

Can emerging technologies substitute for trust in consumer markets?

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Image taken from Schmidt, J. (2024, August 15). AI in Financial Modeling: Applications, Benefits, and Development. Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/data-science/ai-financial-modeling/>

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Abstract

This research investigates and explores whether emerging technologies, specifically such as artificial intelligence (AI) and blockchain systems, can fully substitute for traditional trust mechanisms in both psychological and social manners, in consumer markets. Through a thorough and comprehensive in-depth review of academic literature, industry reports, alongside conceptual frameworks, the research paper and discussion evaluate multidimensional approaches of the technology adoption. This consists of factors such as operational, psychological, and regulatory frictions. The findings of this piece of research indicate that whilst artificial intelligence enhances both operational efficiency and blockchain systems introduce immutability within cryptographic operations, neither technology, or together, are able to fully substitute or replace the human and institutional prerequisites of trust. Rather, literature and research evidence support a “hybrid trust” model whereby these technologies act as “trust-enablers”, rather than replacers. Fundamentally, the successful application of these technologies and deployment into settings remains heavy reliant on endorsement from established institutions, transparency in interface design and actions of each technology, and rigorous ethical, regulatory, and legislative governance.

Chapter One: Introduction

Trust is a fundamental and vital concept within society, which is a psychological, and social prerequisite within financial consumer markets. In a historical context, it has been built upon institutional credibility, frameworks, relationships between people, and accountability within governed regulatory settings.

Nonetheless, through the rapid integration of emerging technologies into both financial and retail markets, it has prompted a re-evaluation of how trust admittedly operates within modern economic operations. In addition, artificial intelligence (AI) and blockchain systems introduce several structural properties, such as consistency within algorithms, transparency within operations, and cryptographic immutability, which attempt to streamline, or on occasion bypass traditional human trust mechanisms.

In regard to the research study, artificial intelligence (AI) refers to algorithms of computational systems which have been designed to perform tasks commonly requiring human intelligence. These tasks include operations such as reasoning, problem-solving, and the recognition of specific patterns. On the contrary, blockchain systems and technologies represent decentralised and tamper-resistant digital ledgers which record transactions through a secure, immutable, network without the requirement for central governance and authority. The core controversy which is addressed within this research is whether these emerging technologies can, indeed, substitute for trust in consumer markets, or whether, they are able to be utilised for altering the procedure through which trust is established and developed in markets.

Through the thorough evaluation of literature and research sources across financial services, regulatory perspectives, governance, and consumer behaviour, this paper argues that whilst artificial intelligence and blockchain systems are not able to override trust in its fullest psychological, and social sense, they function best as 'trust-enablers' which operate within preceding institutional structures. These technologies heavily depend on the provenance of the organisation, transparency within design, and oversight from regulators to protect the best interests of consumers.

Chapter Two: Literature Review

The aim of this research is to investigate the available sources, summarise, review and evaluate the reliability, accuracy, type and credibility of individual sources. The significance and relevance of the sources will be assessed in relation to the question “Can emerging technologies substitute for trust in consumer markets?” where emerging technologies are primarily referred to as consumer-facing artificial intelligence and blockchain technologies. The contradictions and supporting judgements and statements from respective authors are intended to be noted to evaluate which sources can be utilised for my discussion. During the research, most uncovered academic material was heavy in depth and vast, comprising of much supporting evidence and theories. Several sources had relied on forward-thinking hypotheses which cannot be marked as confident and trustworthy pieces of material, yet some theoretical and concept papers will be utilised as marked below for investigatory pieces.

Definitions

Definition of ‘*artificial intelligence*’ for the purpose of this literature review refers to *computational systems and algorithms which are designed to perform tasks that usually require human intelligence, including, but not limited to, reasoning, learning from historical data, pattern recognition, decision-making abilities, and problem-solving skills. Artificial intelligence systems can analyse information and content, detect patterns and anomalies, and generate output that optimises outcomes in advanced, and complex, environments such as financial decision advice and support, consumer-facing interactions, and automated decision evaluation.*

Definition of ‘*blockchain*’ for the purpose of this literature review refers to *decentralised and digital ledger technology that records transactions across a secure, transparent, and immutable network of computers. Each recorded block is linked through cryptography to the previous one, which makes the ledger tamper-resistant and verifiable without any intermediaries such as central authorities and regulated figures.*

Definition of ‘*trust*’ for the purpose of this literature review refers to *a social and psychological concept referring to an individual’s (trustor) expectation that an organisation, system, or another individual (trustee) will act reliably, fairly, and predictably through conditions of risk and uncertainty. Trust involves cognitive assessments such as historical records of competency, transparency, and deliverance on*

‘promises’, alongside emotional confidence such as a willingness to be ‘vulnerable’ based on positive expectations and outcomes.

Definition of ‘consumer markets’ for the purpose of this literature review refers to *economic systems where goods are offered to individual buyers (such as households and end-users) rather than to businesses or states. These markets are shaped by the behaviour of consumers, perceptions, needs, and trust, which involve repeated transactions guided through confidence in products, services, institutions, and technological platforms.*

Artificial intelligence and trust in financial services

Financial service literature highlights that artificial intelligence has been widely adopted to improve efficiency within various organisational processes, as well as streamline decision-making and provide better customer experience in public-facing situations, however, its effects on trust awarded by consumers are not evident. Bhattacharya and Sinha (2022), professors at Symbiosis International University (Pune, India) writing in a peer-reviewed financial service journal, had reported that Indian-based financial organisation usage of artificial intelligence (whether it be in customer service agent chatbots, facial recognition for identity verification, or biometric security) can enhance overall consumer satisfaction and confidence by streamlining the delivery of responses and services. Additionally, Jain (2023), a lecturer at Jaipur’s Subodh College (Jaipur, India), had found that artificial intelligence applications in the banking sector (detection of fraud transactions, credit scoring and lending decisions, customer service agent chatbots) are believed to “improve accuracy and reduce costs”, thus strengthening trust awarded by consumers, however, Jain warns that as a consequence, privacy, bias, and ethical issues with the usage of artificial intelligence must be managed. Celestin and Vanitha (2021), a banking professor and a quantitative researcher, similarly present that in large-scale industry executions of utilising artificial intelligence systems, banking costs are reduced by ~45% and processing times by 60%, simultaneously to raising the satisfaction of consumers and drastically improving the accuracy of fraud detection mechanisms. Such peer-reviewed, quantitative, data suggests that artificial intelligence’s operational benefits can indirectly support the trust mechanisms adopted by consumers through better quality services and experiences.

Yet, there are reports which emphasise that certain risks can negatively impact, and undermine, trust in finance led by artificial intelligence systems. Jacovi et al. (2020), computer science researchers from Bar Ilan University and the University of Illinois, had introduced the idea of “contractual trust” between humans and artificial intelligence which suggests that trust exists when there is an implicit expectation, including the belief that an algorithm or system will behave as advertised and intended, is upheld. This theory highlights that trust which is “unwarranted”, in most scenarios, leads to misuse, whereas “warranted” or justified trust requires total transparency and accountability of decisions made by artificial intelligence. Glikson and Woolley (2020), who are psychologists at Bar Ilan University and Carnegie Mellon University, have found that in their comprehensive peer-reviewed management review, transparency, reliability of decisions and accuracy of feedback from artificial intelligence are imperative and “key antecedents to user trust”. Artificial intelligence systems that elaborate on their thinking processes and systems, alongside their reasoning, and have consistency in performance are likely to gain “cognitive trust” which is rational from consumers utilising the technology.

Contrarily, unverified artificial intelligence can disrupt trust mechanisms in consumers. Several reviews note that *algorithmic bias is a critical challenge* when adopting artificial intelligence into regulated products, such as financial services. Kekez et al. (2025), a philosopher at KU Leuven and colleagues (peer-reviewed in *Technology in Society*), had reviewed research on artificial intelligence bias in corporate human resource functions and had found that many studies even *fail to define “bias” or “discrimination”*. Observations had been made that there is an “overemphasis” on racial and gender-based biases, indicating important blind spots. Thus, such vagueness in concepts results in businesses deploying artificial intelligence technologies into consumer-facing products that consumers may perceive as unjust or prejudiced. Additional analysis completed by Min (2023), an educational author, stressed in a non-peer-reviewed report, that biased artificial intelligence can *violate users’ rights* such as anti-discrimination and privacy, alongside undermining trust. Such findings re-iterate that artificial intelligence in financial markets must be governed by ethics and regulation (external auditing and data protection practices) to maintain trust within the emerging technology.

Blockchain as a substitute for trust

The promise of whether blockchain technology can be seen as a “trustless” system and whether it is “confidence” technology is vastly debated. Garg et al. (2021), who are financial researchers in a peer-reviewed forecasting journal, state that blockchain technology can “eliminate intermediaries, improving transparency and traceability” in banking transactions. This is possible through the nature of blockchain and the technologies behind it, including the secure timestamps of data and linking transactions towards a blockchain address, and how blockchain’s ledger and trust is governed by mathematical cryptography rather than by a single authority, such as a centralised financial institution, which provides customers with the understanding that records are unalterable and cannot be influenced by external sources. Farayola (2024), an industry concept piece written by a computer laboratory researcher at UT Dallas with extensive knowledge in banking technologies, highlights that blockchain ensures the integrity of transactions and operations through the process of decentralised and fixed ledgers, which drastically reduce fraudulent risks in banking operations. Structural features, such as these, suggest that the blockchain technologies provides a form of *distributed trust*, which focuses on the trust in the protocols and mathematical accuracy, rather than in individuals.

On the other hand, scholars familiar with this discipline caution that blockchain in itself does not eliminate the concept of trust, solely reallocates it. De Filippi, Mannan, and Reijers (2020), scholars specialising in law at CNRS Paris and Harvard, argue in a peer-reviewed *Technology in Society* article that blockchain is not explicitly a “trustless” technology, but a “confidence machine”. The article reiterates that confidence, “*predictability of the software code is*”, replaces traditional aspects of trust, however, that confidence in blockchain technology vastly depends on the “*governance of the underlying blockchain-based network*” and the operations of the code. Furthermore, Tripathi et al. (2023), an article from a Decision Analytics Journal written by researchers from respected universities, confirms and describes blockchain as a decentralised *ledger* that “*has redefined trust*” in the financial market by shifting it from institutions and authorities to networks of nodes, computers. However, it is also stated that solutions utilising blockchain technology can only function efficiently in “*appropriate scenarios*” suggesting an implication of limits.

Furthermore, Makarov and Schoar (2022), economists at LSE and MIT Sloan (NBER Working Paper), had analysed Bitcoin’s structure and application in the real-world and found that the network’s concentration

is “*still dominated by large and concentrated players*”, most predominantly mining pools and wealthy individuals which limits the decentralisation aspect of blockchain, and the idea of trust through structure may not hold, as users rely on key authorities and figures for platforms. In terms of blockchain governance and application, Cengiz (2023), a political scientist at the University of Liverpool (peer-reviewed policy journal), had highlighted that while the concept and idea of blockchain emerged from the distrust and heightened suspicion of central authorities and governing institutions, “*blockchain could also be the vehicle delivering centralized state surveillance and behavioural control*”. As reported by news outlets such as Brookings, governments are actively experimenting with the utilisation of blockchain for purposes such as identification, criminal identification, which blurs the line between the use of blockchain for decentralisation and oversight from governing bodies.

Consumer trust and applicable behaviour

Literature on consumer behaviour underlines that trust remains an imperative and decisive factor in the adoption of technology. In terms of emerging financial technology, surveys have found that people will embrace changes and innovation only if they are promoted by trusted or credible sources. An industry survey published by FIS, in the 2025 Banking Exchange, had identified that 74.8% of U.S. consumers would try a ‘stablecoin’ if offered by their own banking institution, whereas only 3.6% would trust an unregulated provider. These findings highlight how consumers *demand* the “*speed and efficiency*” of new payment methods (including features such as instant settlement and low fees) only “*when wrapped in the trust and safeguards that traditional institutions provide*”. The data from the industry reports highlights how many consumers provide a strong premium to the familiarity of credible financial institutions and regulated firms when considering blockchain-based currency. This research, therefore, suggests from a behavioural perspective that emerging technologies and their foundations alone do not build trust in consumers automatically, and that issuing institutions and regulated overseers do.

Several psychological factors similarly emphasise factors which influence human trust in artificial intelligence and *digital systems* such as blockchain. Glikson and Woolley (2020), psychologists at aforementioned respective universities, had summarised decades of human and technology research, and found that artificial intelligence’s tangibility in results and transparency are key antecedents of trust to the processes. In application, Glikson and Woolley claim that applications such as *ChatGPT*, or

general artificial intelligence chatbots that elaborate on its reasoning processes alongside with human-like interface cues tend to inspire trust rather than “*black box*” algorithms that are opaque and non-transparent. Consumer data and surveys (Cisco, 2024) (Cisco, 2023) (Forrester, 2025) (Forrester, 2022) further support the link between trust and transparency as it is reported that 63% of respondents believe artificial intelligence can only be useful when paired with “*strong privacy protections and ethical use standards*”, additionally, 75% of respondents had stated that they would not purchase from organisations that they do not trust with their data (Cisco, 2024) – highlighting how visible mechanisms and privacy assurance techniques are imperative to building and establishing a sense of trust. An additional survey further reports that despite consumers increasingly utilise artificial intelligence tools, “*this growing familiarity doesn’t always translate into trust*”, many remain sceptical and insist on explicit disclosure and governance prior to trusting such technologies as consumers are “*calling for stronger oversight*” (Forrester, 2025). Contrarily, Lockey et al. (2021) emphasise in their review on artificial intelligence vulnerabilities that distrust (such as a fear of bias or misuse of data) can lower the usage of such technologies.

Ethical and regulatory implications in governance

A frequent theme in literature regarding the implementation of emerging technologies (artificial intelligence, and blockchain) presents ethical and governance implications that regulators are beginning to address. In artificial intelligence, several articles and reviews underline the importance of recognising biases in artificial intelligence and how the lack of transparency and clarity can violate consumer rights. Kekez et al. (2025) similarly recognise that academic work based on artificial intelligence bias oftentimes fails basic definitions, refers to factors, constraints and obstacles that hinder the effective implementation of adoption, and the researchers call for clearer regulation within artificial intelligence and accountability. Min (2023) reviews artificial intelligence bias in a non-peer educational source and exemplifies the ethical harm which discriminatory artificial intelligence causes by violating individuals’ fundamental rights and further perpetuating inequality in vast settings. These pieces of analysis underline why it is vital for governments to draft regulations surrounding artificial intelligence (such as the European Union AI Act) which demand acts of transparency, risk assessments, regulatory power and human oversight. In 2024, the European Union’s high level expert group had explicitly warned that “*if AI systems*

do not prove worthy of trust, their widespread acceptance will be hindered” which had framed trustworthy and respectable artificial intelligence as a policy objective (Lockey et al., 2021). Central banking institutions and financial regulations similarly emphasise the requirement for transparency, for example, a historical review of the U.S. Federal Reserve had noted that transparency became a *“fundamental principle of accountability”* for centralised banking institutions (Federal Reserve History, 2024). As such, regulated financial products containing artificial intelligence and blockchain initiatives must also need to require transparency and accountability to *obtain* consumers’ trust.

However, blockchain further raises related governance problems and issues where reports have shown blockchain’s pseudo-anonymity identity conflicts with regulations such as anti-money-laundering laws and regulatory oversight (Tripathi et al., 2023). Cengiz (2023) further contrasts the potential for blockchain *‘democratizing’* finance with its extended usage in surveillance; Cengiz argues that states’ *“tripartite strategy*, not uniformly adopting, regulating, or rejecting blockchain, reflects certain ethical concerns regarding control. In practice, a large number of countries are implementing *know-your-customer (KYC)* and licensing regulations for cryptocurrency exchanges which acknowledges that an unregulated blockchain system is not a viable substitute for accountability in legal practice. The literature reviewed thus suggests that neither technology, whether it be artificial intelligence, and cryptocurrency through blockchain concept can bypass regulation without associated risks. As an example, Martinez and Hill (2023) explore how contracts on blockchain *“blockchain-based smart contracts”* must still comply with laws about fraud and consumer protection, despite their automated and decentralised nature – it is noted that the rapidly evolving legal landscape of such activities makes compliance a *“moving target”*, this is especially the case for globally accessible blockchain applications. In an ethical perspective, the integration of artificial intelligence and blockchain technology into consumer financial markets requires the preservation of human-centred values. As the cited review from Lockey et al. (2021) states, previous historical events signify the importance of *“breaches of trust and ethical standards”* (such as financial crises) eroding social *license* and trust, and therefore, rigorous standards are imperative.

Integration into consumer markets

Lastly, researchers have examined how artificial intelligence and blockchain are, in reality, being integrated into consumer products and services. In varying financial consumer markets, the adoption of

such technologies is rapidly expanding, however, remains closely tied to factors of trust and legitimacy. The vast scale of data, analytics and information usage is documented by reviews such as Bahoo et al. (2024) that count hundreds of studies within artificial intelligence and finance covering information from trading algorithms to models which analyse credit risks and lending patterns. Emerging technologies further power robotic advisors, fraud detection algorithms, and personalised experiences within banking applications. Consumer banking institutions have in particular embraced artificial intelligence within operations, as mentioned before, Celestin & Vanitha (2021) report that leading institutions have cut processing times and service costs drastically due to artificial intelligence, and as such, the operational success underpins consumer-wide adoption.

Similarly, blockchain systems are also penetrating the consumer markets in a variety of methods. Tripathi et al. (2023) and Kumar et al. (2022) highlight the use cases from supply chain tracking (e.g. "verification of organic food origins), problem and issue detection (e.g. "*production, product origin, code, expiry*") (Kumar et al., 2022) to management of digital identities. Min (2023) claim that blockchain applications are in IoT and healthcare settings, suggesting the vast role spreading beyond primary finance purposes.

Sources, provenance and adequacy of literature

This literature review draws on much peer-reviewed academic research (e.g. Glikson & Woolley, 2020; Lockey et al., 2021), alongside publications from the central bank, industry publications and concept papers (Farayola, 2024) alongside expert analyses (Min, 2023). Author credentials range from university professors (e.g. Bhattacharya at Symbiosis, Lockey at UQ) to analysts with industry specialists, the review further includes academic journals (e.g. Technology in Society, ANNALS) and industry-backed white papers. Where sources have not been thoroughly and academically peer-reviewed (inc. industry surveys, conference papers), this has been taken into consideration, noted and their findings are interpreted cautiously with scepticism. All sources evaluated were in relevance to psychological, behavioural, and consumer trust, behaviour exhibited by consumers, and integration of artificial intelligence and blockchain technologies into such markets.

Chapter Three: Discussion

The induction of artificial intelligence and blockchain systems into financial consumer markets has prompted an action of reconsidering how trust operates in modern systems, whether they are financial, regulatory or ethical. In the past, trust between consumers and firms has been anchored through human factors such as the brand reputation, the interpersonal relationships between consumers, the credibility of firms and accountability in regulatory perspectives (Sapienza, Toldra-Simats and Zingales, 2013). As the aforementioned emerging technologies permeate financial services, supply chains within companies and digital retail firms, several questions arise regarding how these influence traditional values. Perhaps the most paramount being whether the structural properties of artificial intelligence and blockchain technologies (namely transparency, immutability, and algorithmic consistency) are able to replace the psychological and social functions that trust has conventionally served or whether these technologies reconfigure the procedure through which trust is established within sensitive markets, leaving its fundamental prerequisite intact?

The discussion argues that whilst artificial intelligence and blockchain systems introduce powerful overriding procedures which streamline trust processes within sensitive consumer-facing markets, they cannot substitute for trust or ‘override’ it in its fullest psychological and social sense. Rather, the evidence researched across financial services, frameworks, and integrated application suggests that emerging technologies, such as the ones mentioned, are best utilised as ‘trust-enablers’ operating within and dependent upon preceding institutional and human trust structures. The discussion is structured to argue across four thematic areas of artificial intelligence and trust within financial services; blockchain as a confidence mechanism in itself; consumer behaviour and the adoption of technology; and the supporting ethical and regulatory governance.

Artificial intelligence and trust within financial services

Operational efficiency as an indirect ‘trust driver’

One of the most evidenced arguments in favour of artificial intelligence’s ability to drive trust within markets is its improvements to the delivery of services and specific growth. Celestin and Vanitha (2021) had documented that the large-scale deployments of artificial intelligence in the banking sector had

reduced the operational costs of firms by approximately 45% and processing times by 60%, simultaneously whilst improving the accuracy of fraud detection. Data driven improvements such as this one represent a compelling argument that when customers experience faster, more reliable, and more secure services, their confidence in these institutions increases. Similarly, Bhattacharya and Sinha (2022) had reported that applications of artificial intelligence in Indian finance markets – which includes the scope of customer service chatbots, facial recognition for identity verification purposes, and biometric security, enhance consumer satisfaction and confidence by delivering services in a more streamlined and positive pattern.

The reported findings are significant as they suggest that artificial intelligence builds trust within consumer markets by exceeding human operational standards, and not by mimicking human relational qualities which were the previous standard in sensitive markets. Fraud detection algorithms which process millions of transactions with much greater accuracy than human analysts provide consumers with a sense of reliability which traditional trust relationships could not guarantee. In this sense, artificial intelligence may not substitute for trust so much as it provides a foundation upon which the trust can be reconstructed rationally, which is what Jacovi et al. (2020) had claimed with the term ‘warranted trust’ where the confidence in a system is justified by the irrefutable, verifiable, and transparent performance record.

Conditions of acquiring ‘warranted trust’

Literature and research have consistently suggested, stated, and emphasised, that improvements in operations do not automatically translate into the acquisition of trust from consumers. Glikson and Woolley (2020), a key source into the research of trust and technology, through their comprehensive review of empirical-style research which had been spanning over decades of interactions between humans and artificial intelligence, identified that the transparency, accuracy of responses, and reliability of decisions were ‘key antecedents of user trust’, and that it had been observed that artificial intelligence systems which explained their reasoning in detail to consumers, as opposed to functioning as an opaque ‘black box’, had been far more successful in generating ‘cognitive trust’ from users, which is a term used to describe a rational form of confidence which is evidence-based.

Jacovi et al. (2020) had validated the concept of a ‘contractual’ form of trust within artificial intelligence where trust only exists when there is an implicit contract between the actual user and the system, which can refer to the expectation that the algorithm will behave and operate as it is advertised to the public, by performing its duties and operations without any struggles and disputes. When this supposed ‘contract’ is violated through actions such as unexplained decisions, inconsistency of outputs, or *opaque* processes, ‘unwarranted trust’ occurs which the authors associate with the loss of the user’s trust which leads to the eventual corrosion of the user’s confidence into the system. This implication is clear for the application of consumer markets as whilst artificial intelligence in itself may be capable of the generation of the trust, it requires specific conditions and prerequisites of transparency and accountability in its thinking to suffice the user’s concerns and disputes. This, therefore, cannot be a passive outcome of deploying the emerging technologies into sensitive markets, rather, it requires the deliberate architectural and governance choices to perform successfully, such as development and intervention from researchers who are implementing tools into the artificial intelligence.

This debate had been successfully extended and supported by researchers Glassberg, Brender Ilan and Zwilling (2025)’s findings into the user experience design which finds that the interface through which consumers interact with technologies such as artificial intelligence systems plays a deciding and critical role in shaping how consumers perceive trust within any situation that they interact with emerging technologies. Systems which incorporate intentionally human-centric design features with transparency features, including the explanation of algorithmic decisions (view Appendix 1), disclosures of how data is used, and patterns, result in significantly greater trust than systems which obscure operations and do not promote their thinking abilities and skills to the consumers utilising the technology. This behaviour suggests that building trust through artificial intelligence requires critical design skills as much as vast abilities in technological development and innovation which reinforces the view that technology alone is insufficient to substitute for trust within markets.

Appendix 1



Igor Filip

Thinking

- Clarifying math reasoning and solution timeline
The user is asking for visible reasoning, so I'll summarize it clearly. Working at a combined rate of 54 packages/hour, delivery proceeds until 10:00 AM when breaks start. The remaining packages are delivered once everyone returns. Calculating the time: end time is around 3:13 PM after all packages are delivered.
- Thought for 7s
- Done

Human centric design in modern large language models (LLMs), Claude (left) and ChatGPT (right)

Algorithmic bias as a threat to trust

One of the most significant threats to the capacity of artificial intelligence in building trust within consumer markets is the problem of algorithmic bias when facing consumers. Kekez, Lauwaert and Begičević Redep (2025), within a systematic review of artificial intelligence bias in human resource management, had identified that there is conceptual vagueness within research whereby many studies fail to define 'bias' and 'discrimination' within the sector of artificial intelligence, and that there is an overemphasis on racial and gender-based bias at the expense of other forms, impacted by technology. This fortuitous vagueness relays practical consequence where that if artificial intelligence regulators, and developers, cannot agree on what constitutes bias within language models, the deployment of such technologies into regulated and consumer-facing market contexts risks perpetuating deep-rooted forms of discrimination that consumers may feel unjust.

Min (2023) had reinforced this idea and concern from the perspective of rights, arguing that artificial intelligence systems which are discriminatory in nature violate 'fundamental individual rights', including protections such as anti-discrimination, which actively undermines consumer trust. Whilst Min's analysis

origin is from a non-reviewed educational source and must be interpreted with caution, its conclusions are validated through broader academic literature. Lockey et al. (2021), which draw on research from the University of Queensland by synthesising industry concerns, frame the breaches of ethical procedures and standards, including those which result from biased artificial intelligence, as acts capable of fraying the 'social license' of institutions which deploy such technologies. Provided with the historical context and sensitivity of financial services to the questions of fairness, the deployment of biased artificial intelligence in delicate areas such as credit scoring, fraud detection, and lending decisions poses a genuine threat to the trust mechanisms that underpin these regulated markets and how consumers behave when faced with an adverse decision.

The consequence of this research is that the potential artificial intelligence has to build and develop consumer trust is contingent upon the resolution of problems that are yet to be solved. Jain (2023) claims that whilst artificial intelligence applications in banking sectors 'improve accuracy and reduce costs', the risks of privacy, bias, and ethics occurring concurrently 'must be managed'. As a result of this, the technology arrives in consumer markets carrying trust-building and trust-eroding properties simultaneously, and the balance between these possibilities will be determined by the choices in governance external to the technology in itself.

Blockchain as a confidence mechanism

Promise of distributed trust

Blockchain systems, as a type of emerging technology, represent a centrally differing model of trust from artificial intelligence. Whilst artificial intelligence aims to build trust by replicating and improving upon the human cognitive capabilities which had been historically imperative to acquiring trust within sensitive sectors such as regulated financial markets – through making better decisions in a faster and more reliable manner – blockchain systems attempt to eliminate the need for trust intermediaries in their entirety. Garg et al. (2021) state that blockchain is able to 'eliminate intermediaries, improving transparency and traceability' within financial processes and transactions by governing the ledger through cryptography, verifiable mathematically, rather than institutional authority, heretofore the standard. Farayola (2024) similarly claims that the decentralised, immutable ledger structure of blockchain systems drastically reduces the risk of fraudulent operations within banking operations,

providing an irrefutable, structural guarantee of data integrity that does not depend on the credibility of any individual actor within a process.

This model of trust, described as ‘confidence’ rather than ‘trust’ by De Filippi, Mannan and Reijers (2020), is on the surface a convincing distinction between the two elements leading consumers in their choice of regulated service provider. If the protocol and process in itself is mathematically intact and verifiable through independent sources, then no individual or institution requires control or *needs* to be trusted as the integrity of the system is endorsed through its design. Tripathi et al. (2023) had described this shift as having ‘redefined trust’ in sensitive, regulated financial markets by relocating it from intermediaries, institutions, and authorities to node networks which are computers governed by consensus algorithms rather than human judgement on its own.

Limits of ‘trustlessness’ within markets

The claim that blockchain is ‘trustless’ does not withstand inquiry and close inspection. De Filippi, Mannan and Reijers (2020), through writing in *Technology in Society*, offer a sophisticated critique of the position that blockchain is trustless. It is argued that blockchain does not *eliminate* trust and rather, it ‘reallocates’ the aspects of it. Confidence within the system remains dependent on the governance of the underlying network itself and the integrity of the code, which are factors that themselves are subjected to human decisions and potential manipulation through external sources. A smart contract is only reliable if the code written by its developers is guaranteed to be irrefutable as a blockchain network is only as decentralised as the surrounding governance structures permit.

This argument is given weight through research conducted by Makarov and Schoar (2022), economists at LSE and MIT Sloan respectively, whose analysis of the real-world structure of Bitcoin found that the network remains to be ‘dominated by large and concentrated players’ – which are predominantly mining pools and ultrawealthy individuals. The decentralisation of blockchain is theoretical, as it underpins its claim to distributed trust, yet is substantially undermined in practice as the users of the Bitcoin network rely on a small number of powerful actors whose interests may not align with those of consumers. The trust that the blockchain network had been designed to eliminate at the institutional level has been reconstituted at the network level.

Cengiz (2023), a political scientist from the University of Liverpool, extends the critique in a peer-reviewed policy journal into the domain of governance and regulation, as it is observed that states have adopted a 'tripartite' strategy towards the adoption of blockchain technology – neither adopting, regulating, nor rejecting it – reflecting the genuine uncertainty surrounding whether blockchain serves the interests of decentralisation for consumers or a level of state surveillance. Brookings' analysts Lee and Wang document that governments are actively experimenting with the abilities and technology of blockchain for identification and tracking purposes within criminal activities. The technology that had emerged from a culture of distrust towards central governance and authorities may become an instrument of centralised control which raises profound questions about the extent to which consumers can trust the blockchain systems that are being interacted with.

Vulnerabilities in security and consumer confidence

Vulnerabilities within technology, commonly referred to as 'bugs', complicate the aim for blockchain to substitute for trust in consumer markets. Singh, Hosen, and Yoon (2021), who are engineers publishing in a peer-reviewed journal titled IEEE Access, identified significant challenges in terms of scalability of blockchain and security issues in the applications of blockchain, most notably within Internet of Things (IoT) networks. If such vulnerabilities were to be exploited by malicious actors, the anticipated consumer confidence, which the integrity of the blockchain cryptographies aimed to cultivate, would be eroded and dismembered. Whilst security, by itself, is not a permanent nor intrinsic property of how the architecture of blockchain functions, and instead it is a function of the quality of how it is implemented, the size of the network and the maintenance which continues to support the growth of the network, the aforementioned qualities are nonetheless features, and yet, they are features which introduce human 'factors' that the 'trustless' system was aimed to eliminate.

The significance of the information suggests that blockchain technology is accepted not as a direct substitute for trust, however, a mechanism which modifies the form of trust. Users of blockchain applications and systems do not avoid the prerequisite to trust, it is transferred from human institutions and firms to protocols, governance structures, and code; all of which are occurrences that introduce their own vulnerabilities and cause the imbalance of control within settings. For everyday users and 'typical consumers', blockchain systems may represent meaningful improvements as cryptographic guarantees

are in many respects significantly much more dependable upon than promises from institutions, however, this still means that substitution is partial and conditional on many accounts, not total.

Consumer behaviour and the adoption of technology

Endorsement from institutions as a prerequisite for trust

Evidence from research based on consumer behaviour has consistently shown that consumers do not extend their trust or beliefs to emerging technologies on the basis of their technical aspects and properties alone. The most compelling evidence to support this claim is from an industry survey report published by the Banking Exchange (2025) which had found that 74.8% of American consumers would be willing to try a 'stablecoin', which is blockchain-based currency, if it had been endorsed and offered by their pre-existing finance institution, such as a bank, whilst only 3.6% of these surveyed consumers would be willing to trust the same product if it was from an unregulated provider with lacking credentials and no major affiliations. This evident disparity in how willing people are to adopt technologies explains that it cannot be solely due to the technical properties of the stablecoin, which are identical regardless of the firm issuing the currency, and that the difference is attributable to the trust and reputation of the institution.

These findings are significant for the discussion of whether emerging technologies impact trust as they suggest that the capacities of trust-building are not intrinsic to the technologies, but instead, are based off of the institutions that deploy these technologies. The research shows that consumers approach blockchain as a feature embedded within already credible and safe regulated contexts rather than separate and autonomous mechanisms aiming to benefit consumers' trust. The implication is that emerging technologies cannot substitute for trust as suggested by the survey data, and at most they are able to operationalise trust that has been established through longstanding institutional relationships between consumers and their firms of choice.

Transparency and privacy as behavioural 'trust-drivers'

Glikson and Woolley (2020) had identified the transparency within mechanisms as 'decisive psychological drivers' of consumer trust in artificial intelligence systems, and it had been observed that artificial intelligence applications which explain their reasoning, such as conversational chatbots with timed trails, achieve significantly greater trust than opaque 'black box' algorithmic systems. These

findings align closely with the Cisco (2024) large-scale consumer survey data as the report claims that 63% of respondents believe artificial intelligence is only useful when combined with ‘strong privacy protections and ethical use standards’, moreover, 3 in 4 people (75%) would not purchase from organisations they distrust with personal information.

Forrester (2025) reports a timed, longitudinal aspect to the analysis, it is reported that despite the growing familiarity with artificial intelligence and its tools among consumers, this familiarity does not simply translate into trust. Consumers are supposedly ‘calling for stronger oversight’, insisting on explicit disclosure and governance mechanisms which would be *prerequisites* for trust – findings which directly contradict the development that the exposure consumers gain to such tools and artificial intelligence will naturally generate confidence in consumers over time. Instead, it appears that trust requires active, and sustained, demonstration of ethical practices throughout a much longer period of time, backed by being represented with credible firms.

Lockey et al. (2021) had further contributed to the idea by stating that the distrust of artificial intelligence, which arises from the fears of bias within the technology or data misuse, actively reduces the usage of artificial intelligence-powered services, independent to their technical capabilities. This finding suggests that the reputational and ethical dimensions of trust are far from secondary considerations, but primary determinants of the adoption of technology. An artificial intelligence which is superior in technical specifications yet deployed without adequate mechanisms exploring transparency will fail to attract the trust from consumers, whilst a less-developed, modest, system governed through clear ethical standards has a likelihood of success within society. The technology is dependent on the governance framework encapsulating the distribution of it to consumers.

Implications for hybrid trust models

The evidence on consumer behaviour strongly suggests what literature describes as a ‘hybrid’ trust model which is a configuration whereby emerging technologies are embedded within regulated, and credible, institutional frameworks which enable customers to benefit from the efficiency and security advantages of artificial intelligence and blockchain, whilst simultaneously retaining the institutional anchors upon which trust depends. Farayola (2024) describe this model as a ‘unified security infrastructure’, combining both artificial intelligence’s anomaly detection capabilities with the immutable records from blockchain,

creating a security environment that develops ‘customer confidence and loyalty’ without being the sole reason for trust.

Hildebrand and Bergner (2020), during four experimental studies conducted at the University of St. Gallen, demonstrated that conversational *robo-advisors*, which are artificial intelligence systems intended to be comprised of human-like interface characteristics, are able to function as ‘surrogates of trust’ within consumer financial decision-making processes whilst producing measurable improvements in the perception of firms’ credibility and the engagement of consumers. These findings suggest that the design of the human-technology interface itself is a trust mechanism which is capable of translating technical reliability into recognised confidence. The ramification is that trust is not automatic property of satisfactory technology; rather it must be engineered and communicated through effective design methods and principles researched within industries.

Ethical and regulatory frameworks as governance prerequisites

Regulatory prerequisites in Artificial Intelligence

A theme that continues to appear across researched literature is that neither artificial intelligence nor blockchain technologies can build, sustain, or grow consumer trust without the appropriate frameworks of governance. In the domain of artificial intelligence, laws such as the European Union AI ACT represent an extremely comprehensive legislative response to this challenge as the act itself establishes the requirements within the space for factors such as transparency, assessment of considered risks, and human oversight across all artificial intelligence systems which operate in regulated markets such as financial markets. The European Union High-Level Expert Group on artificial intelligence, cited in Lockey et al. (2021), had explicitly framed trustworthy artificial intelligence systems as a policy objective whilst warning that ‘if AI systems do not prove worthy of trust, their widespread acceptance will be hindered’. The regulatory sector framing of trustworthiness within artificial intelligence as a political and legal objective, as opposed to a purely technical objective, reflects the discussed understanding that emerging technologies cannot generate trust independently of contexts in which they operate such as institutional and legal settings.

Kekez et al. (2025) argue that it is necessary for clearer regulatory definitions of terms such as bias and discrimination as they are a vital prerequisite for effective governance of artificial intelligence systems, and without agreed standards, regulators cannot intentionally hold such systems accountable, leading to consumers having no reliable basis for trusting artificial intelligence systems' treatment, and whether it is fair or not. There is significant historical precedent involved in this discussion where the Federal Reserve's emphasis on transparency as a 'fundamental principle of accountability', documented in Federal Reserve History (2024), exhibits that traditional finance institutions such as banks and lenders required enforced standards of transparency prior to the public extending genuine trust towards them and their operations. If it was essential for such organisations to gain trust through their demonstration of accountability, artificial intelligence systems operating within the same regulated consumer markets must meet equivalent standards to ensure equality. The merging of this historical context and arguments leads to the conclusion that artificial intelligence systems' capacity to build trust is fundamentally dependent on the governance and regulatory frameworks that had not existed prior to artificial intelligence itself, which is a dependency that highlights the technology's inability to substitute for the institutions and firms within which trust is settled.

Governance of blockchain and legal compliance

Blockchain technologies raise a set of challenges in governance that limit its capacity to substitute for trust within consumer markets. Tripathi et al. (2023) note that the pseudo-anonymity within blockchain creates undeviating conflict with anti-money-laundering (AML) regulations and regulatory requirements which is a tension that cannot be resolved through the technology itself. Martinez and Hill (2023), who are legal specialists within the fintech sector and 'smart contract' law, had observed that blockchain-based 'smart contracts' must still be compliant with laws that govern fraud and the protection of consumers regardless of their automated and decentralised nature. Imperatively, the study describes the everchanging legal landscape for 'smart targets' as a 'moving target', which is particularly the case for globally accessible blockchain applications and operations, a description which highlights the continuing vulnerability of the governance surrounding blockchain to the complexity of jurisdiction, power, and changes in legislation.

The response from states and governments worldwide has been to implement requirements such as know-your-customer (KYC) and licensing requirements for exchanges of cryptocurrencies and similar platforms which effectively impose the institutional accountability models and mechanisms onto a technology which had been specifically designed to operate against them, and without them. Cengiz (2023) claims this dynamic as evidence that the unregulated idea of blockchain is not a suitable alternative for institutional accountability in legal practice. The requirement for KYC compliance worldwide contradicts the central aim of blockchain to be trustless, lacking in intermediaries, and it represents the importance of human and institutional trust mechanisms in a system which was designed to operate without them.

Ethical perception within human-centred values in the governance of technology

Beyond compliance to formal regulations, literature similarly raises ethical questions regarding the deployment of emerging technologies into regulated and sensitive consumer markets. Lockey et al. (2021) argue that the historical criterion, including the financial crises, demonstrate that breaches of ethical standards and qualities destroy social trust and 'license' in methods that are difficult and slow to repair. The idea that trust, once damaged, cannot be restored and reestablished through technical improvements by themselves, is one that is shown popularly through literature, and instead, it is required for trust to be rebuilt through sustained ethical practices and accountability for demonstrated actions.

These views have direct consequences for the true deployment of artificial intelligence and blockchain into consumer financial markets as if these technologies are seen by consumers as decoys for exploitation through a variety of methods such as biased algorithms, unclear, opaque decision-making or through the circumvention of consumer protection laws, the damage to the trust within markets may be disproportionate to the failure in technicalities that caused it. The social elements of trust, whether it's being embedded within relationships, firm expectations and communal norms, form it to be much more fragile and more valuable than a technical account of the reliability of a firm would suggest.

Evidence for integration into regulated consumer markets

The factual findings for artificial intelligence and blockchain integration into regulated consumer markets highlight extremely important evidence when evaluating the theories outlined in the statements above. In

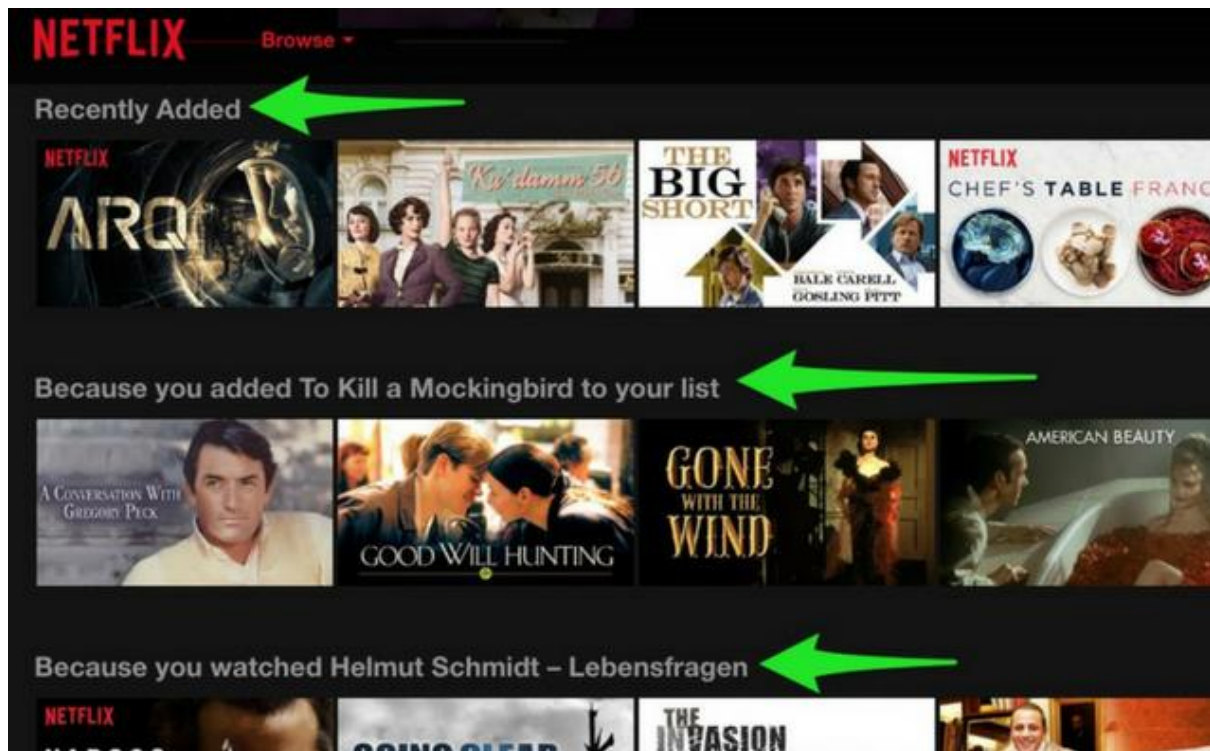
financial markets and services, the adoption of artificial intelligence is extremely widespread and accelerating at critical rates due to the ease of access and development of such technologies. Bahoo et al. (2024), during a review of artificial intelligence in finance, had documented hundreds of studies which covered applications of artificial intelligence from services such as trading algorithms to credit risk models. To support this, Celestin and Vanitha (2021) reported that leading financial operators and banking institutions have achieved significant reductions in their processing costs and processing times through the deployment of artificial intelligence, with quantifiable improvements in the satisfaction of consumers which benefited the analytics of banks.

In supply chain management, blockchain applications have demonstrated their necessity and essential view to build trust with consumers through their technologically based verifiable transparency. Kumar, Upreti and Mohan (2022) record the applications of blockchain in cases such as to verify organic food origins and verify the product provenance in retail food supply chains, a use case in which the immutability and traceability of the technology provide a form of trust guarantee that is truly difficult to replicate through institutional means. Azevedo, Gomes and Romão (2023) demonstrate the application of blockchain in traceability within supply chains by using Ethereum-based systems to provide objective and tamper-resistant records of the origin of products and 'chain of custody'. Within these context applications, the technical properties of blockchain systems provide relevant functions in building consumers trust that complement, however extremely importantly not replace, the institutional credibility of the brands deploying these technologies to consumers.

The common pattern that appears from the evidence of integration into applied settings is shared and consistent with the analysis mentioned within this discussion. Farayola (2024) state that there is a view for a long-term future of 'unified security infrastructure' where artificial intelligence and the capabilities of blockchain technology are amalgamated within the framework of regulated banking procedures with artificial intelligence providing dynamic fraud detection and analytics of consumer behaviour, with the blockchain systems providing immutable records of transactions and audit trails, benefiting the trust of firms and consumers. This 'future' represents the 'hybrid' trust model to its utmost fullest expression where emerging technologies *do not* displace the trust within institutions, yet they strengthen the foundations of operations, which makes the trust that consumers award to these regulated institutions

significantly more warranted than previously, as they do not force consumers to relieve banks of their trust-building duties, yet implement strategies to promote intentions.

Appendix 2



Netflix user recommendations which mask complex machine learning algorithms

Glassberg, Brender Ilan and Zwilling (2025) had observed that service providers are investing much more into user-conscious interfaces (*such as Appendix 2*) that mask the complexity of technologies such as artificial intelligence and blockchain systems which enable consumers to gain from the trust-enhancing features of the aforementioned systems without needing to understand the systems which they are based on. This strategy in user-oriented design is *pragmatically* responsible and revealing of the theories whereby it acknowledges that consumer trust in emerging technologies such as artificial intelligence is not the primary function of understanding the technical requirements and specifications, but of the actual and experienced reliability and the perceived fairness of these systems by consumers, which is followed through by institutional endorsement. Despite how sophisticated the technology in itself is, its ultimate purpose is to serve as a tool which broadens the relationship of trust between consumers and

the regulated institutions that consumers rely upon, hence why interfaces such as Appendix 2 are beneficial to consumers and firms, to ensure both parties are prioritised.

Closing arguments

The question of whether emerging technologies can substitute for trust in consumer markets admits that they cannot, especially not in any full sense. The evidence which had been reviewed across regulated financial services, the governance of blockchain, consumers' behaviour, and regulatory frameworks leads to a consistent conclusion. Artificial intelligence and blockchain technologies, both, introduce extremely powerful new mechanisms through which trust can be constructed and maintained, techniques such as algorithmic reliability, immutability of cryptographic transactions, transparency within operations, and verifiable audit trails, are several. These mechanisms are fundamental, and they address the limitations of traditional 'trust' relationships by providing forms of consistency and accountability that institutions led by humans and independent of technology-led content have struggled to deliver in past situations and contexts.

However, it is imperative to consider that these mechanisms and technologies are not operating independently of contexts in which trust is embedded such as social, institutional, and legal situations. De Filippi et al. (2020) mention that blockchain technology 'tries to maximise confidence' within a system, whereas Lockey et al. (2021) argue that the growth and development of trust from stakeholders in artificial intelligence is essential for market growth, both studies acknowledge that trust is property of the 'relationship' between technologies and the associated institutional, regulatory, and importantly, human, context, not of technology in isolation. The evidence of behaviours is especially supportive in this regard as sources such as the Banking Exchange (2025) data shows that 74.8% of consumers would adopt blockchain-based stablecoins from their established banking institution whereas only 3.6% of consumers would trust the stablecoin from an unregulated provider that operates with no previous trust, this demonstrates that consumers are not treating the technical properties of blockchain as a substitute for the trust within institutions, rather, they are treating them as additional features.

The appropriate framework in conceptual terms is therefore not to substitute technologies but to augment them within settings. Emerging technologies do not replace the foundations of trust, whether they are social or psychological, they convert the traditional mechanisms through which trust is

operationalised which makes it less dependent on the individual reputation of the technology and firm and significantly more dependent on system design, the architecture of transparency and the compliance within regulatory settings. For trust to effectively function in artificial intelligence and blockchain enabled consumer markets, trust must be constructed actively through choices in governance such as bias auditing, requirements for explainability, compliance with KYC (know-your-customer), and regulatory licensing which themselves depend on human institutions.

In this matter, the hugest insight of the literature reviewed is not regarding the technology itself in the slightest, yet it is about the irreducible and irreplaceable social construct and nature of trust. Trust, as previously defined within this discussion, consists of the cognitive and psychological assessments of competence of an institution and the reliability of a firm, accompanied by the emotional willingness to be vulnerable in conditions of uncertainty. Algorithms can therefore improve the assessments of competence; however, they cannot address the conditions of vulnerability and human expectation which make trust a human 'phenomenon'. The emerging technologies which had been examined within this discussion are remarkable tools which assist and aid our everyday operations, however, they remain tools which are in service of social purposes that these tools did not establish nor create, and therefore, without the assistance of governance and pre-existing frameworks which had been present much prior to them, they cannot, by themselves, sustain their operations and gain trust.

Chapter Four: Conclusion

In sum, the question of whether emerging technologies (artificial intelligence, and blockchain systems) can substitute for trust in consumer markets yields to a definitive answer of the fact that they cannot.

Whilst these tools introduce imperatively powerful new mechanisms which construct and maintain confidence within society, tools such as rapid operational efficiency of artificial intelligence in financial sectors and the verifiable audit trails of blockchain, they cannot and do not operate independently of the social, legal, and institutional contexts through which trust is embedded into consumers' daily life.

The research highlighted several key factors regarding the limitations of technology substituting for trust:

Artificial intelligence requires transparency whereby artificial intelligence significantly improves the service delivery of products and fraud detection, yet it requires deliberate transparency and a human-centric interface design to generate "warranted trust" from consumers. Furthermore, critical threats such as algorithmic bias must be managed as a priority through human developers to prevent the erosion of trust and confidence in a societal aspect.

Blockchain has several practical limitations as whilst it is conceptualised as a "trustless" confidence machine that reallocates trust signals into a mathematical code, real world blockchain networks and technologies remain especially vulnerable to centralisation through large players. Moreover, blockchain systems are unable to bypass real-world regulatory and legal compliance, as they require frameworks such as know-your-customer (KYC) to abide by legislative restrictions to function securely in markets.

Consumers demand institutional support and backing as consumer behaviour consistently highlights that technical features alone do not drive the adoption of technology. Industry data demonstrates that whilst consumers are vastly more willing to adopt emerging financial tools such as stablecoins, this is the case when they are endorsed by familiar and regulated banking institutions rather than unregulated providers which highlights how organisational credibility is fundamental to the adoption of technologies.

Ultimately, the integration of such aforementioned technologies into regulated and sensitive markets denotes towards a "hybrid trust model" where trust remains an irreducible social and psychological construct, 'phenomenon', anchored through human expectations, experiences, and willingness to be vulnerable with organisations. Algorithms and decentralised ledgers are able to optimise the assessment

of competence within institutions; however, they are not able to address the emotional conditions of vulnerability. Therefore, artificial intelligence and blockchain systems are tools best utilised as advanced mechanisms that augment, secure, and classify relationships between consumers and regulated firms that they rely upon, and not as replacements for human trust.

Chapter Five: Review

Self-reflection and project evaluation

This section aims to provide a critical reflection on the research processes which had been undertaken for this Extended Project Qualification (EPQ), it reflects and evaluates the challenges faced during several phases such as research and drafting, the methodologies employed to overcome these challenges, and the key lessons learned for future academic research and writing endeavours.

Challenges and overcoming certain obstacles

During initial phases and stages of the project, a significant challenge had been navigating the volume of available literature within this topic. Initially, I had addressed and researched far too many sources which limited my analytical depth in the most critical aspects and areas of this research. Therefore, to resolve this, I had conducted rigorous evaluation and planning to determine which papers and journals had been the most beneficial, subsequently narrowing my focus exclusively to those high-value sources to maintain academic validity and rigour.

Furthermore, through drafting the literature review, structural difficulties had been presented. My initial iterations had contained an excess of analysis within the literature review, which resulted in a 'blended review' that sounded too much like a discussion chapter rather than a foundational review of the sources. The individual sources had not been sufficiently separated which limited my project scope. To rectify this problem, I had paused the drafting process and fundamentally restructured the sections to analyse the categories of the sources. I focused heavily on clarifying the credibility of each source distinguishing between whether they were fact, speculation, and opinion. This had been documented explicitly within the 'validity' column of my research evaluation in appendix four.

Similarly, another ongoing obstacle had been the rapidly evolving nature of the landscape and technology aspect. Because of the sectors constantly changing (particularly artificial intelligence), several of my initial sources had quickly become outdated or unnecessary due to advancements in technological capabilities. I overcame this by continuously tracking the sector through tech journals and sources and periodically reviewing the validity and relevance of my chosen sources, which ensured that my final arguments relied on current and applicable data rather than outdated sources from previous research.

Reflecting on possible changes

If I were provided the opportunity to undertake this project again, there are two primary areas of my methodology which I would prefer to alter to improve the quality and efficiency of the research.

Reducing scope as attempting to cover both artificial intelligence and blockchain systems had made it exceedingly difficult to stay within a sensible word limit and manageable material coverage. In the future, I would avoid this by narrowing my choice of emerging technologies into one single category. This would benefit the research and ensure a much deeper, rather than broader, analytical depth which would allow for a significantly much more focused and comprehensive investigation of the technologies.

Management of time as I had severely underestimated the length of time and the complexity in intellectual terms required to comprehend certain academic papers and peer-reviewed journals during the initial research phase. Whilst I had enjoyed the research process, I struggled with the density of the material. In future projects, I would allocate a significantly larger proportion of the time available exclusively to the reading, and digestion, of the methodologies and sources themselves prior to attempting the drafting phase of the literature review or discussion.

Upon reflecting on the drafting of the discussion chapter, I had realised the critical importance of ensuring that every line of reasoning is explicitly linked back to the central research question of whether emerging technologies substitute for trust. Whilst I had structured the discussion positively into different thematic parts, I had been forced to revise my arguments to ensure they directly addressed whether these technologies could truly substitute for trust, which secured a much stronger and much more focused analytical outcome of the research benefiting the quality of the analysis and the research.

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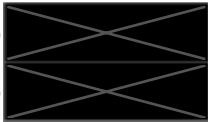
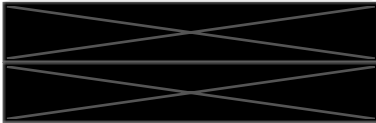
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Appendix One: Proposal Form



P301 - Project Proposal form

Learner Name	Igor Filip	Learner number	
Centre Name		Centre Number	
Teacher Assessor		Date	21/11/2025
Unit	P301		
Proposed project title	Can emerging technologies substitute for trust in consumer markets?		

Section One: Title, objectives, responsibilities

Title or working title of project (in the form of a question, commission or design brief):

Can emerging technologies substitute for trust in consumer markets?

Project objectives (e.g., what is the question you want to answer? What do you want to learn how to do? What do you want to find out?)

For the purpose of this report, emerging technologies largely include, but are not limited to, artificial intelligence, blockchain technology, open banking, and robotic support. Consumer markets refer to financial services such as banking, and regulatory contexts.

Technologies such as blockchain technology are particularly interesting due to their contrasting fundamental trust mechanisms to current financial systems and banking standards which rely on trusted organisations, whereas cryptographic networks are decentralised, extremely transparent and mainly resistant to external tampering by nature.

- To analyse mechanisms and trust factors driven by AI (investigate how artificial intelligence can substitute human 'middlemen' through transparency from development, audit records, and checks)
- To analyse trust in blockchain-based technologies and finance systems (further examine how blockchain technology generates trust through decentralisation, being unaffected by external or political influences and immutability)
- To evaluate how regulatory and ethical implications affect substitution of trust in sensitive markets (assess how problems such as fairness, privacy, accountability, affect the introduction of artificial intelligence into trust markets, which furthers the analysis of transparency being essential in artificial intelligence maintaining trust in consumers and entirety of markets)
- Assess how everyday consumers would put confidence into technology-driven services and adapt to them (further study consumer habits and willingness to adapt to new technologies, trusting them with financial records and details, recognising bias)
- Explore implications of integrating emerging technologies into established sectors and

markets such as finance (consider regulatory pressures, decentralised finance adoption by governments, historical landscape adoptions in consumer services)

Section Two: Reasons for choosing this project

Reasons for choosing the project (e.g. links to other subjects you are studying, personal interest, future plans, knowledge/skills you want to improve, why the topic is important):

- Academic relevance to A-Level studies (this project and topic links directly with my subjects and combines *Business* and *Economics* by examining the impact on markets, consumer trust and satisfaction, financial transactions and operations with regulatory investigations alongside *Computer Science* through artificial intelligence algorithms, cryptographic networks, and similar technologies)
- Personal relation and interest to topic (keen interest in financial-technology sector with intention to further pursue studies and career in markets and similar fields, exploring trust in artificial intelligence fits my passion in the financial market alongside aspects of regulatory pressures, thus, this project allows me to delve into the adaptive area aligning with my university aspirations)
- Development of academic and soft skills (the extended project qualification will develop vital and critical academic skills such as drafting, research, review and evaluating sources – such as academic journals and books – whilst strengthening my analytical abilities and independent research habits, essential for further education which includes managing project timelines)

The topic of trust and consumer markets is vital to the future as the everchanging landscape of implementation of emerging technologies into the population's daily lives remains unknown, and thus this research could provide insight into how companies could replace dated systems with unbiased technologies that are built on transparency and trust for consumers, markets such as financial and regulatory services and other sorts of companies.

Section Three: Activities and timescales

Activities to be carried out during the project (e.g., research, analysis, writing, preparing for the presentation, etc)	How long this will take
Conduct literature review by reviewing academic journals online, searching reputable news sources alongside white papers for content based on artificial intelligence trust, consumer adaptation and confidence (keeping record on a bibliography document for efficient referencing) • Completed annotated bibliography of sources	December 15
Plan and structure a report, drafting an outline of the required sections such as different technologies, their foundations and origin, theories of trust within markets, analysis of feasibility, ethics, and conclusions Beginning to write initial sections (background on trust in financial markets and how regulators assist with this) • Finalised research and completed project outline with important sources gathered with detailed structure	December 30

Write a full draft and expand the analysis on artificial intelligence integration and blockchain technology in markets, integrating specific case studies and research whilst discussing the ethical, societal and psychological implications • Written first draft with sources and research	January 29
Conduct a draft review by meeting with the EPQ supervisor to analyse content, discuss the clarity, structure and strength of the arguments across the project while noting required refinements and specific areas to improve upon • Reviewed first draft and identified areas for further exploration and improved the argument structure	January 30
Redraft the report by including refinements and improved upon areas, enhancing the structure and ensuring that all arguments are supported by academic and industry-based evidence • Rewritten selected sections, expanding argument analysis and organising paragraphs for clarity	February 6
Write the final report introduction and conclusion ensuring the introduction encompasses the entire argument, context and structure of the report whilst the conclusion answers the question backed by evidence and a well-reasoned judgement • Completed final introduction and conclusion aligned with the argument and judgement within the article	February 10
Complete project evaluation and analysis by reflecting on utilised skills, strengths and limitations of the research project, reviewing encountered challenges and explaining research development, organisation of project and analysis of the EPQ • Produced a critical and detailed evaluation on research decisions and the method utilised for the development	February 17
Make final edits the research project by proof-reading the entirety of the report, ensuring an academic tone throughout the project, precise Economic, Business and Computer Science terminology, logical structure, improvement of clarity and tone • Completed final proofreading of project whilst implementing any necessary accuracy adjustments	February 22
Finalise all references and appendices by ensuring the bibliography is accurate, confirming correct style of reference formatting throughout and compiling all materials necessary such as statistics, graphs, research notes, data tables • Completed final bibliography and appendices	February 29
Preparing all presentation assets by creating clear and concise slides without additional text or information summarising the research question, methodology utilised throughout the project, key findings, and project conclusion • Completed presentation including all research materials and summaries for review	March 15

Submitting the completed project with materials, assets, supporting evidence with any information necessary	April
Milestone one: Target date (set by tutor-assessor): Milestone two: Target date (set by tutor-assessor):	

Section Four: Resources
What resources will you need for your research, write up and presentation (eg libraries, books, journals, equipment) Academic journals • Peer-reviewed studies on analysing artificial intelligence in regulatory contexts, alongside other vital consumer markets, and adaptation of blockchain technology into main-stream banking companies (Lloyds, HSBC, JPMorgan, Santander, Goldman Sachs) • Technological, finance and management journals and blogs which reflect management and consumer market trust and frameworks of new technologies Industry reports, white papers • Publications from consultancy firms and technological companies such as Deloitte, PwC, McKinsey, Apple, Microsoft, Google, KPMG which outline central bank foundations, and regulatory reports on <i>FinTech</i> and use of artificial intelligence. • Research from artificial intelligence companies and <i>FinTech</i> organisations such as Monzo, OpenAI, Revolut, Stripe, Affirm and payment networks, Visa, Mastercard on their stances regarding emerging technologies and implementation timelines Examples of resources • The Role of Artificial Intelligence in Banking for Leveraging Customer Experience • Human Trust in Artificial Intelligence: Review of Empirical Research • Is artificial intelligence (AI) research biased and conceptually vague? A systematic review of research on bias and discrimination in the context of using AI in human resource management • A Review of Trust in Artificial Intelligence: Challenges, Vulnerabilities and Future Directions • Integration of Artificial Intelligence in Human Resource These resources are not exhaustive of my research, however, provide insight into my investigation of the impact of emerging technologies into financial markets, and employers behaviour and hiring patterns, which coincides with background checks, and similar actions. What areas of research will you cover? My research aims to be broken up into five different questions which will cover a large aspect of emerging technology and its integration into regulated consumer markets.

- Can humans trust artificial intelligence with their funds?
- How biased is artificial intelligence in its decision-making process?
- Are regulators open to adapting non-governed blockchain technology?
- How have financial markets started integrating emerging technology?
- Does emerging technology pose a risk to regulated financial sectors?

These questions will provide a large overview of how emerging technologies, at present, and in the future, will be impacting consumer markets such as the financial sector. Artificial intelligence is driving a large volume of other companies and sectors into making difficult changes to advance, and stay as market leaders, and thus, the research at hand will aim to answer whether emerging technologies (*such as artificial intelligence*) will affect financial markets which have a specific psychological link to consumers as they hold their funds.

Comments and agreement from tutor-assessor

Comments (optional):

I confirm that the project is appropriate.

Agreed: _____ **(name)** _____ **(date)**

Comments and agreement from proposal checker

Comments (optional):

I confirm that the project is appropriate.

Agreed: _____ **(name)** _____ **(date)**

Appendix Two: Activity Log

Date:	Comments:
17 November	Initial research for EPQ proposal form, including content available online with viable sources, and further research available.
21 November	Submitted EPQ proposal form with realistic deadlines and timelines, further additional research relating to topic, and additional details regarding why this topic interests myself.
24 November	Attended EPQ Session 5, led by [REDACTED] who had provided vital recommendations on resource research for EPQ content and academic journals.
25 November	Utilised principles advised by [REDACTED] to research articles relating to my area of investigation on JSTOR, proving useful.
27 November	Filtered chosen articles to separate documents based on usefulness and ability to be used in my literature review.
1 December	Attended EPQ Session 6, led by [REDACTED] who had provided an extremely useful lecture on academic reading and methods for concentration, including skimming and research.
3 December	Conducted independent reading and review of sources such as Glikson and Woolley (2020) and Jacovi et al. (2020) to understand the foundational frameworks for trust within artificial intelligence.
5 December	Reviewed De Filippi, Mannan and Reijers (2020) on blockchain as confidence machines, noting the distinction and change between trust and confidence coinciding with the potential central point.
8 December	Attended EPQ Session 7, led by [REDACTED] who had provided good practices supporting my abilities to research content effectively and prepare my literature review for submission.

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13 December	Utilised Google Scholar to find research papers surrounding central banking and trust within banking to gather context into why consumers trust financial institutions without proper research.
15 December	Identified paper written by researchers from the University of Queensland which directly corresponds to my research, linking how trust in artificial intelligence has challenges and requirements.
28 December	Researched regulatory frameworks which targeted fields such as artificial intelligence, through this, located acts such as the European Union's AI Act and its implications on consumers and their trust to build the governance section.
30 December	Began drafting the literature review topic by planning the sections and authors that would be discussed alongside their credentials and information which they provide, this was completed roughly.
5 January	Attended EPQ Session 8, led by [REDACTED] who had provided tips regarding referencing, functionalities in Microsoft Word on how to easily and correctly reference sources and insight into literature reviews and the mark scheme of the EPQ section.
8 January	Conducted a dive into consumer statistics and their behaviour regarding blockchain, found a report through the Banking Exchange (2025) which had discussed adoption of stablecoins which illustrated the necessity of banks.
12 January	Attended EPQ Session 9, led by [REDACTED] who had provided advice on how to correctly paraphrase sources, quote from authors and individuals and summarise text without plagiarising, content provided by University of Leeds' research.
17 January	Gathered all my research sources (24 academic papers and articles) and imported them into an academic agent, Anara, to provide a clear and consistent library of my sources and notes.
19 January	Attended EPQ Session 10, led by [REDACTED] who had provided valuable insight into how to effectively plan EPQ drafting, writing consistently and

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	academically, and taking breaks to ensure that content is consistently on topic and remains academic.
26 January	Attended EPQ Session 11, led by [REDACTED] who had presented what a discussion <i>is</i> and what it is <i>used for</i> alongside the necessary structure for an effective discussion section, similarly, he had provided general advice on the pro forma and useful habits.
9 February	Attended EPQ Session 12, led by [REDACTED] who had provided detail and insight into the discussion section of the EPQ, alongside good practices which should be exhibited by students.
12 February	Received feedback from my supervisor surrounding my Literature Review and had been told tweaks surrounding reliability of source analysis alongside format of referencing are necessary to be made.
14 February	Drafted initial notes on the review section, documenting challenges and adjustments necessary, where I had overcome several problematic phases.
16 February	Revised literature view following supervisor feedback received earlier, adjusted the reliability of sources and standardised referencing Harvard format throughout the document.
23 February	Began to plan the structure of the discussion section with thematic outlines with artificial intelligence in financial services, blockchain as a confidence mechanism, consumer behaviour and the ethical perspective of governance within the discussion as a whole.
2 March	Attended final EPQ session, led by [REDACTED] pertaining to the art of presenting and related to AO4. This session had provided view into how to present your EPQ project and format your presentation which provided useful to be able to understand what examiners and the mark scheme looks for to ensure maximisation of marks.

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5 March	Began to draft the discussion section of the EPQ which starts with the artificial intelligence and financial services section, aiming to cross reference literature review sources to ensure consistency.
16 March	Completed the draft of blockchain and consumer behaviour sections of the discussion by reviewing the mark scheme to ensure there was a sufficient level of critical engagement within the points.
22 March	Completed a comprehensive review of my bibliographic sources, the bibliography in the document itself, and my in-line sources to ensure that all of the citations are up to standard and match the Anara documentation log.
28 March	Completed a rough draft of the discussion chapter including points on the ethical and regulatory frameworks section and closing arguments, began reviewing bibliography for completeness.
30 March	Reviewed the entire discussion with critical thinking to look at which sections require adaptation, reviewed research sources to ensure content was up to date, altered certain sections such as regulatory frameworks for accuracy.
6 April	Began to make changes to the document by checking citations against the bibliography and correcting inconsistencies.
11 April	Completed a near-final draft of the entire discussion and submitted it alongside other content to my supervisor for brief review and verification of quality.
13 April	Finalised the formatting of my appendix sections, ensuring that my proposal form has been completed and can be easily accessed, and that my research evaluation tables are properly addressed and referenced in line with my data.
18 April	Drafted the final remaining sections, namely the abstract and conclusion where I synthesised the core findings from my discussion chapters and review to definitively answer the research question, highlighting the hybrid trust model.
27 April	Attended final EPQ presentation session, led by [REDACTED] relating to the deadlines and administration tasks required prior to the submission of the research project and proforma [REDACTED] emphasised the importance of

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	completing forms within a timely manner and the appropriate formatting of the research project.
28 April	Met with my supervisor to discuss the progress and whether there are any tasks that I require support within the upcoming weeks, coming to an end. Finalised any outstanding work that had to be completed prior to drafting the presentation.
10 May	Began designing vital assets for the delivery of my EPQ presentation such as visual aids and inspiration from external sources and previous presentations. Focusing on creating clear and concise slides which present my research without overwhelming the audience with pieces of information.
14 May	Finalised a rough draft of my EPQ presentation and started creating and developing speaker notes which ensure high quality delivery whilst presenting a high degree of my knowledge of the subject. Consulted my supervisor regarding my presentation to review whether there need to be any changes made.
20 May	Finalised my rough speaker notes which aimed to display a high degree of knowledge with a positive delivery of the subject matter. Added an additional slide recommended by my supervisor of definitions discussed in the presentation to ensure that the audience was aware of the foundations and baseline.
25 May	Collated all necessary documents and my presentation to include on my pro forma, attaching information surrounding the process and ensuring my files such as the presentation, proposal page and additional information is formatted.
28 May	Conducted a timed rehearsal of my presentation to ensure that my content comfortably fits within the EPQ presentation time constraints. Adjusted my speaker notes to improve pacing and ensure each section is covered.
3 June	Presented my findings on whether emerging technologies can substitute for consumer trust to my EPQ cohort and supervisor(s), being questioned surrounding the possible future expansion of artificial intelligence and impacts of trust on elderly consumers.

Appendix Three: Question Design

Chosen subject: Impact on financial and consumer markets

Chosen focus/controversy: Emerging technologies (artificial intelligence, blockchain networks)

Your questions should prompt a yes/no answer.

Date:	Question:
5 November	Should artificial intelligence be trusted with stock trading and consumer assets?
10 November	Is trust important in public financial institutions and consumer markets?
15 November	Is a financial institution's public facing reputation important for how consumers protect their assets?
16 November	Can blockchain financial systems replace our modern use of currency and international transfers?
17 November	Can artificial intelligence control banks and modern financial institutions?
19 November	To what extent can emerging technologies (such as artificial intelligence and blockchain systems) substitute for trust in consumer markets?
20 November	Can emerging technologies (such as artificial intelligence and blockchain systems) substitute for trust in consumer markets?
1 December	Can emerging technologies substitute for trust in consumer markets?

Appendix Four: Research Evaluation

<i>Title</i>	<i>Author(s)</i>	<i>Type of source</i>	<i>Additional comments</i>	<i>Validity</i>
Artificial Intelligence and Blockchain Integration in Business: Trends from a Bibliometric-Content Analysis	Satish Kumar, Weng Marc Lim, Uthayasankar Sivarajah, Jaspreet Kaur	Peer-reviewed literature review with factual and analytical characteristics	High suitability for “discussion” on the convergence of technology, provenance includes lead author from MNIT, alongside highly cited professor at Swinburne University. Published in a top-tier management journal from 2022, systematic PRISMA methodology minimises bias in the review and remains a foundational 2020 review of paradigm.	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load-bearing evidence for empirical claims within the research.
The key role of design and transparency in enhancing trust in	Iris Glassberg, Yael Brender Ilan, Moti Zwilling	Academic journal article which is speculative and forward-looking	Essential for the discussion of UX/UI drivers for discussing cognitive	This research is factual with aspects of analysis and

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AI-powered digital agents			trust, high suitability. Provenance includes researchers from Ariel University and Academic College, expert in digital marketing and e-commerce. Most current source available, zero risk of outdatedness and may exhibit minor “optimism bias”.	therefore the bias is low to moderate which means that it may pose some limitations, it acts as useful evidence for the discussion.
Legal Challenges in Blockchain-Based Smart Contracts	Michael Martinez, Ariana Hill	Legal review, concept paper with fact-based speculation and analysis	Strong suitability for framing regulatory hurdles in discussion. Provenance is that authors are legal specialists in fintech and smart contract law, high quality which identifies the critical “moving target” nature of compliance globally. Focused on legal theory, interpreted	This research is theoretical and conceptual with moderate bias and therefore can only be utilised as supplementary evidence for illustration, not to be solely relied upon.

			through lens of European consumer protection laws.	
Conversational robo advisors as surrogates of trust: onboarding experience, firm perception, and consumer financial decision making	Christian Hildebrand, Anouk Bergner	Peer-reviewed empirical study which analyses factual and behavioural trust in consumers	High standard and suitability for the discussion of psychological affective trust, provenance is the University of St. Gallen (CH) – ranked #1 in Europe for Business and Management. Hildebrand is a qualified professor at the Institute of Marketing. Quality is impressively high with the inclusion of four experimental studies with high internal validity. Published in 2020, and may be outdated as artificial intelligence changes, however,	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load-bearing evidence for empirical claims within the research.

			aspects of psychological responses to anthropomorphism are constant and remain useful in discussion.	
Blockchain Adoption for Provenance and Traceability in the Retail Food Supply Chain	Nishant Kumar, Kamal Upreti, Divya Mohan	Peer-reviewed journal article with factual and applied characteristics	High suitability for discussion on technological substitution of trust through transparency mechanisms. Authors are affiliated with engineering, supply chain research institutions providing strong provenance. Published in a peer-reviewed journal which provides applied, real-world implementation, in turn strengthening reliability.	This research is factual with aspects of analysis and therefore the bias is low to moderate which means that it may pose some limitations, it acts as useful evidence for the discussion.

Supply chain traceability using blockchain	Pedro Azevedo, Jorge Gomes, Mário Romão	Peer-reviewed design science paper with factual and architectural characteristics	High suitability and critical for how code and systems replace brand reputation in supply chain management. Provenance includes researchers from ISEG and other leading universities. Industry ties are reported to TB.LX and the quality includes being published in Operations Management Research with an objective design-science approach which ensures high reliability, and technologies such as Ethereum for technical benchmarks.	This research is factual with analysis on contexts and with low to moderate bias which supports it as strong evidence for load-bearing claims, however, it requires caution.
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Consumers Are Using AI But They Still Don't Trust It	Audrey Chee-Read, Sam Higgins, Enza Iannopollo, Chiara Bragato	Industry report published by Forrester, opinion and behavioural survey	Decent suitability for benchmarks, however, separate from academic peer-review, provenance includes senior analysts from a leading advisory firm, current posting and contains “market sentiment bias” aimed at corporate strategy rather than scientific application.	This report is mixed with speculation and factual information with moderate bias, and therefore, requires investigation prior to usage within the discussion.
Cisco Survey Shows Strong Relationship Between Privacy Awareness and Trust in AI	Cisco	Industry survey published by Cisco, factual and statistical	Useful for consumer-level data analysis on privacy and trust, reinforcing the transparency results in trust relationship. Provenance is corporate rather than academic, Cisco has interest in trust narratives surrounding	This research is factual with analysis on contexts, however, with high bias which means that claims must be verified independently to ensure accuracy.

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			technology, thus including potential bias so source is best utilised as supporting evidence data.	
Stablecoin Adoption: Consumers More Likely to Trust Traditional-Fi Banks	Banking Exchange	Industry white paper with factual and consumer data	Crucial for hybrid trust argument, provenance is Fidelity National Information Services within Fortune 500. Current yet represents a banking-centric perspective, may downplay the decentralised alternatives to emphasise the role of traditional intermediaries.	This industry paper is mixed with speculation and analysis on contexts, with high bias which supports it as questionable industry evidence, however, requires high caution.
Governments are turning to blockchain for public good	Nicol Turner Lee, Judy Wang	Policy analysis by Brookings with speculative and observational views	High-quality policy analysis from globally respected individuals. Brookings has strong institutional	This research is of mixed nature with moderate bias and should be interpreted

			credibility and authors specialise in technology governance, alongside digital policy. Source is suitable for discussion of institutional and regulatory trust, highlighting government attempts to embed technologies into frameworks.	and utilised with caution for selective purposes whilst being supported with stronger peer-reviewed claims.
Blockchain Analysis of the Bitcoin Market	Igor Makarov, Antoinette Schoar	NBER working paper utilising factual and data- driven sources	High suitability for discussion on the point of decentralisation with provenance from LSE and MIT global research institution researchers, with exceptionally high quality, utilising a database linking addresses to	This research is factual with aspects of analysis and therefore the bias is low to moderate which means that it may pose some limitations, it acts as useful evidence for

			entities. Published in 2022 and the data remains a benchmark for market concentration though addresses and technologies may have evolved.	the discussion, however, is not peer-reviewed, therefore requires supporting evidence research.
Blockchain as a Confidence Machine: The Problem of Trust and Challenges of Governance	Primavera De Filippi, Morshed Mannan, Wessel Reijers	Peer-reviewed journal article with theoretical and philosophical views	Foundational theoretical framework for literature review and perspectives on trust within blockchain, provenance is a permanent researcher at CNRS and Faculty Associate at Harvard, Mannan operates within the European University Institute. Published in Technology in Society. Seminal and current research.	This research is conceptual and theoretical with low bias which means that it can be utilised for definitions and frameworks, rather than empirical proof.

The Role of Artificial Intelligence in Banking for Leveraging Customer Experience	Chandrima Bhattacharya, Manish Sinha	Peer-reviewed journal article (AABFJ) with factual and empirical analysis and views	Strong for discussion of operational efficiency, with provenance including a top-tier private university for management research. Published in Australasian Accounting, Business and Finance Journal. Focused on the Indian market and provides specific metrics which may not be fully transferrable to a global or European perspective.	This research is primarily factual and with moderate bias which supports it as strong evidence for load-bearing claims, however, requires support and evidence as it is questionable.
Systematic Literature Review on Blockchain Governance	Yue Liu, Qinghua Lu, Liming Zhu, Hye-Young Paik, Mark Staples	Peer-reviewed systematic literature review with factual and integrative sources	High-quality peer-reviewed systematic review from established software engineering, and governance, researchers. Strong in terms of	This research is of mixed nature with moderate bias and should be interpreted and utilised with caution

			identifying frameworks related to governance and blockchain ecosystems are reliant on decision-making processes.	for selective purposes whilst being supported with stronger peer-reviewed claims.
Blockchain and Artificial Intelligence for Network Security	Diogo Menezes Ferrazani Mattos, Francine Krief, Sandra Julieta Rueda	Peer-reviewed empirical paper with factual and a focus on security data	Peer-reviewed research paper with technology focus examining integration of technologies into cybersecurity, published in Annals of Telecommunications — a reputable peer-reviewed engineering journal. Strong empirical focus on network-level challenges of combined artificial intelligence and blockchain systems provides insights into how reliability	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load-bearing evidence for empirical claims within the research.

			supports trust mechanisms.	
Blockchain Technology Research and Applications: A Literature Review and Future Trends	Min An, Qiyuan Fan ¹ , Hao Yu, Bo An, Nannan Wu, Haiyang Zhao, Xinhao Wan, Jiaxuan Li, Rui Wang, Jingyu Zhen, Qinyan Zou, Bin Zhao	Systematic literature review with factual basis and reviewing data	Valuable broad review with extremely strong research provenance, comprehensive systematic literature review which consolidates blockchain research across diverse application. The multidisciplinary author team includes established scholars in blockchain engineering, providing broad coverage and relevance. Contributions are descriptive and foundational, utilised best to contextualise the	This research is primarily factual and with low bias which supports it as strong evidence for load-bearing claims.

			capabilities of technology and the limitations of it.	
Measuring the Perceived Benefits of Implementing Blockchain Technology in the Banking Sector	Poonam Garg, Bhumika Gupta, Ajay Kumar Chauhan, Uthayasankar Sivarajah, Shivam Gupta, Sachin Modgil	Peer-reviewed empirical paper with factual and statistic information	Reliable evidence for transparency and “disintermediation”. Garg is an academic at a respected Indian institute and has been published in the Technological Forecasting and Social Change. High quality uses CFA for validation. Published in 2021 with very strong banking adoption section of literature review.	This research is primarily factual with low bias which means that it can be utilised for load-bearing evidence for factual and empirical claims with positive intentions.
Revolutionising Banking Security: Integrating Artificial Intelligence, Blockchain, and Business Intelligence for	Oluwatoyin Ajoke Farayola	Concept paper/technical report with speculative opinions that are forward-looking	Essential suitability for argument surrounding “Unified Security Infrastructure” with provenance including author being a computer laboratory	This research is primarily speculative with moderate bias and therefore should be utilised for speculative

Enhanced Cybersecurity			researcher at UT Dallas and MSc in FinTech and Analysis, proposes a specific roadmap for proactive banking. Interpreted through cybersecurity perspective with current research views.	and forward-facing research such as future possibilities, rather than current reality.
Role of Artificial Intelligence in Banking and Finance	Rita Jain	Peer-reviewed journal article, factual review	Useful for listing specific applications such as credit scoring and fraud, provenance includes respected college in Jaipur. Published in Journal of Management and Science in 2023, lower-impact factor journal which has to be interpreted with slight caution.	This research is factual with aspects of analysis and therefore the bias is low to moderate which means that it may pose some limitations, it acts as useful evidence for the discussion, however, due to context it

				should be reviewed.
Re-Thinking Data Strategy and Integration for Artificial Intelligence: Concepts, Opportunities, and Challenges	Abdulaziz Aldoseri, Khalifa N. Al-Khalifa, Abdel Magid Hamouda	Academic journal article with factual and technical data and views	High suitability for discussion surrounding data and artificial intelligence trust mechanisms, authors originate from the Engineering Management Program at Qatar University, with expertise in data strategy and artificial intelligence challenges provides high reliability to discussion and how data affects trustworthiness. Makes sources particularly relevant when linking data governance to consumer perceptions of trustworthy	This research is factual with analysis on contexts and with low bias which supports it as strong evidence for load-bearing claims.

			intelligence systems.	
A Comprehensive Review of Blockchain Technology: Underlying Principles, Historical Background, and Future Challenges	Gautami Tripathi, Mohd Abdul Ahad, Gabriella Casalino	Peer-reviewed journal article with a factual and integrative analysis	Well-rounded overview with high quality, authors include scholars with strong backgrounds in Computer Science and Engineering, published in a peer-reviewed journal, article reliably summarises blockchain's core mechanisms, development and hypothesised future issues. Analysis of technical principles and challenges add suitability for establishing foundation prior to evaluation of trust implications.	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load-bearing evidence for empirical claims within the research.
Formalising Trust in Artificial	Alon Jacovi, Ana Marasović, Tim	Conference proceedings	High-quality source with strong	This research is conceptual

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Intelligence: Prerequisites, Causes, and Goals of Human Trust in AI	Miller, Yoav Goldberg	(FAccT) with a theoretical and formalisation basis	provenance, presented at ACM FAccT, respected conference on accountability, transparency in artificial intelligence, authorised by leading researchers in surrounding ethical policies and interaction between human-computer. Formalises trust concepts and exposes vagueness in trust research, valuable for ethics analysis and framing of why technology cannot simply replace trust.	with theoretical aspects with low bias and therefore serves as a very strong conceptual framework which can be utilised to encapsulate future options and proceedings within the discussion.
Artificial Intelligence and Bias: Challenges, Implications, and Remedies	Alfonso Min	Non-peer- reviewed report with an educational and critical	Low scientific regard, usable for community impact and human right perspectives. Provenance includes	This research is mixed with speculation and research with high bias and therefore

		perspective analysis	the author who is a Principal Assistant Secretary at the Human Rights Commission of MY. Caution required regarding accuracy due to lack of strict peer review in journal, focuses on marginalised and impacted communities rather than market efficiency.	should be utilised with high caution, potentially as a stakeholder viewpoint corroborated with independent academic evidence.
Human Trust in Artificial Intelligence: A Review of Empirical Research	Ella Glikson, Anita Williams Woolley	Peer-reviewed literature review with a factual and integrative analysis	Fundamental integrative analysis with focus on behaviour, peer- reviewed literature review by established psychological researchers. Synthesis of empirical evidence displaying how users form trust in artificial	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load- bearing evidence for empirical

			intelligence. Academic provenance and systematic nature make it highly reliable for consumer behaviour, and how trust cannot be replaced by performance alone.	claims within the research.
Understanding Trust	Paola Sapienza, Anna Toldra- Simats, Luigi Zingales	Academic journal article based on factual social science research	Crucial foundational source on societal trust authorised by economists with standing reputations in behavioural research, article provides reliable grounding for what trust fundamentally is in economic interactions.	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load- bearing evidence for empirical claims within the research.
Is Artificial Intelligence Research Biased?	Ivan Kekez, Lode Lauwaert, Nina Begičević Redep	Systematic literature review based on societal	Critical suitability for ethical paradoxes section of	This research is primarily factual with

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Conceptual Validation in the Context of Using AI in Human Resource Management		technology with a factual and critical perspective	discussion with researchers from KU Leuven, Belgium, and University of Zagreb. Lauwaert is furthermore a philosopher specialising in technological ethics, quality is high as published in Technology in Society meaning it is exceptionally current and identifies “conceptual vagueness” and bias within the wider research community itself, providing valuable and accurate as it self- moderates the research performed.	low bias which proves as strong evidence and it can be utilised as load- bearing evidence for empirical claims within the research.
Artificial Intelligence, Bias, and Decision-	Sankita Sigdel, Anne Powell	Academic review with a factual, review analysis	Useful review on bias impacts with artificial intelligence	This research is factual with aspects of

Making: A Review of Major Findings			trust, factual analysis, source provides relevant critical evidence for ethical sections. Journal impact is moderate; topic intersects with issues of fairness and legitimacy which impacts whether consumers feel justified in trusting artificial intelligence systems.	analysis and therefore the bias is moderate which means that it may pose some limitations and should be solely utilised for supporting evidence.
A Review of Trust in Artificial Intelligence: Challenges and Vulnerabilities	Steven Lockey, Nicole Gillespie, Daniel Holm, Ida Asadi Someh	Peer-reviewed literature review with a factual and integrative analysis	Crucial for the discussion of “social licenses” and regulation, with provenance including the University of Queensland and KPMG. Gillespie is the KPMG Chair in “Organizational Trust” with high	This research is factual with aspects of analysis and therefore the bias is low, however, due to the nature of the research not being peer-reviewed, the research

			quality, synthesising academic and wider industry concerns with a high provenance, lack of outdated research. Gillespie is a leading voice on institutional trust.	should be used as supplementary research or if relevant, corroborated with independent academic sources.
Impact of Artificial Intelligence on the Future of Banking	Mbonigaba Celestin, N. Vanitha	Academic journal article with empirical findings on artificial intelligence	Strong contribution to artificial intelligence trust in financial services, authored by researchers in banking technology and finance, published in a reputable peer-reviewed journal. Utilises real banking data to evaluate artificial intelligence impacts on operational efficiency and trust perspectives. Highly	This research is factual with analysis on contexts and with moderate bias which supports it as strong evidence for load-bearing claims, however, requires evidence to support claims to avoid biased information.

			relevant for discussion surrounding how trust in technology influences regulated markets with data enhancing reliability.	
Blockchain Security Attacks, Challenges, and Solutions for the Future Distributed IoT Network	Saurabh Singh, A. S. M. Sanwar Hosen, Byungun Yoon	Peer-reviewed technical article with factual and analytical content	Relevant technical analysis on security and trust foundations, provenance includes affiliated authors with established institutions in engineering and computer science, article is published in a peer-reviewed technical journal. Systematically analyses vulnerabilities in blockchain and countermeasures in IoT, speaking to the reliability and integrity of trust.	This research is primarily factual with low bias which proves as strong evidence and it can be utilised as load-bearing evidence for empirical claims within the research.

			Credible source led by detailed and data-driven exploration.	
Blockchain governance and governance via blockchain: decentralized utopia or centralized dystopia?	Firat Cengiz	Peer-reviewed policy/journal article with conceptual and critical analysis	Critical source on governance and trust, authorised by a political scientist specialising in digital governance at the University of Liverpool and published in a peer-reviewed policy journal. Article debates whether decentralised systems decentralise authority or reconfigure how power is structured, suitable for ethical trust discussion. Conceptual depth and critical perspective led by historical data.	This research is conceptual and not factual with low to moderate bias which requires for it to be vetted and investigated prior to usage within broader contexts.

Artificial intelligence in Finance: a comprehensive review through bibliometric and content analysis	Salman Bahoo, Marco Cucculelli, Xhoana Goga, Jasmine Mondolo	Academic journal with strong factual and integrative analysis	Strong review with broad coverage and high academic quality, published in peer-reviewed finance or information systems journal. Authors include recognised researchers in financial technology, paper combines <i>quantitative bibliometric methods</i> with content analysis to develop landscape of artificial intelligence research in finance, providing conceptual insight for discussions of how artificial intelligence is applied across the sector.	This research is factual with analysis on contexts and with low bias which supports it as strong evidence for load-bearing claims.
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Appendix Five: GANTT Chart

The screenshot below contains the original timeline represented through a GANTT chart, which suggested that the entire project would be completed by the end of April and several stages of iteration.

			Gantt Timeline																											
#	Task	Description	Nov 2025				Dec 2025				Jan 2026				Feb 2026				Mar 2026				Apr 2026							
1	Literature Review	Research academic journals, news sources, and white papers on AI and blockchain trust.																												
2	Project Planning	Draft report structure, define sections, and establish core research questions.																												
3	First Draft	Expand analysis on market integration and discuss ethical and societal implications.																												
4	Supervisor Review	Meet with supervisor to evaluate argument strength and identify areas for refinement.																												
5	Redrafting	Incorporate supervisor feedback and enhance argument support with industry evidence.																												
6	Final Writing	Complete the introduction and conclusion to align with evidence-based judgements.																												
7	Project Evaluation	Critically reflect on research decisions, project management, and skills development.																												
8	Final Editing	Conduct full proofreading to ensure academic tone and technical accuracy.																												
9	References & Appendices	Finalise bibliography formatting and compile supporting data, graphs, and notes.																												
10	Presentation Prep	Develop presentation assets and summaries of methodology and key findings.																												
11	Final Submission	Submit the complete project portfolio with all supporting evidence.																												

This GANTT chart had been developed for Excel hence the cell arrangement and separation in some parts, it had severed as a useful timeline recommendation for my work during busy periods of time. Although it had not been accurate to the specific stage due to underestimating the thoroughness and time spent on certain sections, it had proved beneficial when evaluating what needs to be completed after a section.

This GANTT chart accommodates for the break and revision schedule in the March to April timeline.

Appendix Six: Presentation

Can emerging technologies substitute for trust in consumer markets?

Igor Filip, 9558

Artificial intelligence

Primary type of emerging technology, algorithm replacing human intelligence which can reason, solve problems and recognise patterns through training.

Blockchain technologies

Second category of emerging technology, refers to transactions made over a secure peer-to-peer network without centralised government power.

Consumer markets

System in which goods and services are exchanged with individual end-users, shaped by repeated transactions, confidence from consumers, and operating platforms.

Choice of topic and discipline

Personal connection

Exciting opportunity to link several disciplines and subjects such as Computer Science, Economics, Business, and Psychology which I had studied at varying levels of education.

Future study opportunities

At university, I would like to learn more about how technology impacts our modern world, and this was a strong introduction.

Critical, innovative ideas

Emerging technologies are a part of our society that constantly evolve, understanding the full scope and potential of this matter has been something that inspired me thoroughly.

Initial aims and approaches

Core objectives

Aimed to research and investigate whether the frameworks of emerging technologies possess the integrity structurally to substitute for psychological and social functions.

Research strategy

Utilised databases of academic nature to develop a strict reading list of 24 peer-reviewed journals which prioritise empirical data over speculation in the industry to ensure academic validity.

Project approach

Maintained control over the project through the activity log and utilised external resources, platforms such as Anara and similar content libraries to categorise and organise data points, making it simpler.

Research journey and sources of information

Source provenance

Targeted academic databases (JSTOR, Google Scholar, ResearchGate) alongside Berkhamsted library services, whilst prioritising leading publishers (i.e., Elsevier, Springer, and Oxford University Press) for resources.

Criteria for selection

Filtered initial research resources to a highly relevant and core paper list whilst applying parameters to ensure recent relevance.

Ensuring high credibility

For **facts**, utilised load-bearing claims from empirical data. For **speculation** and **opinion**, reviewed industry surveys to gauge market views.



Methodology of research

Literature based approach

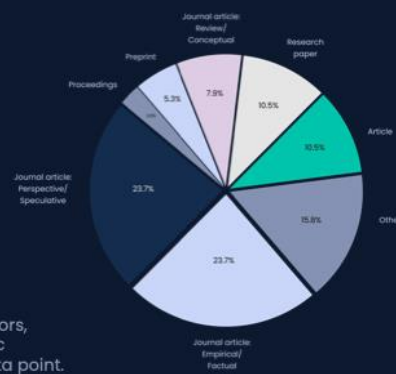
Conducted vast amounts of qualitative research which focused on literature, lectures, and systematic reviews, curating a focused reading list of frameworks.

Prioritisation of provenance

Ranked peer-reviewed journals, published articles/books and databases much more highly to access validity.

Background checks

Implemented background checks on professors, authors, and experts to ensure true academic authority, systematically evaluating each data point.



Key arguments within Artificial Intelligence

Developing warranted trust

Evidence suggests that artificial intelligence drastically reduces practical aspects and operational speeds, and costs, up to 45% less.

This leap in operational efficiency and fraud detection, indirectly, strengthens a rational, evidence-bound "warranted" trust amongst groups of consumers.

Threats of a "Black Box"

Algorithmic bias and hidden architectures to base decisions off poses significant threats to consumers and their confidence.

If artificial intelligence operates as a non transparent "black box", it violates the rights of consumers, shatters trust, proving technology only works if governed by humans.

Key arguments within Blockchain

Promise of being "Trustless"

Blockchain technologies claim that the foundations create a "trustless" mathematical system that defies modern requirements.

The argument relies on the idea that cryptographic evidence and decentralised ledgers eliminate the requirement to place faith into central banking authorities.

Reality of centralisation

Research had uncovered that true decentralisation is largely pure theoretical speculation.

Evidence highlights how networks are highly saturated and centralised amongst wealthy mining pools causing Blockchain to simply reallocate trust to unregulated network architecture.

Concluding the argument

No.

Limits of technical
architecture

Problem of
reallocation

Augmentation
over substitution

Project story and reflection

Data synthesis

Successfully managed to take into account many high level journals, weaving them into a single, sustained argument providing a coherent thinking pattern throughout with possible areas of improvement.

Dynamic logging

Maintained a highly updated and detailed activity log with work over several months, allowing for myself to keep track and accountability with incoming challenges which could disrupt the progress.

Feedback

I had spoken with my supervisor not only for management of time and feedback, but to broaden critical thinking and gain advice regarding retaining academic tone throughout the research project.

Challenges and overcoming obstacles

Vast sources

I had addressed and researched too many sources which limited my depth in critical aspects.

To resolve this, I completed analysis on which ones were the most beneficial, focusing on those.

Blended review

My literature review had too much analysis which led to it sounding like a discussion in parts.

To resolve this, I paused drafting and restructured sections to explicitly analyse their categories.

Changes

As this area is constantly evolving, my sources had become outdated or unnecessary.

To resolve this, I periodically reviewed the validity of my sources and kept tracking this sector.

Challenges and overcoming obstacles

Vast sources

I had addressed and researched too many sources which limited my depth in critical aspects.

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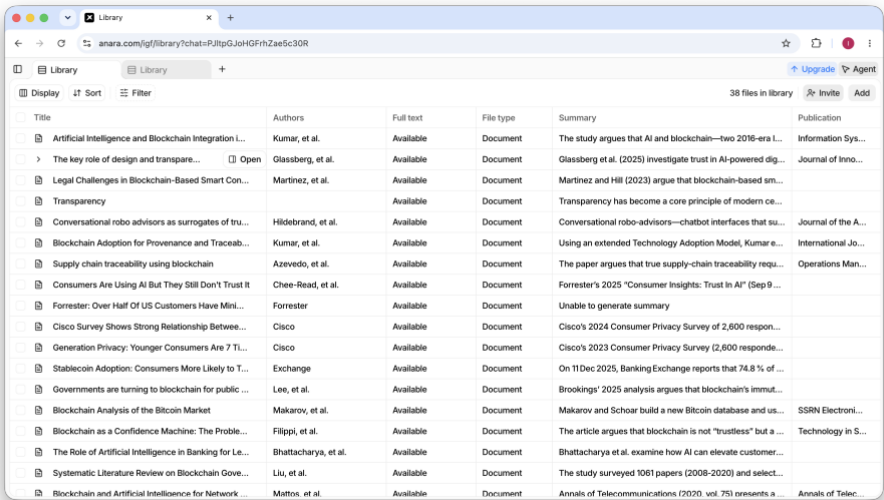
Changes

As this area is constantly evolving, my sources had become outdated or unnecessary.

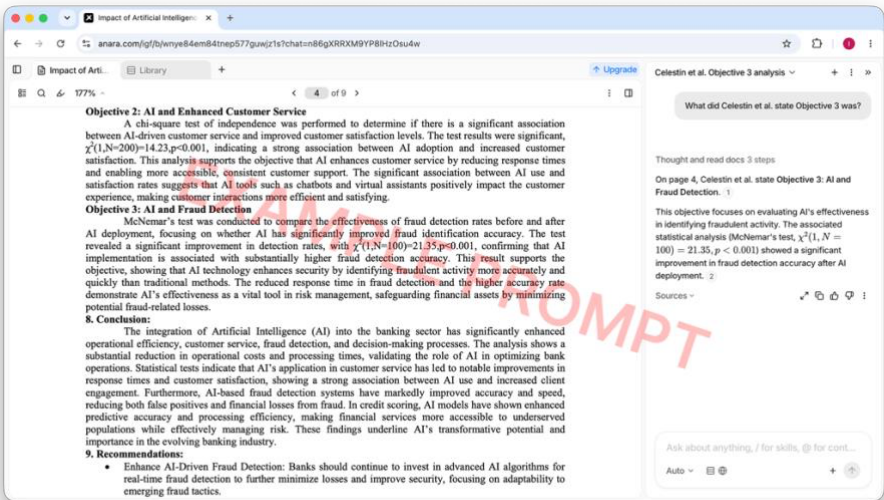
To resolve this, I periodically reviewed the validity of my sources and kept tracking this sector.

Appendix Seven: AI Usage

Generative AI Tool name/link	Prompt & date accessed	AI response	Screenshot
Anara, anara.com	Utilised throughout my EPQ journey for the storage of my sources, accessed from November onwards to April.	No explicit response, Anara is a research data store with artificial intelligence capabilities such as questioning sources.	Photo of library and example usage is attached below.



Screenshot of Anara interface with sources and additional resources, including AI summary



Screenshot of Anara capabilities with an example prompt that was not utilised for research