) learners receiving them, (c) a verifying organization, such as another educational institution (Oliver, 2019) and (d) a micro-credential platform to issue the ensuing digital credentials.

Since they show a candidate's education and qualifications, university certificates are significant for employment in Malaysia. The primary function of schooling and education certificates, such as those obtained after public examinations, was seen as a passport to employment. The certificates control entry into privileged jobs (Nurul-Awanis et al., 2011). A university degree or diploma is frequently necessary for specific sorts of occupations, and many employers regard education level as a hiring criterion. A university degree or certification can also indicate to companies that a candidate has specific expertise and job readiness. Digital credential systems aforementioned applied in Europe and Australia are not absent in Malaysia's tertiary education. Taylor's University has introduced the SHINE Program to students, which provides them with an additional transcript proving their graduate capabilities to potential employers in the job market (Taylor's University, 2015). The transcript has helped employers understand job applicants better as they browse through their transcripts and digital data (in the form of electronic portfolios ready for public access). This enhances the employability of certificate holders where employers can make an informed decision during the hiring (Taylor's University, 2015). It is no doubt that certificates are placed of high importance in Malaysian society based on the perspectives of universities, university graduates, students' parents and employers alike.

Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges

Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges (Wang, Li, Wang, & Chen, 2021) introduced smart contracts on the blockchain. Wang et al. (2021) suggested NFTs as a solution to intellectual property (IP) product protection, ticketing systems, and certification validating authentic physical possession of items. The article also highlights public adoption and acceptance as major obstacles in utilizing NFTs for certification systems. The study conducted by Wang et al. (2021) examines the recently booming NFT technology. In recent years, the Non-Fungible Token (NFT) industry has exploded. The idea behind NFT was inspired by an Ethereum token standard that sought to identify each token by a distinctive symbol (Wang et al., 2021). These tokens' distinctive identifiers can be connected to virtual or digital properties, thus, possibly academic certificates. However, the NFT ecosystem is still in its early stages of development, and the NFT technologies are immature. The lack of comprehensive summaries makes it possible for newcomers to become lost and bamboozled in their chaotic progress.

Unlike a typical fungible cryptocurrency where all coins are interchangeable and indistinguishable, NFTs are distinct and non-fungible (i.e., they cannot be swapped equivalently among one another). Hence, NFT technology is appropriate for uniquely identifying things, assets or people. NFTs are distinct and non-fungible tokens as they are unique, non-interchangeable, and can be traced back to their origins. This contrasts with conventional fungible cryptocurrencies, where all coins are interchangeable and indistinguishable, making them susceptible to erasing or changing the historical record of transactions (using blockchain overwriting). This qualifies users to receive authentic certification after course completion via an NFT system, as they have tangible qualities that cannot be reproduced. Blockchain technology is an innovative way, using software techniques and community consensus, to record transactions without needing a central, authoritative ledger (Wang et al., 2021). NFTs are blockchain-based tokens representing a particular asset, such as a work of art, a piece of media, a certificate or digital data. A digital or physical asset, whether digital or tangible, can be considered an NFT as an irrevocable certificate of ownership and authenticity (Wang et al., 2021).

To be more precise, according to Wang et al. (2021), a creator (an educational institution) can easily demonstrate the existence and ownership of digital assets in the form of films, photographs, arts,

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event tickets, etc., by leveraging NFTs on smart contracts. NFT technologies are still in their very early stages, despite their significant potential impact on the current decentralized marketplaces and future economic opportunities. While some possible obstacles must be adequately addressed, others provide bright prospects that should be recognized. Furthermore, even though the public has access to a wealth of information on NFTs via blogs, wikis, forum posts, codes, and other sources, a systematic study is lacking (Wang et al., 2021). Insofar as it has been noted, the study done by Wang et al. (2021) tries to call attention to these issues and concentrate on summarising existing NFT solutions. The researchers offer a thorough analysis of its key elements, the state of the technology roadmap, and the prospects and difficulties. The contributions made by the researchers include abstracting the design models of the most recent NFT solutions, specifically listing the fundamental technical elements that go into making NFTs and examining several potential applications for NFTs in the future. Numerous new applications will be boosted by using NFTs in practical settings.

To implement NFT, you need an underpinning distributed ledger for records and exchangeable transactions for peer-to-peer trading. This paper largely views the distributed ledger as a unique database for storing NFT data (Wang et al., 2021). NFTs are verifiable. It is possible to publicly verify the ownership of the NFT and its token metadata. NFTs consist of transparent executions. Public access is available for NFTs' purchasing, selling, and minting activities. Besides that, the NFT system is accessible and unbreakable (Wang et al., 2021). The issued NFTs and tokens are also up for sale and purchase. NFT techniques benefit from the characteristics and attributes of the public ledgers that underpin them because they are fundamentally decentralized applications. NFTs are tamper-resistance as once the transactions are judged to be confirmed, the NFT metadata and associated trading records are persistently preserved and cannot be altered (Wang et al., 2021). The most recent ownership information is available for every NFT and is user-friendly and information-clear. The public can easily access information on the history of the ownership of any digital assets. In the case of academic certificates in the form of NFTs, the source of the certificates can be easily verified to prove their authenticity.

The validation feature of NFTs makes it possible for each person to relate to a certain event, much like the patterns in our everyday lives (Wang et al., 2021). For instance, an NFT-based ticket for an event, such as a university convocation, is exclusive and rare; thus, once it has been sold, the ticket's owner cannot resell it. The blockchain-based smart contract offers a transparent platform for exchanging tickets for all parties involved, including the customer and the event organizer. Aside from merely digital collectables, NFTs can function as verification or validation certificates for an individual’s physical possession of items, including luxury goods and, most notably in this study, education certificates. Any certificate system, including university certificates and drone flight licenses, may apply to the NFT system. The certificates can be available online after being securely verified in an unchangeable form that can only be viewed with permissions allowed by the certificate owner or issuer. This form of utility offers a great opportunity for the application of blockchain to benefit various industries.

The current research challenges must be overcome before reaching mass-market acceptance are outlined. The study by Wang et al. (2021) scrutinized provides timely analyses and summaries of projects and solutions that have already been suggested, making it simpler for newcomers to follow the current developments. Blockchain formed its basis based on cryptocurrencies. Due to its decentralisation and security, people are increasingly using it to revolutionize other industries. Similar to how the internet changed business practices across a wide range of industries, blockchain and NFT has the potential to do the same. Before blockchain becomes an integral part of the educational system, people must be prepared as the opportunities and difficulties that may arise from this technology are to be examined. This research done by Wang et al. (2021) provides a technical investigation before presenting design concepts and attributes rather than casting doubt on blockchain technology's revolutionary potential, including preventing fraud certificates.

Blockchain and NFTs: Research and Applications

NFTs are built upon blockchain with features of digital scarcity, fractional ownership, and provenance (Franceschet, 2021). While most people associate blockchain technology with cryptocurrencies, it can potentially bring about radical structural change in the arts and creative

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industries. Crypto art is another type of blockchain-enabled innovation. Crypto art is a burgeoning art movement in the crypto space that associates digital artworks with unique and provably rare non-fungible tokens on the blockchain. The true potential of the emerging crypto art current is to elevate a digital image to the status of a true work of art by making it unique, immutable, and collectable through blockchain technology (Franceschet, 2021). This resulted in an art market comprised of artists who create and tokenize artworks, collectors who patronize or invest in artists, galleries that host marketplaces, and curators and art experts who inform the cultural value of artworks through an act of interpretation. Indeed, all crypto art transactions are immutably recorded on a public blockchain, and this data is instantly available for analysis (Franceschet, 2021).

Furthermore, Franceschet (2021) mentioned that metadata for artwork, such as titles, descriptions, tags, and digital files representing the artwork, is stored on peer-to-peer networks. Digital forms of certifications can consider using this type of technology. According to Franceschet (2021), the third application of blockchain technology in art, digital scarcity, is connected to crypto art. The novel notion is making a digital file rare by linking it to a non-fungible token, or NFT. As per observed in the study with the limited amounts of examples of NFT applications, it can be concluded that the application and utility of NFTs and blockchain in various industries have yet to be explored by various industries, including the education industry, thus implying the massive potentials of industries such as education and finance sectors tapping into this space, which has yet to happen in a massive widely adopted scale.

NFTs are digital works of art that are produced and exchanged like cryptocurrency. An NFT in crypto art validates the ownership (current owner), provenance (previous owners, author), and scarcity (number of copies) of digital artwork. The NFT can be transferred much like the artwork's ownership certificate. Similar to the conventional art, intellectual property rights like copyright claims and rights to any commercial re-use are typically excluded from ownership rights (Franceschet, 2021). Cryptographic art has its roots in conceptual art and shares its rejection of traditional art markets and institutions and the immaterial and distributive nature of artworks.

According to a recent study by Franceschet (2021), blockchain is not yet a significant component of any industry, including the education sector. His research covers more applications of blockchain technology, such as NFTs. Although they are becoming increasingly popular, there is still a lot of misunderstanding and misconception among the wider population about what these concepts imply. The future possible applications of these technologies in industries such as the finance and education sectors are still unheard of and unimaginable to many. Although the art industry has embraced blockchain with enthusiasm earlier than other sectors, other applications, such as provenance and ownership, are more useful than the transfer of title. This indicates that even while blockchain technology is not deemed a necessity, some people are thinking about it and exploring its possible uses.

However, in this discussion, some people accuse blockchain of being a weapon for scams, money laundering and widespread disruption. In contrast, others think it is the most amazing innovation ever created, akin to the introduction of the internet decades ago. Franceschet (2021) optimistically claimed that the general public will notice the effects of blockchain technology as early as 2025.

Development of Certification Programs

Rops (2007) discussed five major steps in developing certification programs: Ensuring a market demand for the certificate, Being clear on what is offered, Determining program goals and audience, Developing the course curriculum, Selecting the delivery vehicles, and Developing course content and assessments. Identified components of certification programs serve as prerequisites to exploring how NFT systems can substitute or enhance existing certification modules.

Rops (2007) discussed various possible ways to deliver certificate programmes. The intended program's goals will determine the delivery vehicle, target audience preferences or access, course learning objectives, and programme budget. The possibilities include Self-study modules such as audio and video files, face-to-face workshops led by instructors, online discussion conferences and quizzes (Rops, 2007). As course participants undergo the educational programme, they should document their learning processes through digital data such as videos and images. These digital data can serve as important artefacts that prove their attendance and certificate authenticity as such data can be included

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in their certificates as a form of NFT, which is absent in a fraud certificate (albeit possibly generated using artificial intelligence as the data produced becomes more realistic as technology progresses). The study done by Rops (2007) is crucial towards understanding the key components of certification programs when we explore multiple possibilities on how e-portfolios, blockchain and NFT systems can substitute or enhance current certification modules.

Suppose academic certification is to be integrated with NFTs and blockchain, which has yet to be done. In that case, various technical considerations are to be tested, and unforeseen circumstances are anticipated as we venture into unchartered waters. Aside from the technical aspect, the marketing factors are also essential towards certification success using NFT. These must be considered if educational faculties adopt NFTs into pedagogical stances. The timely evaluations and summaries of initiatives and suggestions that have already been made in these literature studies make it easier for newcomers to keep up with the latest developments. Because of its decentralization, verifiable features and security, people increasingly use NFTs and blockchain to revolutionize other industries. Blockchain and NFT can transform business practises in various industries, much like the internet did, which includes eliminating the possibility of fraud certificates. The literature reviews serve as a prerequisite towards the future, bracing people into a future of innovation, specifically in the educational sector where certification plays a vital role, which has yet to be fully understood, comprehended and explored.

METHODOLOGY

To make inferences about how societies and individuals operate, data are gathered through observation and interviews, which are used in this research regarding the potential prevention of certificate fraudulence using NFTs. The collection of anthropological data, the creation of analyses of people needing certificates and the prominence of certificates in society, together with public penetration of NFT utility, are referred to in this ethnographical approach.

Research Design

Ethnography involves close observation of subjects in their natural surroundings. In the social and behavioural sciences, ethnography is a qualitative data collection technique (Creswell, 2013). The ethnography approach focuses on fake certificates used in society that involve using certificates to seek employment or income. It has become a widely accepted culture that people should be educated and equip themselves with certain skills before being awarded to verify that they possess them and are readily hired or given jobs. However, with the availability of fake certificates, people who are not qualified and equipped with said skills can still get certificates and use them.

The proposal of applying a system of NFTs to counter fake certificates requires examining the current public acceptance towards NFTs, which is fundamental towards this innovation of using NFTs and blockchain in digital certification. The ethnographic research approach involves looking into a community's culture and social structure (Creswell, 2013), such as people involved in using certificates. The information collected will be a fundamental prerequisite to future potential programs utilising NFTs for educational certification.

Ethnography is used to support a deeper understanding of the problem presented, certificate fraudulence, encompassing the relevant domain, audiences, goals and context of use. These fields of study include usability, user-centred design, and service design for using NFTs to create a certification system that is more valid and not easily forged.

Sampling

Convenience sampling is applied in this study to access the perspectives of people who buy fake certificates and people who create and sell fake certificates, who are also aware of NFT technology. 2 buyers and two sellers were interviewed. This study utilizes convenient respondents for the researcher as there is no pattern to how these responders were obtained. The respondents were selected based on the researcher’s contacts and chose to stay anonymous due to their involvement in illicit and malicious

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certification fraud activities. Due to this technique's lower cost than other sampling methods, the researcher's budgetary limitations are no longer an issue.

Trustworthiness

In this qualitative study, trustworthiness was addressed. To establish trust, the researcher utilized probing questions throughout the interview with the respondents to get them to open up more and to allow the researcher to obtain saturation from the respondent's responses. The data obtained from respondents are to be examined from numerous perspectives in the form of reflective commentary (Shenton, 2004). To address transferability, the researcher provided comprehensive, rich descriptions of every aspect of the study, including the objectives, population sampled and research methodologies (Shenton, 2004). In terms of conformability, significant portions of the data were taken from the analysis to adhere to the analysis. This was done so that the information could stand independently and support the emerging themes. In the process of coding, portions of meaning were also taken to be studied in a data-oriented approach (Shenton, 2004). This makes it possible for the researcher to track it down and use it in the analysis part later.

RESULTS

Table 1

Explanation of Themes

Themes	Explanation of themes
Desperate acts	The strong emphasis of certificate possession in better job employment opportunities driving people with no certificates to buy fake certificates as a ticket towards income.
Cost and time effectiveness	The high cost of obtaining certificates drove respondents to opt for fraudulent certificates that are faster and cheaper. Employers tend not to go to further lengths to validate certificates.
Lack of coordination	Current verification procedures by certificate issuers and certificate holders are ineffective. A comprehensive certificate validation system that requires coordination between certificate issuers and certificate readers has yet to be developed.

Desperate Acts

All respondents fit the theme of 'Desperate acts' as they mentioned the strong emphasis on certificate possession in better job employment opportunities motivating people with no certificates to buy fake certificates as a ticket towards income or permit to conduct activities that generate income (such as drone piloting). The presence of demand for certificates due to desperate clients gave rise to the supply of fraud certificates.

Buyer Respondent 2 mentioned:
"After countless job rejections and failed interviews, I became desperate and decided to take a drastic step. I found a website that sold fake degree certificates and ordered one for myself."

Seller Respondent 1 said:
"My fake certificates enabled people to get jobs and opportunities that they might not have been able to get otherwise."

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Cost and Time Effectiveness

All respondents stated the 'Cost and time effectiveness' factor of fraud certificates compared to genuine certificates. The higher cost and amount of time to be spent for obtaining true certificates make people buy fake certificates as it is a cheaper and faster option that is readily available. Employers in companies who read certificates submitted by job applicants tend not to spend more time and money to go into further actions that validate the certificates. This becomes a loophole that allows certificate fraud to occur.

> Buyer Respondent 1 said:
> "I found the training programs offered by educational institutions to be too expensive and unaffordable, which discourages me from participating in one to get a legal drone pilot license, making me opt for the much cheaper fake certification."

> Seller Respondent 1 said:
> "If an extra or two fake certificates can give a person an advantage, it is no wonder so many people are willing to risk their reputations by buying fake certificates from me, which is much easier and faster than going back to school or taking classes again."

Lack of Coordination

All respondents agreed that the 'Lack of coordination' between stakeholders that use certificates will continue to cause certificate fraud to still be rampant within the next five years to come. The current certificate holders' and certificate issuers' verification processes are ineffective. A complete certificate validation system that calls for cooperation between certificate readers and certificate issuers is yet to be widely adopted by people and organizations involved in using or reading certificates.

> Seller Respondent 2 said:
> "I think that most Malaysian government authorities, technological minds and local educational institutions have yet to even propose strategies to be implemented on this issue. Even if it does happen, I think that this will not happen in the near future within five years."

> Buyer Respondent 2 said:
> "NFTs can prevent certificate fraudulence, but it requires the cooperation between educational institutions, government authorities and job employers, in which I doubt that a cooperation of all these parties regarding NFTs is going to happen soon."

Interviews

As agreed before the interview, all respondents (2 Buyer Respondents and 2 Seller Respondents) have their true identities concealed in this report and are anonymous. Buyer Respondent 1 is a videographer and bought fake Civil Aviation Authority of Malaysia (CAAM) certificates and permits for drone flight approval. As per Malaysian Civil Aviation law, all drone flights and operations must be approved by the Civil Aviation Authority of Malaysia (CAAM) with a provided permit and certification. To receive such drone flight permits, individuals must undergo drone flight training programs available in vocational education institutions all across Malaysia to earn a drone flight license. Any drone flight attempts without licensing and special permits in Malaysia are deemed illegal and are subjected to hefty fines. The Department of Civil Aviation (DCA) decided to be stricter about drones. It ruled that people who want to fly them must get a permit for every flight as per Civil Aviation Regulations 2016: Section 140-144, which the Government approved in April 2016 (New, 2016). A permit must be obtained for every drone flight intended, and the approval can only be done in 14 days.

Asides from finding the drone flight permit approval procedure to be a huge hassle, Buyer Respondent 1 found the training programs offered by educational institutions to be too expensive and unaffordable, which discourages him from participating in one to get a legal drone pilot license, making him opt for the much cheaper fake certification. He also finds the drone training programs redundant as he claims to be highly skilful in drone piloting after years of experience despite no formal training. He

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can use drones for his videography works as a self-taught drone pilot. Despite frequently flying his drone for leisure and videography within Malaysian airspace with fake certificates and permits, he has never encountered problems such as flight restrictions and monetary fines from authorities. Even if any person, such as security guards, questions his drone flight activities, he quickly shows them the fake permits he bought online to avoid interruption. He also doubts that his drone flight activities cause any hazards to the public as no accidents have occurred throughout his experiences. He is always careful during drone flights. When asked about getting a real drone flight certificate and drone flight permits in the future, he voiced his opinion that participating in legal drone certification programs and getting legal permit approval is unnecessary as he views them as a waste of time and money. Legal enforcement on drone flights in Malaysia is not strictly imposed as long as he avoids public landmarks and sensitive areas such as places armed by military personnel. Buyer Respondent 1 is fully aware of the potential of NFT being an antidote towards fake certificates and permits such as those he possesses. He perceives that as long as NFTs as certificates are still yet to be implemented as a mainstream certification and licensing system in Malaysia, he can still freely operate his drone without facing legal consequences due to the lack of strict enforcement. He thinks that it is still highly unlikely that education institutes and enforcement personnel will use NFTs to verify drone pilot certificates and flight permits within the next five years. Even if it does, he might as well attempt to bribe his way through if any personnel halt his drone flights on the spot.

Buyer Respondent 2 is a sales executive for a Malaysian car sales company. During his school years, he struggled immensely with academics. He barely graduated from high school and never attended college, working from job to job in restaurants and shopping malls. Despite his lack of education, he was determined to succeed and make something of himself. After countless job rejections and failed interviews, he became desperate and took a drastic step. He found a website that sold fake degree certificates and ordered one for himself, claiming to have graduated from a prestigious Malaysian university with a degree in business management. Even the person for reference in his resume was faked via this service, claiming to be his former lecturer. With his fake degree certificate, he applied for a job at a car company as a sales executive. Unsurprisingly, he was offered the job and accepted it without hesitation. At first, he was terrified that he would be found out and fired. But as time passed, he began to excel in his new role. He worked hard, learned the ins and outs of the car sales industry, and quickly became one of the top sales executives in the company. Despite his initial deception, his success was undeniable, and he was eventually promoted to higher positions in his career. He continued to excel in his role and even earned the respect and admiration of his colleagues and superiors, as he claimed. His talent is in verbal communication and closing high sales volume, never in academic writing nor regurgitating facts for exams. When asked about his feelings about his fake certificate, he looked back on it with a mix of shame and gratitude, knowing that it was the catalyst for his success but also aware that it was not something he was proud of. His success was a testament to his hard work and determination, even if it had started with a white lie.

When asked about pursuing a real certification, Buyer Respondent 2 answered that he finds it unnecessary. He elaborates that he has a fake degree but is performing better in his career than many of his peers with real degrees. His job performance is already a testament to his abilities. Possessing a degree does not guarantee career success. You can be a real Master of Business Administration (MBA) graduate yet cannot hit target sales for a company. Buyer Respondent 2 also invests a small portion of his income into digital assets such as cryptocurrencies and NFTs. He expressed his thoughts that NFTs can prevent certificate fraudulence. Still, it requires cooperation between educational institutions, government authorities and job employers, in which he doubts that cooperation of all these parties regarding NFTs will happen soon (within five years). However, he is highly optimistic about the potential utilities of NFT. He showed his Metamask digital wallet that although most of the NFTs he bought and sold are mere pump-and-dump schemes with no real-life utility, a small portion of them do have utility, such as tickets to private events and discounts to merchandise. Even if his education certificate can be proven false, he has already proven his value to his company, which will not concern him.

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Seller Respondent 1 sells fake certificates to clients and buyers online. He creates those certificates using Adobe Photoshop. He explains that he sells fake certificates because it is a relatively lucrative business. In Malaysia, there is a demand for fake certificates, and he can earn income by supplying them. He knows it is illegal, but he takes steps to avoid getting caught, and the risk is worth it for the money he makes. Plus, he does not see the harm in it. The people who buy fake certificates can use them for their purposes, whether to impress others or to get a job they are not qualified for.

Ultimately, everyone, both buyer and seller parties, is happy. He gets paid, and his customers get what they want. He had been doing this for many years. Even though what he was doing was illegal, he believed that he was helping society in a number of ways. He argued that many people who bought fake certificates from him did so because they could not get the real thing. They might not have had the time or the money to go through the formal education process, but they still needed to prove they had certain skills or qualifications. In this way, his fake certificates enabled people to get jobs and opportunities they might not have been able to get otherwise.

Additionally, he believed that his fake certificates helped to level the playing field for people who were at a disadvantage. For example, someone from a poor background might not have been able to afford to attend a prestigious university. However, with one of his fake certificates, they could still compete for the same jobs as someone with a more privileged upbringing.

Despite these arguments, he knew his actions were still legally wrong. He knew he was potentially harming people by relying on the validity of the certificates he was selling and that he could face serious consequences if caught. But he justified his actions by telling himself that he was providing a valuable service to those who needed it and helping make the world a fairer and more equal. He elaborated that one may argue that fraudulent certificates are scams, but if one can say so, educational certification is also all about the money in our capitalist society. Society in capitalism has created a system where individuals in society need to pay for qualifications that are necessary for them to pursue certain jobs. The presence of requiring certificates to prove possession of certain skill sets disregards the fact that some people can be self-taught without requiring formal education. Certain people do not need to pay and spend lots of money to learn skill sets, yet employers who place high importance on certificate possession disregard this possibility. For instance, one can be highly skilled in playing the violin without ever attending a music academy, but if a job he applies for requires him a certificate to prove his ability, even if he can record videos of himself playing the violin as evidence, is an insult to his true capabilities. The system and acknowledgement of society towards needing certificates to prove capabilities catalyze a money-making system for government and educational institutions. This widely accepted system of education and employment should be questioned. One of the reasons certificate fraud is so rampant in Malaysia is that society places a huge emphasis on certificates as proof of qualification and education. It is hard to get a job in many places without a certification. However, funny enough, many companies in Malaysia, especially small-medium enterprises, do not try to verify the legitimacy of certificates sent in by job applicants. The referrals in resumes can be easily forged with a false person-in-contact readily available for phone calls from the company. He also mentioned that people want a piece of the action for themselves, and they know that if they can get their hands on a "real" certificate, they will have a better chance at getting a job than someone who does not have one. Finding jobs nowadays is not easy due to the high competition. If an extra or two fake certificates can give a person an advantage, it is no wonder many people are willing to risk their reputations by buying fake certificates from him, which is much easier and faster than returning to school or retaking classes. Seller Respondent 1 is also aware that NFTs might put him out of business. He talks about the lack of coordination in Malaysia between educational institutions, real certificate issuers and companies hiring workers, which makes him doubt that an NFT system combatting certificate fraudulence, which requires close coordination of multiple parties, together with the widespread integration of blockchain technology, can be implemented without much obstacles in Malaysia. Even if it occurs, he has his backup plan as he proclaims that he never puts all eggs into one basket. People who can make fake certificates are skilful in digital visual and graphic means, which already has a certain level of demand in our ever-digitalizing world.

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Seller Respondent 2 also sells fake certificates. He mentioned profiting from existing loopholes and a lack of coordination between employers, educational institutions and authorities that issue certificates. This lack of coordination allows fake certificates to be issued without suspicion. Many people in Malaysia, students, job applicants and employers, do not handle their documents properly or seriously. Lost and misplaced physical documents are a common scene in Malaysia, and he received many requests to "recreate" those documents, including certificates, receipts, recommendation letters, agreements and invoices. He attributed this to the lack of efforts to educate people on proper file management since they were young in Malaysia. We, as Malaysians, were never taught in school or by our parents how to handle and organize our physical and digital files. He also mentioned that signatures on certificates could be easily forged as a digital system to verify letter headers, watermarks, and handwritten signatures have yet to be developed and widely adopted in Malaysia. Perhaps an NFT system could be implemented to counter this issue. Still, a cross-integration between physical documents and digital data can be seen as challenging to Malaysian companies, especially smaller companies that are used to operating in traditional age-old administration styles led by stubborn employers who are almost or more than half a century old.

Developing such a cutting-edge system may require huge costs and time investment. Still, judging from how businesses operate in Malaysia, nobody is willing to inject the initial capital if they cannot think of a way to profit from it. This delays the development of such an anti-fraud system in Malaysia. He also talks about an inherent problem with the current system of getting a certificate from an institution and using it to get jobs. It devalues the value of real credentials while encouraging those who do not deserve them to get them anyway, as long as they are paid to attend the educational courses. In other words, he urges us to stop thinking that having a certificate is the same thing as being qualified for something; it isn't. People tend to complain that much money was spent paying for tertiary education. Still, the salary provided by companies that hire them due to their real certificates is too low. He perceives that parents and students were, and are still, "scammed" by educational institutions that monopolize the market due to the high demands towards their certificates, marking up the tuition fees to high prices. Varsities also tend to overpromise the job prospects of those who possess the certificates they issue. He also suggests that we must start valuing real-world experience over paper qualifications because it is clear that many people do not know how important it is until it is too late. And then they pay dearly for it. This can make it tempting for people to lie about their paper qualifications (even if they are qualified in terms of skill contribute to anyone that employs them), and if they get caught, they can just say they made a mistake, and no one will know the difference. We live in a world where certificates are valued. We have come to rely on them as proof of qualification and education, and they are used to determine everything from our place in society to the very terms of our employment. He provides the supply and responds to the market if there is demand.

Seller Respondent 2 also talks about the possibility that technological advancements such as Artificial Intelligence might replace their role because clients for fake certificates might use Artificial Intelligence to get their products without requiring them as intermediaries. Even images and videos of university experiences can be faked using Artificial Intelligence as they become increasingly realistic. Anyone can look like they have attended courses at the University of Malaya, been given a Datukship (a title in Malaysia) or knighted by the Queen of England (he had created such images for clients) to justify the false certificates they have. A real-life picture of the person before the University of Malaya can easily justify his false certificate as if he attended the varsity. He sees NFTs as a possible solution to counter this, which will also put him and many other fake certificate sellers out of business. Still, he thinks that most Malaysian government authorities, technological minds and local educational institutions have yet to propose implementing strategies on this issue. Even if it does happen, he thinks this will not happen soon (within five years).

DISCUSSION

People buy fake certificates for a variety of reasons. Some may do it because they want to impress others or use them to execute activities with a fake degree or qualification that they do not have. Such

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certifications can be persuasive as they are highly valued in Malaysian society. Others may do it to get a job or promotion that they are not qualified legally for. Still, others may do it because they want to avoid the time and expense of earning a real certificate (Sim, 2016). Whatever the reason, buying fake certificates is illegal and can have serious consequences, including fines and imprisonment, but still hardly enforced in Malaysia, as our respondents claimed, who have been creating and using fake certificates for years without facing any trouble yet. All respondents point out the lack of coordination in Malaysia between multiple parties, such as certificate issuers, companies hiring employees and government authorities, as a major loophole allowing certification fraud. This phenomenon can also be attributed to the lack of public penetration of NFT and blockchain technology. For example, if someone possesses a certificate claiming to have been given a Datukship title by a royal family in Malaysia, who or which public database does the certificate reader refer to validate the certificate's authenticity? Suppose a person is flying a drone in Malaysia and is noticed by security personnel. Can the personnel use blockchain and NFT on his smartphone to validate that the drone pilot has legitimate CAAM licenses and permits and is permissible to fly his drone? Suppose a person claims to hold a degree from a local university and is applying for a job. Can the job hirer immediately validate the degree certificate's authenticity by referring to the university's database, which the university might be reluctant to share and look through efficiently? If a person has a photo of himself attending classes at a university, how do we know if it is genuine? In Malaysia, there is a lack of coordination between multiple parties that use certificates, including certificate issuers, companies and institutions. Companies that hire people in Malaysia, especially smaller ones, who largely do not go to further lengths to scrutinize and check submitted certificates, also seem to value their real credentials more than the certificates they possess, which is marketed otherwise by certificate issuers, including institutions who actively promote their courses, as if the job hirers think that as long as the hired person is productive and can solve company problems, there seems to be no wrong if they use fake certificates. The lack of coordination between parties, the lack of widespread adoption of NFT in the Malaysian market, and the high demand of Malaysian people towards certificates allow the fake certificate market to thrive in Malaysia. In addition, the high costs of obtaining real certificates in Malaysia drove people to opt for the fake certificate option, which can be much cheaper and faster to obtain than the real thing.

NFTs, or non-fungible tokens, are a type of digital asset that can be used to prevent certificate fraud (Mourasillo, 2021). An NFT is a unique digital asset stored on a blockchain, a decentralized, digital ledger (Wang et al., 2021). This means an NFT can be verified as authentic and cannot be replicated or altered. This makes it difficult for anyone to create fake certificates using NFTs because the unique digital signature of the NFT would be easily detectable. By using NFTs, institutions and organizations can ensure the authenticity of their certificates and prevent fraud. But for this to happen, widespread adoption and integration of NFT and blockchain technology have to be accepted, known and adopted functionally by mainstream society, which is still a long way to go in Malaysia. It is important to always be honest and truthful about our qualifications and achievements. NFT systems can prevent certification fraud by proving the authenticity of certificates as digital data sources can be traced. However, as long as this technology has yet to be implemented with the coordination between various parties, fake certificates will still be rampant in Malaysia for years to come, as most that run in the market stay undetected.

CONCLUSION AND IMPLICATIONS

Most conventional certificate verification methods rely on direct communication with the certificate's issuer; however, this requires a lot of time and resources, both of which many businesses either cannot afford or are reluctant to participate, as per Malaysia's employment and educational context. The verification procedure is further complicated by the involvement of numerous intermediaries (such as certificate holders, teachers, officials, ministries, third-party checking firms, etc.). By eliminating the requirement for intermediaries in the present certificate verification system, blockchain can eliminate these vulnerabilities and stop the creation of fake copies. This cutting-edge system keeps authentic certificates on hand in digital form, treats them like "contracts," and maintains them in a distributed database (Mourasillo, 2021). The certificates built upon NFTs on the blockchain can be available online after being securely verified in an unchangeable form that can only be viewed

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with permissions allowed by the certificate owner or issuer (Yaga et al., 2018). This form of utility offers a great opportunity for the application of blockchain to benefit various industries, especially education. NFTs backed by digital data that proves the participant's involvement in the education programme, validating the learning process of subjects can counter certificate fraudulence. Job employers play a fundamental role in validating the authenticity of certificates of job applicants.

The unprecedented usage of NFT technology to combat certificate fraudulence has yet to be implemented in Malaysia and within the global context (Wang et al., 2021). For the implementation of NFT into certificate issuance to occur, coordination and cooperation of an assortment of parties, including certificate issuers (universities and government authorities), companies, organizations, blockchain developers and government bodies, need to be executed, alongside being well-informed and educated on NFT technicalities. This presents NFT technology as a huge opportunity to be presented and justified with great utility beneficial to society and not merely a medium for pump-and-dump schemes and money laundering (Franceschet, 2021). However, implementing this scheme of preventing certification fraud faces multiple challenges, and the main obstacles are the lack of public penetration and adoption of NFT and the lack of cooperation between certificate stakeholders.

Also, the emphasis given to Malaysia's education system needs to be re-examined as it emphasizes paper qualifications more than real credentials, which do not respond to true Malaysian job market requirements. The lack of knowledge and skills in digital and file management amongst Malaysian people was highlighted . It can serve as an obstacle for Malaysians to adopt newer digital data storage and validation systems such as NFT. These are issues to be solved before NFTs can realize their potential role in combatting certificate fraudulence in Malaysia.

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