Electronic Markets (2025) 35:62
https://doi.org/10.1007/s12525-025-00803-w

RESEARCH PAPER

Trust and FinTech: A review and research agenda

James F. Devlin[1,2] · Sanjit K. Roy[3] · Harjit Sekhon[4] · S M A Moin[5] · Mehmet Sahiner[6]

Received: 28 February 2024 / Accepted: 23 May 2025 / Published online: 4 July 2025

Abstract
The primary objective of this paper is to formulate a detailed research agenda focussed on trust in the context of FinTech. To achieve this objective, conceptualisations of trust and related constructs are reviewed, and a detailed model of trust is developed. The domain of FinTech is then introduced and is taken to include current and emerging innovations in financial services incorporating aspects of big data and AI, as well as open and decentralised finance and crypto assets. Typologies of FinTech services are also explored. Arguments concerning the importance of trust in financial services are then reviewed, along with prior studies of trust in the context of financial services. Nascent research into trust and FinTech is emerging, but many important questions remain, such as (a) to what degree are traditional definitions and conceptualisations of trust germane to aspects of FinTech and what adaptations or additional factors may be beneficial? (b) from both the trustor's and trustee's perspective, what are the relevant objects of dependence that form the focus of the trust relationship in the context of FinTech? (c) are views on the importance of trust consistent across elements of the FinTech domain including big data and AI and open, decentralised, and crypto finance? (d) how best to measure and evaluate levels of trust in FinTech? (e) what are the antecedents and consequences of trust in FinTech and other related questions? Thus, a comprehensive and nuanced exposition of trust and its impact in relation to the gamut of activities encompassed under the FinTech moniker would add significantly to collective understanding.

Keywords Trust · Dispositional Trust · Institutional trust · FinTech · Big data · AI

JEL Classification G20 · G40 · G50

Introduction

This paper develops a research agenda aimed at providing a comprehensive and nuanced understanding of the precise nature, role and importance of trust in the context of

Responsible Editor: Christopher Patrick Holland

✉ James F. Devlin
James.devlin@ntu.ac.uk

Sanjit K. Roy
roysanjit2002@gmail.com

Harjit Sekhon
H.Sekhon@wlv.ac.uk

S M A Moin
s.moin@qmul.ac.uk

Mehmet Sahiner
Mehmet.sahiner@ntu.ac.uk

[1] Department of Economics and Finance and UFS Business School, University of the Free State, Bloemfontein, South Africa

[2] Nottingham Business School, 50 Shakespeare St, Nottingham NG1 4FQ, UK

[3] School of Business and Law, Edith Cowan University, Perth, Australia

[4] University of Wolverhampton Business School, Wolverhampton, Ring Rd Saint Peters, WV1 1LY, UK

[5] School of Business and Management, Queen Mary, University of London, Bancroft Building, Mile End Rd, London E1 4NS, UK

[6] Business School, University of Dundee, Nethergate, Dundee DD1 4HN, Scotland, UK

FinTech. Although not easily defined and bounded, it is clear that FinTech is a rapidly growing area of financial services and that many more traditional services are becoming blended with elements of technological production, delivery and de-centralisation. The domain of FinTech is generally taken to include innovative, digitally based production and provision of banking and financial services which often incorporates the use of data analytics and the use of sensitive customer data (Roh, et al., 2022). Such data is also frequently shared across domains, bringing risks and aspects of open and decentralised finance also introduce the further potential for vulnerabilities (Thakor & Merton, 2018). Thus, it is clear that the need for trust in operators, systems, processes and governance models is likely crucially important for the effective functioning of markets in the FinTech domain. The fact that the reach and maturity of regulation and policy in the area are limited further adds to the potential importance of trust, as will price volatility for some crypto-assets, the faddish nature of some of those assets and regular scandals and reports of customers and institutions suffering significant loss. Taken as a whole, developments at the intersection of technology and finance are bringing changes which are of a magnitude that will likely alter fundamentally the antecedents, nature, role and consequences of trust (or the lack of it) in the financial services sector.

Hence, we contend that the insights offered in this paper are both timely and important and set out a direction of travel which will allow for a far more profound and contemporary understanding of the role of trust in the area of FinTech broadly defined. In essence, our overarching research question is "What is the nature, role and importance of trust in the Fintech domain?" Whilst the extant literature provides a reasonably advanced understanding of the nature and importance of trust in banking and financial services generally (c.f. Ennew & Sekhon, 2007; Ennew, et al, 2011), the same cannot be said for the context of FinTech. Thus, our contribution is to specify a detailed research agenda that will bring novel insights that will be of much interest to academics working in the area, financial services organisations and also regulators and policymakers. It is acknowledged that other research agenda style papers have been written in FinTech. Ng et al. (2023) present an insightful paper focussing on strategic options in the FinTech domain and highlight the challenges of achieving profitability for FinTech firms. Milian et al. (2019) offer a comprehensive review which describes the main areas of FinTech operations and highlight the main issues dealt with in what is a burgeoning canon. Both papers offer important insights but do not focus to any significant degree on the topic of trust in FinTech. Milian et al. highlight general key topics and trends, whilst Ng et al. integrate the core logics of strategy with the characteristics of FinTech to formulate a research agenda. Likewise Jafri et al. (2024) do make some effort to incorporate aspects of trust into a study of FinTech adoption in banking. However, their focus is on lessons for maximising the prospects of FinTech adoption and they do not develop a research agenda focussed in any detail on the area of trust. As aspects of trust are just one of many variables of interest to the authors, then understandably, their treatment of trust is necessarily perfunctory. We add to the current literature by adopting an integrative approach, focussing specifically on issues of trust and the characteristics of, and challenges associated with, the FinTech domain. In doing so, we contribute an alternative, more specialised perspective which provides detailed considerations which are largely absent from the more general reviews mentioned.

The paper proceeds as follows: Firstly, we explain our method and approach. Then, a detailed yet tractable exposition of the conceptualisation of trust is offered, culminating in the development of a multi-disciplinary model of trust for use in further discussion and analysis. The domain of FinTech is then reviewed and existing definitions and typologies are discussed. What is known about trust in the context of financial services is then analysed, as well as the far smaller literature on trust and FinTech. Combining the insights from the multi-disciplinary model of trust and insights from what is known about trust in FinTech, a comprehensive research agenda is then developed and related to current understanding. Finally, a summary of the paper is offered.

Our approach

The primary objective of our study is to formulate a research agenda which will yield innovative perspectives on trust within the FinTech context. Rather than conducting a literature review in the traditional sense (c.f. Bell, et al., 2022), we anchored the development of our research agenda and associated research questions in pertinent literature covering various topics. Our study is comprehensively underpinned by various strands of literature, ranging from well-established yet disparate areas such as trust concepts, to nascent areas such as definitions and concepts within FinTech, which evolve in line with technological and practical developments. For burgeoning fields, narrative integrative reviews are an appropriate method for capturing the most recent advancements, which are also useful for topics where diverse strands of literature converge, such as with the topic of trust (Snyder, 2019). Narrative reviews also bring the advantage of flexibility and the ability to integrate non-peer-reviewed sources, such as policy reports and contemporary coverage

in the media, an important consideration for an emerging field moving at pace as is the case with FinTech (c.f. Kalifa, 2021). Thus, we determined that a narrative review was, on balance, the most suitable choice for the literature review component of our study, given its manageability, flexibility and the ability to effectively integrate findings from different fields by highlighting key debates, controversies, and introducing critical perspectives.

Of course, even in the case of a narrative review, there is still a requirement for broad criteria to decide upon coverage and inclusion. Here, an important criterion was the disciplinary boundaries of our considerations. Given that it was particularly important to keep the review tractable, especially given the broad-ranging coverage of trust, we concentrated our efforts on the business, management and finance domains (including marketing and consumer behaviour) in the first instance. We also reached into broadly cognate areas where we encountered supporting literature from those areas in our primary sources. We searched the established electronic databases of primarily academic sources (such as EBSCO Business Source Premier, ProQuest) and supplemented these efforts with Google Scholar. Given the potential usefulness of policy reports and similar, we also employed general Google searches. A further criterion for potential inclusion centred on the research terms employed. It was apparent that broad terms such as "Trust" and "FinTech" employed on their own would yield vast and unfocussed results. Therefore, we tended to employ terms such as "Trust AND Financial Services" before focussing more specifically on "Trust AND FinTech". We also replaced FinTech with other related terms such as "Crypto". For our more general material on the conceptualisation of trust more generally, we had prior knowledge of research published in the very highest quality of management and related journals, and we used this as a point of departure. As our review was not aiming to be exhaustive, we also had to decide when we had "done enough". In this regard, broadly, we were mindful of the quality judgements ascribed to source journals, related evaluations of the rigour and significance of the articles themselves and the degree of focus on our topics of interest. As is often the case, for less mature areas of research, we were more open-minded in what we deemed suitable for inclusion. In conducting our review, we were confident that the equivalent of "saturation" had been reached as themes began to reoccur and sources consulted offered little new of substance. In summary, we applied our judgement, expertise and knowledge of the field to establish what we believe are robust foundations for the development of our research agenda.

Conceptualising trust

In the following section, an integrative analysis of the facets, levels and multi-disciplinarity treatments of trust will be presented to provide a nuanced and pluralistic understanding of the concept. However, it will do so in a tractable manner, as there has been an extensive body of research on trust from a range of disciplinary perspectives, and a full review could result in a thesis-length document. This is perhaps because trust is an inseparable part of everyday life, as Botsman (2017, pg. 17) points out "Social scientists, psychologists, economists and others view trust as an almost magical economic elixir, the glue that keeps society together and the economy ticking over". Trust can best the thought of as an entity (individual, group or organisation) being willing to put themselves at risk or in a position of vulnerability whilst in some measure by relying on the actions and decisions of another party with a reasonable expectation that the other party in question will not act in a manner contrary to their interests (Martin, 2018; Mayer, et al., 1995). The entity doing the trusting is known as the *trustor*, and the entity being trusted is known as the *trustee*. Trust is essentially a psychological state of mind with positive expectations and optimism that stimulate a willingness for risk taking and vulnerability based on the belief and confidence that others (trustees) will not work contrary to the interest of the person(s) trusting (trustor), because they (trustees) share traits that underpin trustworthiness.

Researchers view trust as a "complex" phenomenon; some have even mentioned that trust is a "multiplex" phenomenon (Rousseau et al., 1998), and five major approaches to the study of trust have been identified (McKnight, et al., 1998) namely, calculative-based trust, knowledge-based trust, personality-based trust, institution-based trust and cognition-based trust. *Calculative-based trust* view theorises that trust is developed through a process of rational choice, i.e. individual undergoes a rational process of cost–benefit analysis prior placing their trust (Coleman, 1990; McKnight et al., 1998; Shapiro et al., 1992). *Knowledge-based trust* research promotes the idea that people develop trust gradually over a period of time, which results from the accumulated knowledge gained through experience with others (Holmes, 1991; Lewicki & Bunker, 1995; McKnight et al., 1998). *Personality-based trust* research highlights how an individual's experience and disposition results in a general tendency to trust others, or otherwise (McKnight et al., 1998). *Institution-based trust* is based on how secure on feels in a particular context, due to factors such as safety net or guarantee or other protection ((Bowlby, 1982; Erikson,

1968; McKnight et al., 1998). Finally, *Cognition-based trust* is rooted in the notion that individuals make instinctive cognitive-cue based assessments rather than relying on personal interactions (Lewis & Weigert, 1985; McKnight et al., 1998; Meyerson et al., 1996). However, in contrast, others have highlighted the potential importance of emotional, or affective trust, particularly in the case of service relationships (Johnson & Grayson, 2005).

To a large extent, the different research approaches adopted in trust studies reflect different disciplinary foundations. *Psychology-based* approaches to trust take into account the personality-based traits of individuals that develop over time (McKnight & Chervany, 2001; Tan & Sutherland, 2004) and conceptualise trust as a tendency to trust others (Rotter, 1967). Therefore, the psychology perspective asserts that the environment in which people are raised plays an important role in shaping their personality and disposition or willingness to trust in general. *Social psychologists* view trust as "an essential element of all social exchange relations" (Sitkin & Roth, 1993; pp 367) and characterise trust as a set of beliefs and expectations about the motives and future intentions of the party to be trusted. For *sociologists*, trust "is a functional prerequisite for the possibility of society" (Lewis & Weigert, 1985, pp 968) and is characterised as an institutional-level trust in situations and structures. Finally, the *economics* view of trust (Dasgupta, 1988; Williamson, 1993) is that it is an "economic choice mechanism" (McKnight & Chervany, 2001, p.37) and essentially a process of using cognition to make rational choices with regards to accepting vulnerability for potential benefits—essentially a process of cost/benefit analysis. More contemporary work has also recognised the role of "reference disciplines" in the conceptualisation of trust with Lacity et al. (2024) outlining the different stance taken by psychologists, sociologists, economists and management scholars. Lacity's insights are broadly supportive of prior conceptualisations of trust rooted in alternative disciplinary perspectives.

It is clear, therefore, that trust is a multi-faceted concept with roots in at least four social science disciplines. Arguably the most comprehensive attempts to model trust in a high-level interdisciplinary manner have been those by McKnight et al. (1998) (conceptualisation) and McKnight and Chervany (2001) (operationalisation) and Tan and Sutherland (2004). The work of McKnight (and Chervany) and Tan and Sutherland incorporates models that share many common features. For instance, both incorporate a disposition to trust/dispositional trust concept. Tan and Sutherland see this concept as rooted in psychological traits such as extraversion, neuroticism and openness to experiences, amongst others. McKnight et al. state that a disposition to trust is further underpinned by an individual's faith in humanity, the extent to which others are well-meaning and reliable and trusting stance, reflecting a conscious choice to trust others in the hope of obtaining a better outcome.

Institutional or institution-based trust is also incorporated into both models, but is characterised in a more holistic and generalisable manner by McKnight et al. The concept is centred on whether the necessary impersonal structures are present to ensure that a successful outcome is likely. According to the authors, institution-based trust is underpinned by structural assurances and situational normality. The former captures the degree to which regulations, guarantees and promises are perceived as being in place, whilst the latter, as the name suggests, is underpinned by the view that the situation is sufficiently normal to mean that a successful outcome is likely.

McKnight et al. (1998) and McKnight and Chervany (2001) have conceptualised and operationalised interpersonal trust using two constructs: trusting beliefs and trusting intentions. They further argue that trusting belief is based on essential attributes of a trustee, such as competence, benevolence, integrity and predictability. The other construct of interpersonal trust, i.e. trusting intention, which captures the notion of a willingness to be vulnerable to the relevant counterparty, has been measured by two sub-constructs namely, the willingness to depend and the subjective probability of depending. They finally identified trust-related behaviour as the outcome of their trust model, which can be defined as intention turned into action. Tan and Sutherland (2004)'s model used the same constructs—competence, benevolence, integrity and predictability—to conceptualise interpersonal trust but saw intention to trust and purchase behaviour as the outcome of trust. Other authors (Ennew & Sekhon, 2007; Ennew, el al., 2011) used similar terminologies/attributes—integrity and consistency, concern and benevolence, shared values, expertise and competence, and communication—to describe what they characterised as "drivers of trust". These essential terminologies of trust—grounded in interdisciplinary trust literature by the authors mentioned above—reflect the crucial dispositional, institutional and interpersonal trust attributes. Thus, the work we draw upon is regarded as seminal and presents the advantage drawing from multiple disciplinary perspectives (McKnight et al., 1998; McKnight & Chervany, 2001; Tan & Sutherland, 2004; Lacity et al., 2024) or is particularly focussed on how such concepts are operationalised in the financial services domain (Ennew & Sekhon, 2007; Ennew & Sekhon, 2011) Incorporating these concepts into a final model to take forward for further discussion provides the following (Fig. 1):

The established conceptualisations in the model, which were derived from an integrative, tractable review of trust literature, will be taken forward and employed in the development of a research agenda focussed on FinTech and Trust presented below. For ease of reference, we provide summary explanations for key concepts in Tables 1 and 2.

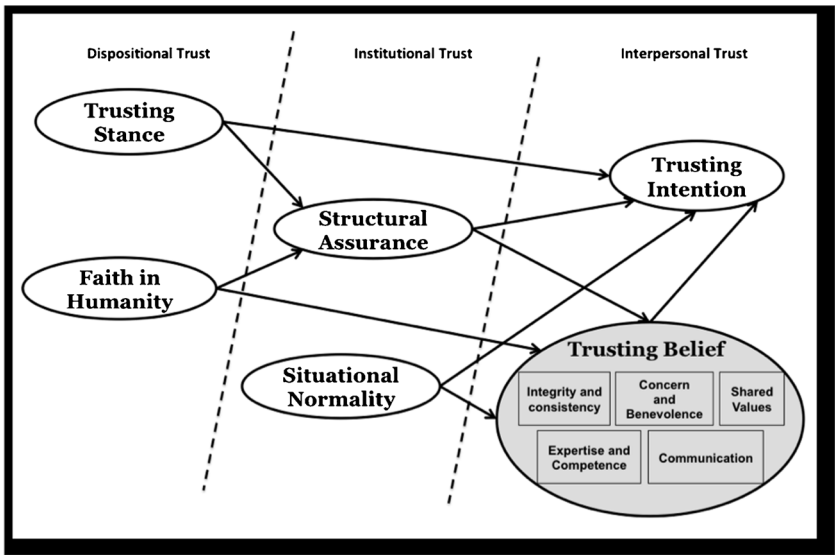

Fig. 1 A Multi-disciplinary model of trust

Developed by the authors, after McKnight, et al 1998, Tan and Sutherland, 2004, Ennew and Sekhon, 2007, Ennew, et al, 2011

Table 1 Key trust concepts

Concept	Explanation
Trustor	The entity doing the trusting and exhibiting a willingness to take risks and make themselves vulnerable
Trustee	The entity being trusted by the trustor
Dispositional Trust: Trusting Stance	The notion that someone will act as expected and that depending on them will lead to a superior outcome
Dispositional Trust: Faith in Humanity	An attitude concerning positive assumptions about others' attitudes and benevolence in general. Others are in general reliable and well meaning. Faith in humanity is not context or situation specific, but a general enduring concept
Institutional Trust: Structural Assurance	Structural assurance relies on social and legal frameworks (e.g. contracts, regulations, legal recourse) to ensure performance and maintain stability and predictability
Institutional Trust: Situational Normality	A perception that the situation is normal and therefore that outcomes are more predictable. To be contrasted with times of crisis, upheaval or scandal
Interpersonal Trust: Trusting Belief	A strong and solid conviction on the part of the trustor that the trustee has the necessary attributes to make them trustworthy (see below)
Interpersonal Trust: Trusting Intention	An intention to place trust in and to depend on the trustee

Sources: Mayer et al. (1995), McKnight et al. (1998), McKnight and Chervany (2001), Tan and Sutherland (2004), Ennew and Sekhon (2007) and Ennew et al. (2011)

Table 2 Drivers of trusting belief

Driver	Explanation
Integrity and Consistency	The degree to which trustees demonstrate honesty and consistency in their interactions
Concern and Benevolence	The extent to which a trustee is concerned about its customers' interests from a customer perspective as demonstrated through its all dealings with its customers
Shared Values	The extent to which a trustee is perceived by the trustor to share similar core values as evidenced by their regular interactions and decisions made
Expertise and Competence	The degree to which a trustee demonstrates, and is perceived as having, the necessary skills and ability to effectively deliver its services to customers
Communication	The extent to which it is perceived that the trustee communicates with transparency, clarity and effectiveness

Sources: McKnight et al. (1998), McKnight and Chervany (2001), Ennew and Sekhon (2007) and Ennew et al. (2011)

Finance and technology: FinTech

The commentary presented in this manuscript is concerned with research questions centred on the topic of trust in the context of financial technology, commonly known as "FinTech". Having arrived at a model of trust to take forward, it is now necessary to clarify understanding of the domain of FinTech, which is normally taken to mean the diverse and innovative range of digital financial services primarily, although by no means exclusively, offered in the retail financial services sector. In this section, we offer a bounded review focussed on definitional issues and classifications of the FinTech domain. We do so to provide an understanding and interpretation of the domain to take forward to the development of research questions centred on trust and FinTech. We do not seek to provide a review of all pertinent literature on aspects of FinTech. Rather, we aim to develop an inclusive definition and characterisation of FinTech that we can take forward to the following section.

FinTech innovations generally incorporate some combination of digital and telecommunications technologies, big data, and, increasingly, machine learning and artificial intelligence (Alt et al., 2018; Langley & Leyshon, 2021). Gimpel et al (2018) define FinTech as: "the usage of digital technologies such as the Internet, mobile computing, and data analytics to enable, innovate, or disrupt financial services." (pg. 247) and FinTech start-up as "newly established businesses that offer financial services based on FinTech." (pg. 247) In specifically defining the latter, the authors seek to draw a distinction between FinTech offers from existing incumbents and those from new entrants, which are typically viewed as more radical and innovative in nature. Dietz et al. (2016) offer a similar definition: "We define FinTech players as start-ups and other companies that use technology to conduct the fundamental functions provided by financial services, impacting how consumers store, save, borrow, invest, move, pay, and protect money." (pg. 1). The former definition is particularly useful in terms of emphasising the potentially disruptive element of FinTech innovations, whilst the latter highlights the potential impact on consumer behaviour and choices across a range of functions. Whether definitions of FinTech should be limited to areas that impact directly on consumers is open to challenge, as FinTech innovations are also impacting radically on strategy and operations in financial services more generally (c.f, Ng, et al., 2023) However, for the purposes of our discussion, the emphasis will be on innovations that provide some form of service or interface with retail financial consumers, as aspects of consumers' trust are the main focus of our enquiries.

Authors have attempted to classify FinTech services into groups or typologies normally based upon function domain or the primary need being met (Chuen & Teo, 2015; Dietz et al., 2016) with common categories being; account management, payments/transfers, insurance, crowdfunding, saving, trading and investing, financial advice and planning, peer to peer lending, lending and financing and, of course, cryptocurrencies. Another insightful method has been to classify FinTech innovations according to their underlying success factors (Werth, et al., 2023) which identify a number of "architypes" including information aggregators, market intermediaries, information extractors, sub-process insourcer, lending, payments and robo-advisors. Langley and Leyshon (2021) highlight some of firms that have served as notable entrants and disruptors in the sector. Their typology is particularly comprehensive and includes "online and mobile monetary payments denominated in sovereign currencies; bitcoin and other cryptocurrency exchanges; online-only banks and banking apps; crowdfunding and peer-to-peer (P2P) lending; investment, saving and financial planning, such as 'robo-advisors' and interfaces and dashboards for money management); and, online lending to different and differentiated market segments, such as small- and medium-sized businesses, low- or high-risk borrowers and payday borrowers." (pg. 379). They also point out that there are a number of business to business focussed FinTech innovations incorporating big data analytics, machine learning and block chain related services.

Notwithstanding the reasonably comprehensive nature of Langley and Leyshon's categorisations, there are still some notable omissions, such as aspects of InsurTech, an example of which is the increasing use of technology to monitor and influence driving patterns in the case of car insurance. For the purposes of our discussion, we will interpret the domain of FinTech as:

> "the current and emerging innovations in financial services facilitated by digital technologies, big data and AI, including Open, Decentralised, and Crypto Finance which underpin innovative and disruptive consumer services across the financial services domain."

We acknowledge that other authors have offered more general reviews of the FinTech domain. As an example, Milian et al. (2019) offer an excellent general review which poses research questions such as "How the literature on fintechs has evolved over time?" (pg 3), "Which have been the most influential studies?" (pg 3) and "What are the main subjects and issues in the scientific literature on fintechs?" (pg 3). They found that extant literature focussed on innovations and regulation, as well as operations and security in the financial technology literature in particular. The authors acknowledge that their approach has limitations which may have led to potentially important areas being overlooked. We believe that the role of trust is one of them. Ng et al.

(2023) also develop a research agenda in FinTech, with their work focussed specifically on strategic options and aspects of profitability, not least due to the high rate of commercial failure amongst FinTech firms. They do not mention trust per se, but they do note the crucial importance of "social fitness and legitimacy" (pg 203), which they characterise as a stamp of approval and which we interpret as closely aligned with our focus on trust. In the following section, we focus more specifically on the question of trust in financial services and FinTech in particular.

Trust, financial services and FinTech

Trust has long been recognised as a crucial antecedent to the effective functioning of financial services markets (Ennew & Sekhon, 2007). In financial services relationships, there is often a high degree of fiduciary responsibility involved where individuals need the trust and confidence necessary to place significant sums of money for safekeeping with firms in the sector (McKechnie, 1992). Consumers do so in the expectation that their trust will not be breached, that their money will be available to them when required and that institutions will not tend to cease trading or disappear unexpectedly with their funds. In many countries, regulation in the form of deposit protection schemes will provide state-backed assurance of the safety of funds, normally up to a certain limit.

Many financial services products are characterised by a high degree of opacity and complexity in terms of how the products work (HM Treasury, 2002), the risks involved, and particularly in pricing. Such complexity is at the root of an information asymmetry between suppliers and consumers (Llewellyn, 1999), which means that consumers are in a position of vulnerability and which requires trust on the part of the consumer. Some products also have a comparatively long-term time horizon where products such as pensions or life assurance may last for many years. The net result is that many financial services products are high in experience attributes, where only many years of usage will reveal the suitability or otherwise of products, or credence attributes where there is insufficient understanding on the part of consumers to evaluate and monitor the suitability of products sold or recommended. As a result, many such products are bought "on trust" in the hope that they will prove suitable. Also, for investment-based products and derivatives, there may well be a significant risk to capital due to market fluctuations and other related factors. Differing tax treatment of similar products depending on the precise mode of investment may also add further complications.

In terms of the main research findings from studies of trust in the financial services sector (apart from those contributing to conceptualising trust, which were covered earlier), one key focus has been the relative standing of financial services in relation to other sectors for levels of trust amongst the public. In 2009, in the midst of the so-called financial crisis, Ennew (2009) found that banks and other financial services providers were reasonably well trusted compared to other institutions such as health services or one's employer. More recently, the Edelman Trust Barometer Report (Edelman, 2022) showed that in 2012, shortly after the financial crisis of the late noughties, financial services were bottom of the table, benefiting from the trust of only 44% of respondents compared to 64% for food and beverage companies and 77% for technology companies. According to the same report, over the next ten years, trust in financial services improved by ten points to 54%, the biggest improvement of any sector, but not big enough to shift financial services from the bottom of the league table. According to the classification used in the report, the improvement was enough to shift financial services from "distrusted" to "neutral", hardly a ringing endorsement but some evidence of progress nonetheless. Reflecting on the totality of data related to the relative standing of the sector, it is difficult to reconcile findings with the often hyperbolic commentary about the lack of trust in the sector. A further, somewhat related, stream of research has concentrated on the relative levels of trust in different kinds of financial services organisations (Devlin, et al, 2015). That analysis shows that financial advisors and brokers have consistently been the most trusted, with insurance and investment companies in the middle of the pack. Banks have gone from poorly to very poorly trusted, whilst credit card companies have moved in the opposite direction. The net result is that traditional banks are comfortably the least trusted type of institution, albeit the data is now somewhat dated.

The final main research stream in financial services is what could be termed the "causal chain" from the antecedents or influences on perceived levels of trustworthiness of institutions through to trusting intentions on the part of individuals. Sekhon et al. (2014) employed a structural model to test the impact of various drivers of trust on perceptions of trustworthiness of financial services organisations and resultant levels of cognitive and affective trust. Their analysis showed that *concern and benevolence*, characterised as having the customers' best interests at heart and giving honest advice, was the single most important driver of trustworthiness in financial services. *Shared values* and having the same concerns were the next most significant drivers identified, followed by *expertise and competence.* Two further factors were identified as significant, if less important, drivers, namely *communication and responsiveness* and *integrity and consistency*. In related work, Roy et al. (2015) found that *distributive fairness*, a measure of how the benefits of a customer/firm relationship are shared out, is a further important driver of perceptions of trustworthiness in financial services as are aspects of procedural and interactional fairness,

namely *impartiality*, *refutability* and *bilateral communication*. Moin et al. (2015) added further possible antecedents of levels of trust in financial services, namely *disposition to trust* and *institutional trust* in an empirical paper focussed on trusting belief. The former is a concept which draws from mainly psychological perspectives, and the analysis showed that "faith in humanity", the tendency to give people the benefit of the doubt and trust until convinced otherwise, is a strong driver of levels of trust in financial services. However, a general tendency to adopt a *trusting stance* with respect to media and major institutions does not extend to financial services. *Institutional trust* draws from sociology and comprises *structural assurance* and *situational normality*. Structural assurance is a faith and confidence in the financial system, and the policies, rules and regulations in place. Those with higher levels of institutional trust have a greater intention to trust financial services organisations. Situational normality, which is a judgement that things are more or less as they should be rather than in crisis or other atypical states, also impacts positively on the level of trust in financial organisations.

Although existing research has identified a significant number of key influences on trust in financial services, it is clear from the conceptualisation of many of the relevant constructs and related definitions and measurements that such concepts do not necessarily transpose easily to the context of FinTech. For instance, concern and benevolence, the most important driver of trust identified in previous research, would typically be associated with interpersonal interactions of the type not necessarily relevant to technology-mediated delivery of services. Similar arguments could be made in relation to other key drivers of trust in financial services identified, such as expertise and competence. Other key questions also emerge. For instance, what is the role of faith in humanity, and should it be replaced by some form of faith in technology concept for FinTech? How do individuals evaluate the degree to which shared values are present with an organisation that may be a new, unknown and opaque tech start-up? Also, does faith in the financial system provide reassurance in the case of novel, very innovative offerings, many of which may be made available by firms not normally considered to be part of the financial sector? These are just some of the main issues and questions that quickly become apparent when considering aspects of trust in FinTech. To assist the identification of gaps in knowledge, an understanding of what is known currently about trust in aspects of FinTech is required. A discussion of this topic is now offered, rooted briefly in the seminal understanding of trust in technology more generally.

Generally, trust in technology has been viewed as concerned with matters such as levels of trust in functionality, usefulness, and reliability (Xia, et al., 2022). McKnight, et al. (2011) made the important observation that the "object of dependence" differs between trust related to human interactions and trust in technology. Lacity, et al. (2024) also pointed out that "IT artifacts" are the object of individuals' trust in such circumstances. For human interactions, trust is essentially in a person or individual who has feelings, ethics, empathy and moral agency. With technology, trust is in an artifact, albeit human-engineered (Lacity, et al., 2024), that lacks free will and moral agency. The distinction is potentially important as the drivers of trust may diverge significantly due to different characteristics of human and technologically mediated interactions. It also has implications for the conceptualisation of constructs such as dispositional and institutional trust as discussed earlier, which we will return to below.

With respect to trust and technology, a noted approach is to assess the impact of trust on the readiness or otherwise to accept and use technology (c.f. Gefen et al., 2003; Wu, et al., 2011) incorporating the Technology Acceptance Model (Davis, 1989) as a theoretical framework. The TAM incorporates perceived usefulness and perceived ease of use as drivers of attitudes, behavioural intentions, and actual behaviour with respect to the adoption of technology. As such, it is not concerned with trust per se. However, Wu et al. (2011) presented a meta-analysis which showed that trust is generally important in the adoption of new technologies and that trust in commercial technology settings is influenced by structural assurances. The authors also pointed out that a higher degree of situational normality in terms of similarity of interface between existing and new technology-based offerings also enhances trust. However, the authors acknowledge that they conceptualise trust very simplistically and that context is important in studies of trust and its impact on technology adoption. More recently, Lacity et al. (2024) offer an excellent insight into current thinking with regard to what they term human trust in information technology. The authors provide a review of the trust literature incorporating various disciplinary perspectives, not dissimilar to that presented here. It is reassuring that the authors identify a number of themes that underpin the conceptualisation of our research, which we also discuss in detail. Specifically, Lacity et al. highlight the importance of expectations and vulnerability, aspects of trust which we covered above in our "Conceptualising Trust" section. Drivers of trusting belief incorporated into our model of trust above include concern and benevolence and expertise and competence, both of which are also noted as important by Lacity et al. in engendering trust in information technology. Clearly, there are important pointers as to the importance of such factors in the case of FinTech which we will return to when deriving research questions below.

For research and commentary into trust and FinTech specifically, several authors have noted that the financial crisis

of 2008 and other scandals have led to an erosion of trust in mainstream financial institutions which helped trigger the interest in alternative finance and increased the adoption of FinTech. For instance, Goldstein et al. (2019) note that the initial prominence of FinTech was a reaction to the loss of confidence in the traditional financial system following the crisis, whilst Yang (2021) highlights the fact that the Wells Fargo scandal in 2016 and the related negative shock of consumer trust in banks impacted positively on FinTech adoption. Additionally, Frost (2020) associates FinTech adoption with a decreasing appetite for traditional financial services due to higher costs and deterioration in the quality of services from traditional banks. Perhaps relatedly, further research suggests that FinTechs are more trusted than banks among younger individuals indicating that trust dynamics are evolving between different demographic groups (Nangin et al., 2020).

Chuang et al. (2016) used the TAM as a point of departure for a study of the adoption of an unspecified FinTech service, and they found that brand and service trust has a positive influence on attitudes towards using the service, thus mirroring earlier findings from more general technology research. Other authors have adopted a similar approach (c.f. Stewart and Jurjens, 2018; Ramli, et al., 2021; Wang, 2021), but these studies mainly replicate and confirm earlier investigations and findings and are generally limited to a narrow range of FinTech services, particularly mobile banking. Perdana et al. (2023) investigated influences on crowdlending investors' level of trust and, not surprisingly given the context, found that factors such as risk mitigation and perceived quality impact levels of trust. In a study of FinTech in China, Roh et al. (2022) found that trust is associated with a positive attitude towards FinTech services and intentions to adopt. In a study adopting a similar approach, also focussed on FinTech in China, Xia et al. (2022) offered useful interpretations of institutional and interpersonal trust in FinTech. They found that aspects of trust impact on risk perceptions, governance perceptions and ultimately the intention to continue using services. Jafri et al. (2024) carried out a thematic analysis of the role of various factors in the adoption of FinTech banking services, one of which was trust. Amongst other matters, they concluded that future research should focus on the role of trust in FinTech adoption and usage. It is apparent therefore that further, more detailed and nuanced research, focussing on a variety of contexts, different cultural backdrops and detailed aspects of the FinTech domain would add significantly to collective understanding.

The issue of data handling and security is particularly pertinent in the case of FinTech, as companies in the sector require large amounts of data to facilitate and deliver their services. Whilst data may well in theory be given with the consent of consumers, such consent is rarely truly or fully informed as consumers have limited information and understanding about what they are agreeing to. Moreover, as researchers have noted, it is not necessarily clear who is the ultimate custodian of the data and thus, who assumes the ultimate responsibility for safety and security. Bogusz (2018) therefore recommends that "Given the potentially invasive nature of data collection, and the implications of possible backlash, FinTech firms need to be careful when designing—and obtaining consent for—their services" (pg. 219). According to Thakor and Merton (2018), building trusted algorithms and data architecture is crucial and should be at the "core" of the business models; otherwise, FinTech companies will eventually fail. Therefore, the question of how to implement trust through technology and manage the related risk expectations remains a major challenge for any FinTech firm.

Some practitioner and policy facing commentary has also addressed the topic of data security and trust. Armantier et al. (2021) in a report for the Bank for International Settlements note that survey data showed that respondents trust traditional financial institutions more than FinTechs, Government Agencies or Big Tech (in that order). In a related report, Chen et al. (2021) showed that differences in the willingness to countenance the sharing of data with firms in exchange for better offers is consistent across many different country contexts, albeit the absolute levels of willingness vary significantly. The overall willingness to share was highest in the Asia–Pacific region and the Americas and lowest in Europe, albeit with some country exceptions in each case. However, for all regions, traditional financial services firms benefited from the greatest willingness to share, followed by FinTechs, with non-financial services firms below both categories. A separate study by Morning Consult (2021) found that the ability to protect consumers' data, privacy and security is the number one driver of trust and the most important influence on purchasing considerations in the financial services sector. Finally, Edelman (2020) made the overall tenor of their thoughts reasonably clear in a piece entitled "Why Consumers Just Don't Trust FinTechs" highlighting concerns such as data privacy, fear of the unknown, an uncomfortably fast pace of change with insufficient regulatory oversight and scrutiny and scandals which account for the trust gap between FinTech firms and more established names. Overall, it is clear that data privacy and security concerns are particularly pertinent to the context of FinTech and represent an area ripe for further detailed investigation.

Blockchain technology is expected to offer a wide range of solutions to address the inherent trust issues in financial transactions (Zhao et al., 2016). One of the most innovative solutions of blockchain is providing a peer-to-peer network that enables asset transfers between individuals by removing the reliance on centralised financial intermediaries. Participants can validate and trace their asset transfers

Table 3 Summary of influential papers

Conceptualising trust		
Authors and year	Title	Outline of relevant findings
McKnight et al. (1998)	Initial Trust Formation in New Organizational Relationships	Proposes a multi-dimensional trust model including dispositional, institution-based and interpersonal trust. Widely used as a foundation in trust literature
Zucker (1986)	Production of Trust: Institutional Sources	Introduces the concept of institutional trust, arising from social structures and routines; relevant for trust in unfamiliar or complex systems
Lewis and Weigert (1985)	Trust as a Social Reality	Argues trust is both cognitive and emotional, and socially constructed. Positions trust as foundational to social order and system complexity reduction
Sitkin and Roth (1993)	Legalistic Remedies and Trust	Distinguishes task-specific vs. value-based trust violations; legal mechanisms help restore the former but not the latter
Tan and Sutherland (2004)	Online Consumer Trust: A Multi-Dimensional Model	Proposed a model including dispositional, institutional, and interpersonal trust; linked personality traits to trust behaviour in digital settings
Finance and technology: FinTech		
Authors and year	Title	Outline of relevant findings
Ramli et al. (2021)	The Implication of Trust that Influences Mobile Banking Intention	Trust mediates the effect of perceived usefulness and ease of use on mobile banking adoption; trust boosts intention to use
Xia et al. (2022)	Trust in Fintech: Risk, Governance, and Continuance Intention	Demonstrates how institutional, interpersonal, and tech-based trust affect perceived risk and intention to continue using FinTech platforms
Wang (2021)	Exploring Biometric Identification in FinTech Applications	Trust and privacy perceptions drive biometric authentication adoption in FinTech. Face and voice recognition are most preferred
Roh et al. (2022)	What Makes Consumers Trust and Adopt FinTech?	Trust is shaped by system, service, and information quality, as well as privacy/security. Trust directly drives intention and usage
Langley and Leyshon (2021)	The Platform Political Economy of FinTech	Shows how FinTech reintermediates finance through platforms; raises questions about trust, governance, and algorithmic power consolidation
Technology, data, and risk in FinTech		
Authors and year	Title	Outline of relevant findings
McKnight et al. (2011)	Trust in a Specific Technology	Distinguished trust in people vs. artifacts; created validated scales for trust in technology, including perceived reliability, functionality and helpfulness
Wu et al. (2011)	Meta-Analysis of Trust in TAM	Confirmed trust significantly affects technology adoption; structural assurances and situational normality enhance trust in digital services
Stewart and Jürjens (2018)	Data Security and Consumer Trust in FinTech Innovation	Found security, transparency, and clear data governance as central to earning trust in German FinTech contexts
Edelman (2020)	Why Consumers Don't Trust FinTechs	Highlighted distrust due to rapid change, data privacy fears, insufficient regulation, and lack of transparency in algorithmic decisions

Table 3 (continued)

Conceptualising trust		
Trust, financial services and FinTech		
Authors and year	Title	Outline of relevant findings
Devlin et al. (2015)	Trust in Financial Services: Retrospect and Prospect	Shows historical trends in public trust toward financial services; reveals banks are least trusted and identifies key drivers like fairness and competence
Sekhon et al. (2014)	Trust and Trustworthiness: Influences and Implications	Finds concern/benevolence and shared values as top predictors of trust in financial services; identifies causal path to cognitive and affective trust
Moin et al. (2015)	Trust in Financial Services: Institutional and Dispositional Trust	Establishes faith in humanity and structural assurances as critical to trusting belief in financial contexts, especially for newer players like FinTechs
Roy et al. (2015)	The Impact of Fairness on Trustworthiness and Trust	Demonstrates how distributive, procedural, and interactional fairness shape consumer trust in banking, especially via perceptions of integrity and respect

by using blockchain, and the chain of blocks that store the relevant information is able to function as a trust element in the system (Cai, 2018). Therefore, building decentralised networks by implementing blockchain technology could be an opportunity for FinTech companies to develop systemic trust dynamics and manage risk expectations of customers in a transformed financial services industry. For this to happen, network users need a reasonable understanding of blockchain technology and decentralised finance, and it is by no means clear that such an understanding is prevalent. Milian et al. (2019) note that peer-to-peer platforms in FinTech can operate as trust-free systems but also note that trust plays an important role by facilitating most, if not all, interactions in a sharing economy. Pazaitis et al. (2017) highlight the intricate trust dynamics in society and explain "when it comes to more complex relationships, involving sharing of resources and assets, blockchain technology alone does not suffice for people to develop trusted interactions" (pg. 217). Moreover, Kowalski et al. (2021) argue that the adoption of blockchain does not remove the need for trust, but rather it shifts to the selection of reliable market participants and transparent governance models. More generally, Jourdan et al. (2023) note the need for further research into the impact of FinTech developments on individuals, and an investigation into FinTech and trust accords with such a suggestion.

In summary, whilst trust has a crucial role to play at the interface of consumers, FinTech providers and other interested parties such as regulators, it is clear that comprehensive and nuanced expositions of trust and its impact in relation to the gamut of activities encompassed under the FinTech moniker are significantly lacking from academic research.

To complement our literature review, in Table 3, we present a summary of findings and insights from papers that are influential for our study. In the section that follows, we draw upon and integrate the streams of literature reviewed in detail above to arrive at a series of research questions aimed at guiding future research endeavours in the area. We will firstly consider the conceptualisation and importance of trust in the context of FinTech as, given the characteristics of FinTech, these may vary from previous norms. We reflect in particular on the relevant "object of dependence" in the FinTech domain. We then move on to consider the nature of dispositional and institutional trust in FinTech along with their antecedents and consequences. We focus also on the potential impact of scams, scandals and other breaches of situational normality in the FinTech context. Finally, elements of trusting belief that may drive intention to trust in FinTech are then analysed, including a focus on the role of technology and security in building trust.

FinTech and trust: A research agenda

As outlined above, trust is viewed as a willingness of an entity to put themselves in a position of risk or vulnerability whilst relying on the actions or decisions of another party and incorporates as psychological state of mind based on the belief and confidence in others. Many researchers have pointed out the important role that trust plays in markets for financial services due to the degree of fiduciary responsibility present, the complexity and opacity of many products, long-term time horizons in many cases, information asymmetries and other related factors. Others such as Lacity et al. (2024) have done similar work for human trust in technology broadly defined. Thus far, discussion has advanced on the assumption that such logic holds for the domain of FinTech as defined previously, and

the point has been emphasised in related policy reports (c.f. Kalifa, 2021). In what follows, we develop pertinent research questions in turn under the headings Trust in FinTech: Conceptualisation and importance; Trust in FinTech: Personality and demographics; Institutional and Structural Trust: Assessing the role of institutional safeguards; Situational Trust: Exploring the influence of scandals, breaches, and situational normality; Drivers of Trust: Identifying the importance of factors such as integrity, benevolence, competence, and communication; and Technological Trust: Evaluating the role of technology and security in building trust.

Trust in FinTech: Conceptualisation and importance

Given that FinTech is normally technologically mediated, often decentralised, frequently uses combinations of innovations and includes entities such as cryptocurrencies and NFTs which are held on blockchains that are supposedly immutable, distributed and consensus based, it is by no means certain that trust will play the same role in the FinTech sector as in the traditional finance sector. Indeed, Lacity et al. (2024) recently encouraged scholars to examine trust in the context of technologies used in combination, such as decentralised, metaverse-based services. Added to that, trust in a particular entity may not be required in the same manner for markets to function effectively. In addition, DeFi initiatives remove any semblance of control and responsibility from central banks and policy makers; hence, it is unclear whether notions of institutional trust are germane to FinTech. That said, digital assets, or the keys to access them, still must be stored somewhere, which may involve trusting a third party with information and potential access. In addition, embracing of aspects of Open Finance requires individuals to trust third party entities with sensitive data and access to accounts. More general concerns with data privacy and the appropriateness or otherwise of automated services may also have implications for necessary levels of trust. Thus, the following initial general research questions are proposed as a point of departure:

RQ1: To what degree are traditional definitions and conceptualisations of trust germane to aspects of FinTech and what adaptations or additions may be beneficial?
RQ2: To what extent are views on the role and importance of trust consistent across various FinTech domains from payments and banking to investment and crypto and DeFi services?

As discussed above, McKnight et al. (2011) noted that the "object of dependence" varied between traditional and technologically mediated services, such as FinTech, with the latter being an artifact rather than something human or tangible. Lacity et al (2024) also noted that the vast majority of trust literature is focussed on humans interacting with each other, with limited attention given to trust in IT artifacts. In research in more traditional settings, in terms of the object of dependence, a distinction has been drawn between *narrow scope trust* (trust in a particular individual or organisation) and *broad scope trust* (trust in the broader business context) (Grayson, et al., 2008; Hansen, 2012). Such a distinction is also supported by the work of Zucker (1986) who noted that trust production can be centred on an individual, an organisation or even a process. For FinTech services, consumers' perceived object(s) of dependence is likely to be more multifaceted and is a question worthy of far more detailed consideration and investigation to move understanding beyond the point where it is merely characterised as an artifact. Thus:

RQ3: From both the trustor's and trustee's perspective, what are the relevant objects of dependence that form the focus of the trust relationship in the context of FinTech services?

Trust in FinTech: Personality and demographics

Dispositional trust (featured in our model above) is an enduring propensity to trust that is relatively consistent across different contexts. A disposition to trust is rooted in the widely recognised personality traits identified in the psychology literature. Initially, five main personality traits were identified, namely Extraversion, Neuroticism, Agreeableness, Conscientiousness and Openness (Goldberg, 1990, 1992). Subsequently, Honesty and Humility were added, resulting in a six-factor model (Ashton & Lee, 2007). Such an extension is important in the context of Fintech. The trait is characterised by aspects of fair-mindedness and genuineness in its positive aspects, and those with a high level of this trait will be more disposed to trust if perceptions of fairness are high (Roy et al., 2015) In its negative aspects, a lack of honesty and humility is characterised by slyness, being greedy and a propensity to exploit others (Ashton & Lee, 2007). Those with such personality traits are less likely to have a high level of dispositional trust given their general modus operandi and expectations of others. With respect to other aspects of personality, Tan and Sutherland (2004) proposed that greater extroversion, openness and agreeableness are associated with a higher disposition to trust, whereas higher levels of neuroticism and conscientiousness are linked with a lower disposition to trust. However, Tan and Sutherland did not test their model empirically. Xia et al. (2022) drew influence from Tan and Sutherland, although they related personality traits to perceptions of risk and governance. Furthermore, Dispositional Trust comprises two distinct dimensions (Moin,

et al., 2015), faith in humanity and trusting stance. The former is more affect-based about others generally having benign and cooperative intentions. The latter is more calculative in nature involving a form of cost–benefit analysis to arrive on stance as to the degree of trust to employ. A detailed understanding of how aspects of personality interaction to determine an individual's level of disposition trust across a range of contexts is important in enhancing our understanding of trust development and maintenance in FinTech. Hence:

RQ4: For a range of FinTech domains, how do aspects of personality (including but not limited to the standard six personality traits) interact to determine levels of dispositional trust in the form of faith in humanity and trusting stance?

As discussed above, some research has indicated that for younger consumers, FinTechs are more trusted than traditional banks (Nangin et al., 2020). Thus, the current proposed programme of research offers an ideal opportunity to test whether such a proposition holds subsequent to recent high-profile company failures in some areas of FinTech and whether there are differences in relative trust levels across different demographic groups.

RQ5: For a range of FinTech domains, do levels of trusting intention compared to that of traditional financial services vary across demographic groups?.

Institutional and structural trust: Assessing the role of institutional safeguards

A further important consideration is the role of Institutional Trust in FinTech, especially given that the domain is still in its relative infancy with many of the key firms being relatively new to market and lacking institutional history and reputational capital. Added to that, the degree to which FinTech services fall under the auspices of existing regulators is currently a matter of significant conjecture, and, in some cases, there is even confusion as to how to categorise and, hence, regulate some FinTech services. For instance, are crypto-currencies primarily a payment mechanism or an investment vehicle? The answer to that question will determine, amongst other things, how and by whom crypto-currencies are regulated, if at all. For some, part of the attraction of FinTech, and in particular decentralised finance, is that it is not subject to regulation by the government or policy-makers from particular nation states or even supra-national organisations. For such individuals, the maxim "Don't Trust, Verify" is germane, and it has even been claimed in more popular commentary that crypto-currencies such as Bitcoin eliminate the need for trust to be present (Delmastro, 2022). Little is known currently about the role that institutional trust plays in the FinTech domain, thus:

RQ6: For a range of FinTech domains, what are the key influences of perceptions of structural assurance including but not limited to policies, rules, regulations, norms and reputational factors?
RQ7: To what extent does a perceived lack of structural assurance in the FinTech domain impact upon perceptions of structural assurance in the financial sector more generally?

Situational trust: Exploring the influence of scandals, breaches and situational normality

Earlier, the importance of potential concerns regarding data collection, security/privacy, and other data issues and abuses were highlighted (Armantier et al., 2021; Bogusz, 2018; Dorfleitner et al., 2023; Edelman, 2020), and it is clear that such factors will likely impact on consumers' assessments of the level of situational normality in the FinTech area in particular. Likewise, scams and scandals are not uncommon in the FinTech domain and tend to be given much prominence in commentary when they do occur. Given these and other pertinent issues, we formulate the following research questions concerning the structural assurance and situational normality aspects of Institutional Trust:

RQ8: For a range of FinTech domains, what are the key influences of perceptions of situational normality including but not limited to the incidence of scandals and scams, reports of data and privacy breaches and other controversies?
RQ9: To what extent does a perceived lack of situational normality in the FinTech domain impact upon perceptions of situational normality in the financial sector more generally?

Drivers of trust: Identifying the importance of factors such as integrity, benevolence, competence and communication

As outlined above, in the established trust literature, elements of institutional trust are viewed as a pre-cursor to interpersonal trust. Interpersonal trust is the level of trust formed in another specific entity, be it another person or artifact of some kind. As such, it can be contrasted to dispositional trust and trust in the institutional context more generally. As illustrated in Fig. 1 above, trusting beliefs are key drivers of the overall intention to trust. Integrity and

consistency have been highlighted as important elements of trusting belief by a number of authors (Mayer, et al., 1995: Sekhon, et al., 2014) and are viewed as closely connected with notions of honesty and the propensity to do the right thing. It has been shown to drive trusting intentions in more traditional financial services settings, but the degree to which it plays a similar role in driving trust in the FinTech contexts has not yet been established. Thus,

RQ10: For a range of FinTech domains, to what extent are perceptions of integrity and consistency important in driving trusting intentions?

The drivers of concern and benevolence and shared values have been shown to be amongst the strongest drivers of trust in financial services (Sekhon, et al, 2014). Perceptions of concern and benevolence convince trustors that individuals and organisations will not exploit vulnerabilities, will show consideration and sensitivity and will act in the trustor's best interests. In theory at least, given that vulnerability is still present in many FinTech domains and given that there is the potential for consumers to be exploited, then there should still be a significant role for concern and benevolence in engendering trust. Likewise, if a consumer perceives that a provider shares his/her/their values, they will have greater confidence in interacting with the provider concerned as shared values are more likely to produce a mutually acceptable outcome. However, greater opportunities to verify transactions and the distributed nature of many FinTech services may reduce the need for the presence of perceptions of concern and benevolence or shared values to facilitate interactions between consumers and firms. As present, it is unclear which of these arguments holds more sway; thus.

RQ11: For a range of FinTech domains, to what extent are perceptions of concern and benevolence important in driving trusting intentions?
RQ12: For a range of FinTech domains, to what extent are perceptions of shared values important in driving trusting intentions?

Traditionally, expertise and competence have been viewed as important in ensuring that customers believe that an organisation has the necessary ability to deliver on promises and to therefore warrant the trust being placed in that organisation. The signalling of expertise and competence is often facilitated by professional qualifications and associations as well as a track record of success. In the FinTech domain, such signalling mechanisms are arguably less prevalent, but equally, consumers are likely to be similarly as demanding with regard to the level of expertise and competence that an organisation such possess to be trusted to be able to fulfil promises. The degree to which perceptions of expertise and competence are germane to levels of trust in the FinTech domain requires further investigation. Thus;

RQ13: For a range of FinTech domains, to what extent are perceptions of expertise and competence important in driving trusting intentions?

The final trusting belief incorporated into the model presented in Fig. 1 is communication. Genuine bi-lateral communication (as opposed to mere information provision) brings accuracy, explanation and openness to exchanges and has been shown to influence trust outcomes (Sekhon, et al., 2014; Whitener, et al., 1998) in a number of contexts. Whether or not such an argument holds in the generally highly technologically mediated context of FinTech is currently a moot point, thus:

RQ14: For a range of FinTech domains, to what extent are perceptions of communication important in driving trusting intentions?

Technological trust: Evaluating the role of technology and security in building trust

Of course, ex-ante, although many of the main trusting beliefs that may influence trusting intention can be identified from previous research with some confidence, given the contextual novelty and variations of FinTech, it is likely that further influential aspects of trusting belief will emerge from research. In particular, in the FinTech domain, the belief that one's assets and data are safe is still germane. In traditional financial services, this was achieved by large granite banking halls and related accoutrements. In the world of apps and the internet, it is achieved by the customer user experience (UX) and related factors. Earlier, the issues of data collection, privacy/security and usage were highlighted as particularly pertinent to the FinTech context (Bogusz, 2018; Thakor & Merton, 2018). Thus;

RQ15: For a range of FinTech domains, what, if any, further elements of trusting belief are important in driving trusting intentions?
RQ16: In particular, for a range of FinTech domains, to what extent does network design, resilience, reliability and usability engender trust in service provision via *apps and the Internet?*
RQ17: In particular, for a range of FinTech domains, to what extent does perceived effectiveness in data privacy and security engender trust in service provision via *apps and the Internet?*

Summary

The arguments presented here develop and explain a detailed research agenda focussed on trust in the context of FinTech. What is already known about trust in financial services has been analysed, and FinTech in particular, and research questions have been developed with reference to the extant literature. By adopting a specific focus on the important issue of aspects of trust in FinTech, we add to other work on a research agenda for FinTech that has been concerned with general trends and developments, as well as strategy and profitability in the FinTech domain. Our more focussed questions will provide important and timely insights that will be of use to academics and practitioners alike. Providing comprehensive, valid and reliable answers to those questions will no doubt involve a large multi-disciplinary research effort incorporating a wide variety of research methods from different traditions and philosophical perspectives. The contribution and insights above are offered with the aim of motivating researchers interested trust and FinTech to become involved in a collective effort to provide answers to questions such as the following: to what degree are traditional definitions and conceptualisations of trust translate to FinTech and whether adaptations are required?; from both the trustors' and trustees' perspective, what are the relevant objects of dependence that form the focus of the trust relationship in the context of FinTech?; how consistent are views on the importance of trust consistent across elements of the FinTech domain?; how best to measure and evaluate levels of trust in FinTech as well as the antecedents and consequences thereof and a number of other related questions. Providing answers to such questions would add significantly to collective understanding.

Funding Open access funding provided by University of the Free State.

Declarations

Competing interest There are no competing interests applicable to this manuscript.

References

Alt, R., Beck, R., & Smits, M. T. (2018). FinTech and the transformation of the financial industry. *Electronic Markets, 28*(3), 235–243. https://doi.org/10.1007/s12525-018-0310-9

Armantier, O., Doerr, S., Frost, J., Fuster, A., & Shue, K. (2021). *Whom do consumers trust with their data? US survey evidence BIS Bulletin No. 42*. Bank for International Settlements.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review, 11*(2), 150–166. https://doi.org/10.1177/1088868306294907

Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods*. Oxford University Press.

Bogusz, C. I. (2018). Digital traces, ethics, and insight: Data-driven services in FinTech. In Teigland, R., Siri, S., Larsson, A., Puertas, A. M., & Bogusz, C. I. (Eds.), *The Rise and Development of FinTech: Accounts of Disruption from Sweden and Beyond* (1st ed.). Routledge. https://doi.org/10.4324/9781351183628

Botsman, R. (2017). *Who can you trust? How technology brought us together – and why it could drive us apart*. Penguin Random House.

Bowlby, J. (1982). *Attachment and loss* (p. 1). Basic Books. Vol.

Cai, C. W. (2018). Disruption of financial intermediation by FinTech: A review on crowdfunding and blockchain. *Accounting & Finance, 58*(4), 965–992. https://doi.org/10.1111/acfi.12405

Chen, S., Doerr, S., Frost, J., Gambacorta L., & Shin, H. S. (2021). *The fintech gender gap*. BIS Working Papers, No 931. Bank for International Settlements.

Chuang, L. M., Liu, C. C., & Kao, H. K. (2016). The adoption of Fintech service: TAM perspective. *International Journal of Management and Administrative Sciences, 3*(7), 1–15.

Chuen, L. D. K., & Teo, E. G. S. (2015). Emergence of FinTech and the LASIC principles (November 7, 2015). *Journal of Financial Perspectives, 3*(3). Available at SSRN: https://ssrn.com/abstract=3084048

Coleman, J. S. (1990). *Foundations of social theory*. Harvard University Press.

Dasgupta, P. (1988). "Trust as a commodity. In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations"* (pp. 47–72). Blackwell.

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*, 319–340. https://doi.org/10.2307/249008

Delmastro, T. (2022). "Don't trust; verify. *Ultimate Money*. https://www.ultimatemoney.com.au/dont-trust-verify/. Accessed 24 Nov 2022.

Devlin, J. F., Ennew, C. T., Sekhon, H. S., & Roy, S. K. (2015). Trust in financial services: Retrospect and prospect. *Journal of Financial Services Marketing, 20*(4), 234–245. https://doi.org/10.1057/fsm.2015.21

Dietz, M., Khanna, S., Olanrewaju, T., & Rajgopal, K. (2016). *Cutting through the noise around financial technology*. McKinsey & Company. https://www.mckinsey.com/industries/financial-services/our-insights/cutting-through-the-noise-around-financial-technology. Accessed 30 Jan 2024.

Dorfleitner, G., Hornuf, L., & Kreppmeier, J. (2023). Promise not fulfilled: FinTech, data privacy, and the GDPR. *Electronic Markets, 33*, 33. https://doi.org/10.1007/s12525-023-00622-x

Edelman. (2020). *Why consumers just don't trust FinTechs*. Daniel J. Edelman Holdings, Inc. https://www.edelman.co.uk/why-consumers-just-dont-trust-fintechs. Accessed 8 June 2022.

Edelman. (2022). *Edelman Trust Barometer 2022: Global report*. https://www.edelman.com/sites/g/files/aatuss191/files/2022-01/2022%20Edelman%20Trust%20Barometer%20FINAL_Jan25.pdf. Accessed 2/9/2022.

Ennew, C., Kharouf, H., & Sekhon, H. (2011). Trust in UK financial services: A longitudinal analysis. *Journal of Financial Services Marketing, 16*, 65–75. https://doi.org/10.1057/fsm.2011.8

Ennew, C. T. (2009). *The financial services trust index*. University of Nottingham, UK: A Financial Services Research Forum Report. http://www.nottingham.ac.uk/business/businesscentres/crbfs/research/researchreports.aspx. Accessed 2/9/2022.

Ennew, C., & Sekhon, H. (2007). Measuring trust in financial services: The trust index. *Consumer Policy Review, 17*(2), 2–8.

Erikson, E. H. (1968). *Identity: Youth and crisis*. W.W. Norton & Company.

Frost, J. (2020). *The economic forces driving Fintech adoption across countries*. BIS Working Paper No 838. Bank for International Settlements.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS quarterly, 27*, 51–90.

Gimpel, H., Rau, D., & Röglinger, M. (2018). Understanding FinTech start-ups–A taxonomy of consumer-oriented service offerings. *Electronic Markets, 28*(3), 245–264. https://doi.org/10.1007/s12525-017-0275-0

Goldberg, L. R. (1990). An alternative "description of personality": The big-five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216–1229. https://doi.org/10.1037/0022-3514.59.6.1216

Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment, 4*(1), 26–42. https://doi.org/10.1037/1040-3590.4.1.26

Goldstein, I., Jiang, W., & Karolyi, G. A. (2019). To FinTech and beyond. *The Review of Financial Studies, 32*(5), 1647–1661. https://doi.org/10.1093/rfs/hhz025

Grayson, K., Johnson, D., & Chen, D.-F.R. (2008). Is firm trust essential in a trusted environment? How trust in the business context influences customers. *Journal of Marketing Research, 45*(2), 241–256. https://doi.org/10.1509/jmkr.45.2.241

Hansen, T. (2012). The moderating influence of broad-scope trust on customer–seller relationships. *Psychology & Marketing, 29*(5), 350–364. https://doi.org/10.1002/mar.20526

Holmes, J. G. (1991). Trust and the appraisal process in close relationships. In W. H. Jones & D. Perlman (Eds.), *Advances in personal relationships* (Vol. 2, pp. 57–104). Jessica Kingsley.

Jafri, J. A., Amin, S. I. M., Rahman, A. A., & Nor, S. M. (2024). A systematic literature review of the role of trust and security on Fintech adoption in banking. *Heliyon, 10*(1). https://doi.org/10.1016/j.heliyon.2023.e22980

Johnson, D., & Grayson, K. (2005). Cognitive and affective trust in service relationships. *Journal of Business Research, 58*(4), 500–507. https://doi.org/10.1016/S0148-2963(03)00140-1

Jourdan, Z., Corley, J. K., Valentine, R., & Tran, A. M. (2023). Fintech: A content analysis of the finance and information systems literature. *Electronic Markets, 33*, 2. https://doi.org/10.1007/s12525-023-00624-9

Kalifa, R. (2021). *Kalifa review of UK Fiintech*. HM Treasury. https://assets.publishing.service.gov.uk/media/607979c7d3bf7f400f5b3c65/KalifaReviewofUKFintech01.pdf. Accessed May 2021.

Kowalski, M., Lee, Z. W., & Chan, T. K. (2021). Blockchain technology and trust relationships in trade finance. *Technological Forecasting and Social Change, 166*, 120641. https://doi.org/10.1016/j.techfore.2021.120641

Lacity, M. C., Schuetz, S. W., Kuai, L., & Steelman, Z. R. (2024). IT's a matter of trust: Literature reviews and analyses of human trust in information technology. *Journal of Information Technology, 0*(0). https://doi.org/10.1177/02683962231226397

Langley, P., & Leyshon, A. (2021). The platform political economy of FinTech: Reintermediation, consolidation and capitalisation. *New Political Economy, 26*(3), 376–388. https://doi.org/10.1080/13563467.2020.1766432

Lewicki, R. J., & Bunker, B. B. (1995). Trust in relationships: A model of trust development and decline. In B. B, Bunker & J. Z. Rubin (Eds.), *Conflict, cooperation and justice* (pp. 133–173). Jossey-Bass.

Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social Forces, 63*, 971. https://doi.org/10.2307/2578601

Llewellyn, D. T. (1999). The case for financial regulation. *Journal of International Financial Markets, August Edition*, 153–161.

Martin, K. (2018). The penalty for privacy violations: How privacy violations impact trust online. *Journal of Business Research, 82*, 103–116. https://doi.org/10.1016/j.jbusres.2017.08.034

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*(3), 709–734. https://doi.org/10.2307/258792

McKechnie, S. (1992). Consumer buying behaviour in financial services: An overview. *International Journal of Bank Marketing, 10*(5), 5–39. https://doi.org/10.1108/02652329210016803

McKnight, D. H., Carter, M., Thatcher, J. B., & Clay, P. F. (2011). Trust in a specific technology: An investigation of its components and measures. *ACM Transactions on Management Information Systems (TMIS), 2*(2), 1–25. https://doi.org/10.1145/1985347.198535

McKnight, D. H. & Chervany, N. L. (2001). "What trust means in E-commerce customer relationships: An interdisciplinary conceptual typology". *International Journal of Electronic Commerce, 6*(2), 35–59. https://doi.org/10.1080/10864415.2001.11044235

McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organisational relationship. *Academy of Management Review, 23*(3), 473–490. https://doi.org/10.2307/259290

Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift trust and temporary groups. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166–195). Sage. https://doi.org/10.4135/9781452243610.n9

Milian, E. Z., Spinola, M. D. M., & de Carvalho, M. M. (2019). Fintechs: A literature review and research agenda. *Electronic Commerce Research and Applications, 34*, 100833. https://doi.org/10.1016/j.elerap.2019.100833

Moin, S., Devlin, J. F., & McKechnie, S. (2015). Trust in financial services: Impact of institutional trust and dispositional trust on trusting belief. *Journal of Financial Services Marketing, 20*(2), 91–106. https://doi.org/10.1057/fsm.2015.6

Morning Consult. (2021). *Most trusted brands 2021: Trust in financial services*. https://mtb.morningconsult.com/financial-services-2021/key-takeaways/. Accessed 8 June 2022.

Nangin, M. A., Barus, I. R. G., & Wahyoedi, S. (2020). The effects of perceived ease of use, security, and promotion on trust and its implications on Fintech adoption. *Journal of Consumer Sciences, 5*(2), 124–138. https://doi.org/10.29244/jcs.5.2.124-138

Ng, E., Tan, B., Sun, Y., & Meng, T. (2023). The strategic options of Fintech platforms: An overview and research agenda. *Information Systems Journal, 33*(2), 192–231. https://doi.org/10.1111/isj.12388

Pazaitis, A., De Filippi, P., & Kostakis, V. (2017). Blockchain and value systems in the sharing economy: The illustrative case of Backfeed. *Technological Forecasting and Social Change, 125*, 105–115. https://doi.org/10.1016/j.techfore.2017.05.025

Perdana, A., Jutasompakorn, P., & Chung, S. (2023). Shaping crowdlending investors' trust: Technological, social, and economic exchange perspectives. *Electronic Markets, 33*, 25. https://doi.org/10.1007/s12525-023-00650-7

Ramli, Y., Harwani, Y., Soelton, M., Hariani, S., Usman, F., & Rohman, F. (2021). The implication of trust that influences customers' intention to use mobile banking. *The Journal of Asian Finance, Economics and Business, 8*(1), 353–361. https://doi.org/10.13106/jafeb.2021.vol8.no1.353

Roh, T., Yang, Y. S., Xiao, S., & Park, B. I. (2022). What makes consumers trust and adopt fintech? An empirical investigation in China. *Electronic Commerce Research, 24*(1), 3–35. https://doi.org/10.1007/s10660-021-09527-3

Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality, 35*, 651–665. https://doi.org/10.1111/j.1467-6494.1967.tb01454.x

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross discipline view of trust. *Academy of Management Review, 23*(3), 393–104. https://www.jstor.org/stable/259285

Roy, S. K., Devlin, J. F., & Sekhon, H. (2015). The impact of fairness on trustworthiness and trust in banking. *Journal of Marketing Management, 31*(9), 996–1017. https://doi.org/10.1080/0267257X.2015.1036101

Sekhon, H., Ennew, C. T., Kharouf, H., & Devlin, J. F. (2014). Trust and trustworthiness: Influences and implications. *Journal of Marketing Management, 30*(3/4), 409–430. https://doi.org/10.1080/0267257X.2013.842609

Shapiro, D. L., Sheppard, B. H., & Cheraskin, L. (1992). Business on a handshake. *Negotiation Journal, 8*, 365–377. https://doi.org/10.1111/j.1571-9979.1992.tb00679.x

Sitkin, S. B., & Roth, N. L. (1993). Explaining the limited effectiveness of legalistic 'remedies' for trust/distrust. *Organization Science, 4*, 368–373. https://doi.org/10.1287/orsc.4.3.367

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Stewart, H., & Jürjens, J. (2018). Data security and consumer trust in FinTech innovation in Germany. *Information & Computer Security., 26*(1), 109–128. https://doi.org/10.1108/ICS-06-2017-0039

Tan, F. B., & Sutherland, P. (2004). Online consumer trust: A multi-dimensional model. *Journal of Electronic Commerce in Organizations, 2*(3), 40–58. https://doi.org/10.4018/jeco.2004070103

Thakor, R. T., & Merton, R. C. (2018). *Trust in lending*. SSRN Scholarly Paper ID 3210412. Social Science Research Network. https://doi.org/10.3386/w24778

Treasury, H. M. (2002). *"Medium and long term retail savings in the UK: A review" (The Sandler Report)*. H M Treasury.

Wang, J. S. (2021). Exploring biometric identification in FinTech applications based on the modified TAM. *Financial Innovation, 7*(1), 1–24. https://doi.org/10.1186/s40854-021-00260-2

Werth, O., Cardona, D. R., Torno, A., Breitner, M. H., & Muntermann, J. (2023). What determines FinTech success?—A taxonomy-based analysis of FinTech success factors. *Electronic Markets, 33*, 21. https://doi.org/10.1007/s12525-023-00626-7

Whitener, E., Brodt, S., Korsgaard, A., & Werner, J. (1998). Managers as initiators of trust: An exchange relationship framework for understanding managerial trustworthy behaviour. *Academy of Management Review, 23*(3), 513–530. https://doi.org/10.5465/AMR.1998.926624

Williamson, O. E. (1993). Calculativeness, trust, and economic organization. *Journal of Law and Economics, 34*, 453–502. https://doi.org/10.1086/467284

Wu, K., Zhao, Y., Zhu, Q., Tan, X., & Zheng, H. (2011). A meta-analysis of the impact of trust on technology acceptance model: Investigation of moderating influence of subject and context type. *International Journal of Information Management, 31*(6), 572–581. https://doi.org/10.1016/j.ijinfomgt.2011.03.004

Xia, H., Duqun, Lu., Lin, B., Nord, J. H., & Zhang, J. Z. (2022). Trust in Fintech: Risk, governance, and continuance intention. *Journal of Computer Information Systems*. https://doi.org/10.1080/08874417.2022.2093295

Yang, K. (2021). *Trust as an entry barrier: Evidence from FinTech adoption*. Available at SSRN 3761468. https://ssrn.com/abstract=3761468 or https://doi.org/10.2139/ssrn.3761468

Zhao, J. L., Fan, S., & Yan, J. (2016). Overview of business innovations and research opportunities in blockchain and introduction to the special issue. *Financial Innovation, 2*(1), 1–7. https://doi.org/10.1186/s40854-016-0049-2

Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure, 1840–1920. *Research in Organizational Behavior, 8*, 53–111. https://psycnet.apa.org/record/1988-10420-001