

An Investigation on the Impact of Financial Technology in the Banking Sector

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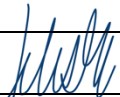
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Abstract

Advancements in technology and regulatory interventions have given rise to novel players named fintechs that fundamentally disrupt the traditional banking sector. However, academics stress that current empirical evidence regarding their impact on the market structures is scarce. Consequently, this undergraduate dissertation clarifies the bank-fintech competitive dynamics, examines attributes of their cooperation, and explores value creation motives and opportunism. Awareness of the current bank-fintech landscape supports all stakeholders in shaping their strategies on how to harness the opportunities as well as mitigate the associated risks. This research employs convenience and snowball sampling. The data is obtained via close-ended multiple-choice questionnaires and analysed using measures of frequency and non-parametric tests. The findings suggest that while coopetition is the most common bank-fintech competitive dynamic, banks either cooperate or compete with payment fintechs; banks cooperate with fintechs through strategic alliances and for product innovation; banks cooperate with payment fintechs with the motive of individual value creation and are more likely to act opportunistically.

Keywords: banking sector, financial technology, banks, fintechs, cooperation, competition, coopetition, resource-based view, industry convergence

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I. Introduction

I.I. Context

Dating back as early as the 1850s, technological advancements have played an important role in the development of the banking sector (Arner et al., 2015). However, during the past two decades, innovation has been compounding at a massive pace (Ashta & Biot-Paquerot, 2018; Lee & Shin, 2018; Murinde et al., 2022). Computing power, connectivity, and data processing have experienced significant improvements, thus ultimately lowering the associated costs while at the same time streamlining the customer experience (Feyen et al., 2021; Saksonova & Kuzmina-Merlino, 2017, Varga, 2017). Moreover, pitfalls of the traditional banking system resulted in regulatory scrutiny and deterioration of public sentiment, limiting the profitability of the banking sector (Anagnostopoulos, 2018; Magnuson, 2018; Vives, 2019b).

These factors have fundamentally shifted the market landscape, leading to the emergence of new entrants that often target both niche segments as well as those previously exclusive to banks (Brandl & Hornuf, 2017; Romanova & Kudinska, 2016; Thakor, 2020). Consequently, financial technology companies, in short fintechs, leverage financial technology to create novel or refine current business models, products, services, and processes (Gomber et al., 2018; Puschmann, 2017). They operate client-oriented and user-friendly digital platforms with customizable offerings to suit diverse personal preferences (Fonseca & Meneses, 2020; Hornuf et al., 2020; Stulz, 2019).

I.II. Problem statement

The banking sector encounters a substantial challenge due to the disruptive nature of fintechs, possibly threatening the survival of traditional institutions (Ashta & Biot-Paquerot, 2018; Gomber et al., 2018; Thakor, 2020; Varga, 2017). In fact, fintechs are likely to have a comprehensive and long-lasting impact as they inherently alter the value chain structures and redefine the competitive dynamics of the entire financial ecosystem (Hendershott et al., 2021; Philippon, 2017; Schueffel, 2017; Vives, 2019b). Banks are forced to swiftly adapt, but they often lack the necessary resources and capabilities to rival fintechs and vice versa, encouraging both sides to exploit potential synergies (Holotiuk et al., 2018; Hornuf et al., 2020; Laahanen & Yrjana, 2019; Murinde et al., 2022).

However, the bank-fintech phenomena have so far received little attention among academia (Schueffel, 2017; Varga, 2017). A number of authors highlight the large knowledge

deficit and call for further investigation. In general, it is not well understood what roles fintechs play and how they transform the banking sector (Chen et al., 2019; Schmidt et al., 2018). Simply put, whether fintechs can replace banks or rather strengthen their position is not clear (Murinde et al., 2022; Navaretti et al., 2018). Therefore, the relationship between banks and fintechs deserves closer inspection (Brandl & Hornuf, 2017; Harasim et al., 2021). More specifically, Holotiuk et al. (2018) and Drasch et al. (2018) suggest further research on the motivation of banks and fintechs to engage in cooperation. Similarly, Hornuf et al. (2020) highlight that the literature regarding bank-fintech strategic alliances is scarce. In addition, the concept of cooptation appears to be omitted almost completely from the bank-fintech literature (Fonseca & Meneses, 2020; Gai et al., 2018).

This undergraduate dissertation seeks to close the research gap and contribute to existing studies by producing additional empirical evidence on how fintechs impact the banking sector. In other words, the intention is to provide insights into the competitive dynamics between banks and fintechs, the forms and drivers of their cooperation, and the characteristics of fintechs in the cooperation. Moreover, this paper will problematise if bank-fintech cooperation possibly leads to a win-win situation.

I.III. Importance

It could be stated that a robust banking sector is essential for the functioning of every society. Although fintech innovation has the potential to yield positive outcomes for all stakeholders, it inevitably implies great uncertainty about the future outlook. As a result, an accurate and up-to-date awareness of the bank-fintech landscape can be critical not only for incumbents but also for newcomers and policymakers. It can support them in shaping and aligning their strategies on how to capture the opportunities that technology brings while mitigating the risks associated with this turbulent period.

I.IV. Research aims

The remainder of this undergraduate dissertation will be structured as follows. The literature review section will provide a background definition of the banking sector and financial technology. It will survey the emergence and categorisation of fintechs, and the positioning of incumbents. A theoretical framework will be proposed, and research objectives will be established based on the research gap. The methodology section will evaluate the research paradigms to justify the chosen design, hence the overall strategy on how the research will be

conducted. The data analysis section will identify the data types and suitable statistical approaches. The demographics of the sample will be analysed, and the findings related to each research objective will be discussed. Lastly, the conclusion section will offer a summary of the key contributions, the limitations of this study, and recommendations for further investigation.

II. Literature review

II.I. Role of the banking sector

As described by Bhattacharya & Thakor (1993) and Merton & Bodie (1998), the primary function of the banking system entails concurrently performing the following five activities that ensure effective allocation of capital: clearing and settlement to facilitate the transactions of goods and services through a medium of exchange; a mechanism to pool funds which enables investments in subdivided shares of large-scale businesses; transferring economic resources from savers' depositories to loan borrowers geographically, across time and industries; managing risk in an uncertain environment through insurance and portfolio diversification; collecting and processing data to support decision-making and deal with incentive problems caused by asymmetric information.

II.II. Defining financial technology

Arner et al. (2015), Puschmann (2017), Machkour & Abriane (2020), and Romanova & Kudinska (2016) claim that the term fintech was presumably introduced in the 1990s in the context of a newly established financial services technology consortium, an initiative launched by Citibank to promote cooperative efforts. Conversely, Schueffel (2017) and Milian et al. (2019) argue that the term was already used as early as 1972 in Bettinger's article demonstrating models for the analysis of daily issues in banking operations. At present, the interpretations of fintech vary considerably among academia and practitioners (Das, 2019; Gai et al., 2018; Milian et al., 2019; Schueffel, 2017; Thakor, 2020). Scholars predominantly reach a consensus about the fundamental elements, its boundaries, however, are comprehended ambiguously (Zavolokina et al., 2016). Different definitions are employed to complement the specific context and objectives of the research (Varga, 2017). Nevertheless, some authors have attempted to establish a unified understanding.

For instance, Schueffel (2017) proposes a definition based on a review of the most frequent commonalities in more than 200 journal articles mentioning the term during the last 40 years. The author describes fintech as a novel industry which deploys technologies arising from rapid advancements in computer science to enhance various financial activities. Furthermore, Milian et al. (2019) examined 179 publications roughly within the same time frame and deem fintechs as innovative companies in the financial sector that exploit the wide accessibility of the internet. In contrast, Zavolokina et al. (2016) focus on more recent literature and offer a

perspective supported by an analysis of 29 different sources. The authors find that most perceive fintechs as enablers of innovative solutions for the financial sector and usually refer to start-ups. Accordingly, Saksonova & Kuzmina-Merlino (2017) argue that fintechs are comprised of micro, small, and medium-sized companies in the early life stage. Varga (2017) further emphasises that fintechs are non or not fully regulated. On the other hand, Arner et al. (2015) consider fintechs regardless of sizes, business models, and product portfolios. In the same vein, Gomber et al. (2017) and Pollari (2017) suggest that the innovator can be either a start-up, an established technology company or a financial institution.

Laahanen et al. (2019) conclude that all financial institutions are increasingly leveraging technology, but fintechs place it at the core of their business models. Similarly, Puschmann (2017) point out that the term is closely associated with financial innovation, which Tufano (2003) observes as “an act of creating and then popularising new financial instruments, technologies, institutions and markets” (p. 311). Grounded on Pisano’s (2015) thoughts, Gomber et al. (2018) show that these innovations can be classified as both radical and disruptive, in other words, architectural, involving new technical competencies as well as business models. Additionally, Frame & White (2014) distinguish between financial innovation in regard to product, process, service, and organisational form.

With that all in mind, for the purpose of this undergraduate dissertation, fintechs will be broadly defined as innovative companies that leverage emerging technologies to improve financial activities.

II.II.I. Emergence

The application of information technology has long been of high strategic importance in the financial sector, especially for innovation efforts focused on data management (Gomber et al., 2017; Laahanen & Yrjana, 2019; Pollari, 2017; Puschmann, 2017). Moreover, across all industries globally, banking traditionally commits the highest percentage of revenues to information technology, making it the second largest cost factor right after labour (Arner et al., 2015; Gopalan et al., 2012; Lamberti & Buger, 2009; Scott et al., 2017). However, the improvements have not been passed through to end users, with the unit cost of financial intermediation in most major economies persisting at around 2% for the past 130 years (Bazot, 2018; Philippon, 2017).

A study by Arner et al. (2015) offers an evolutionary approach, classifying three phases of fintech development. The authors do not limit the term to current tendencies but describe dynamic changes in the environment as actors that have fuelled the innovation taking place. Varga (2017) suggests that their analysis can help explain how fintechs have achieved such momentum lately.

II.II.I. Recent development

Banks have historically enjoyed a privileged position as stable and trustworthy institutions that protect wealth, confidential information, and serve the customers' best interests (Jones & Ozcan, 2021). However, the 2008 Global Financial Crisis raised concerns about the lack of transparency and systemic misconduct, severely damaging the trust of retail clientele and sparking a shift in public perception of the traditional banking system (Arner et al., 2015). Magnuson (2018) argues that the crisis prompted the most pervasive revamp of financial regulation since the 1930s. The author further claims that legislators imposed a multitude of rigid requirements that substantially altered banks' organisational structures and performance incentives. Banks went through massive deleveraging, and their risk appetite fell significantly, meaning that credit became nearly impossible to obtain (Anifa et al., 2022; Varga, 2017; Vives, 2019a). Moreover, during the downturn, many well-educated professionals became unemployed or poorly compensated and thus sought new entrepreneurial opportunities (Arner et al., 2015; Gomber, 2017; Haddad & Hornuf, 2018).

Consequently, the post-alignment of market conditions served as a turning point in the rise of innovative players exploiting the regulatory arbitrage, and capturing unserved and under-served clientele over banks whose novel compliance obligations had the unintended outcome of restricting their ability to compete (Anagnostopoulos, 2018; Arner et al., 2015; Mention, 2019; Murinde et al., 2022; Stulz, 2019). After banks recovered, there was a noticeable gap as technologies continued to feed one another, and at the same time, highly technically proficient generation of millennials began to replace the retiring baby boomers, further accelerating the exponential rate of adoption (Laahane & Yrjana, 2019; Gomber et al., 2017).

II.II.II. Categorisation

In general, fintech encompasses the area of payment, investment, lending, and insurance, upon which various solutions have been built, with the most prominent ones being cryptocurrencies, robo-advisory, crowdfunding, and insurtech, respectively (Anifa et al., 2022;

Lee & Shin, 2018; Thakor, 2020). Moreover, their operation is grounded on technology platforms, including distributed ledger, robotics process automation, internet of things, cloud computing, and underpinned by artificial intelligence (Agarwal, 2019; Cao et al., 2021; Chen et al., 2019; Hendershott et al., 2021; Zheng et al., 2019). Fintechs utilize these to coordinate flows of information, creating new forms of value through disintermediation, an extension of access, financialisation, hybridisation, and personalisation (Gozman et al., 2018). As a result, fintechs are able to improve productivity, efficiency, transparency, and security of the banking system, customer engagement and satisfaction (Gomber et al., 2018; Laahnen & Yrjana, 2019; Navaretti et al., 2018; Thakor, 2020; Vives 2019b).

II.II.II.I. Payment

Cryptocurrencies solve the double-spending problem in electronic transactions by conducting them on a transparent peer-to-peer network, thus removing the involvement of central authority in facilitating the exchange (Bratspies, 2018; DeVries, 2016; Dwyer, 2015; Milutinovic, 2018). Cryptocurrencies can be stored on a physical or digital wallet that keeps a record of the current balance and ownership history (Bratspies, 2018; Dwyer, 2015; Liu, et al., 2021). Furthermore, each wallet is associated with a public and private address used to receive and sign transactions, which are then disclosed in a publicly accessible database, meaning independently validated typically through proof-of-work or proof-of-stake consensus mechanism (DeVries, 2016; Harwick, 2016; Milutinovic, 2018; Mukhopadhyay et al., 2016)

Proof-of-work requires solving mathematically difficult tasks to verify the transaction, which is a resource-intensive process reimbursed with newly distributed coins or other monetary compensation (Bach et al., 2018; Eyal, 2015; Gervais et al., 2016; Gupta et al., 2018). The downside can be that if a single entity constitutes more than 50 per cent of the computing power, it can unilaterally manage the network (Bratspies, 2018; Gervais et al., 2016; Harwick, 2016; Mukhopadhyay et al., 2016). Proof-of-stake assigns the highest probability of successful verification, hence the reward, to the entity that owns the largest number of coins, which also possibly introduces bias (Bach et al., 2018; Eyal, 2015; Nguyen et al., 2019; Saad et al., 2021).

II.II.II.II. Investment

Robo-advisors provide automated wealth management, asset allocation, and interactive investment consultation to optimise clients' financial objectives based on the assessment of their risk-to-return profiles (Ludden et al., 2015; Jung et al., 2018). Robo-advisors generally utilize

financial products that mirror market indexes, which results in a convenient fee system and low minimum investment (Beketov et al., 2018; Jung et al., 2018; Tao et al., 2020). Moreover, they can even achieve performance comparable to that of human advisors (Beketov et al., 2018). Consequently, robo-advisors are able to reach a substantial market of retail customers who could not previously access such services targeted at high-net-worth individuals (Jung et al., 2018; Ludden et al., 2015; Tao et al., 2021). In addition, robo-advisors employ a transparent monitoring structure, reducing the emotional and cognitive biases which are characteristic of human advisors and often adversely impact their recommendations (Beketov et al., 2018; D'Acunto et al., 2019; Foerster et al., 2017). However, robo-advisors might be too simplistic and not designed to consider the more personal factors as well as human advisors can through tailored interviews, and bosom relationships (Abraham et al., 2019).

II.II.II.III. Lending

Crowdfunding decentralizes the process of raising capital by directly matching a large audience of prospective contributors with organisations, entrepreneurs and individuals seeking funding support in order to undertake specific projects (Belleflamme et al., 2014; Mollick, 2014; Ordanini et al., 2011; Short et al., 2016; Valanciene & Jegeleviciute, 2013). Crowdfunding essentially democratises finance by providing a solution that appeals to market segments not penetrated by traditional financial intermediaries (Bretschneider et al., 2014; Haas et al., 2015; Jagtiani & Lemiux, 2018; Kim & Hann, 2013). In contrast to banks, they typically do not engage in credit monitoring and are not constrained by minimal reserve requirements through which regulators limit the total amount of capital lent, hence crowdfunding platforms can lower the costs for all participating sides (Herve & Schwienbacher, 2018).

The contributors commit capital to projects and, in return, expect different forms of benefits, which can be classified as royalty-based, collecting a share of profits; lending-based, yielding an interest rate on loan; reward-based, receiving a non-monetary compensation; equity-based, acquiring an ownership stake in a private enterprise; donation-based, voluntarily providing to the community as a philanthropist (Belleflamme et al., 2015; Mollick, 2014). Additionally, crowdfunding platforms can also serve as a tool for in-depth market research, supplying the initiators with valuable insight into the future potential and building an enthusiastic community of supporters (Belleflamme et al., 2014; Drover et al., 2016; Roma et al., 2017; Viotto da Cruz, 2018).

II.II.II.IV. Insurance

Insurtech streamlines insurance contracting, underwriting, and claims management, thereby reducing operational costs, and providing solutions to cover the underinsured population (Harit, 2021; Koprivica, 2018; Lewis, 2017; Stoeckli et al., 2018; Xu & Zweifel, 2020). Sensors in smart devices generate vast amounts of unstructured data from unconventional sources, where the linkages between disparate variables can be analysed, allowing the prediction of individuals' behavioural patterns (Harit, 2021; Wilamowicz, 2019). Insurtech exploits these to supplement the traditional insurance models through more accurate and dynamic risk profile assessment, and personalised premium-pricing strategies, emerging in flexible micro-events insurance that can better satisfy customer needs (Harit, 2021; Lewis, 2017; Wilamowicz, 2019; Xu & Zweifel, 2020). On the other hand, some high-risk groups could be perceived as uninsurable or unable to afford insurance as their premiums become unbearable (Lewis, 2017; Rawat et al., 2021; Wilamowicz, 2019).

II.III. Incumbents positioning

Historically, the banking sector has been an oligopoly with intense competition, and thus firms constantly strive to outperform their rivals (Machkour, 2020). Indeed, in the past, banks were often the early adopters of breakthrough technologies (Alt & Puschmann, 2012; Milian et al., 2019; Lamberti & Burger, 2009). However, more recently, they have been a minor figure in these financial innovations (Anagnostopoulos, 2018; Brandl & Hornuf, 2020). One of the main differences is that the prior generations of fintechs usually supplied back-end solutions to banks, but today, fintechs tend to design them to target niche market segments directly, thus unbundling banks' offerings of products and services (Brandl & Hornuf, 2020; Gomber et al., 2018; Gozman et al., 2018; Laahanen & Yrjana, 2019; Navaretti et al., 2018).

Banks are integrated both vertically, engaging with clients when raising and lending capital, as well as horizontally, offering information services that leverage synergies with the former (Boot et al., 2021). Over time depositors require more complex products and services, and in order to satisfy their needs and attract new customers, banks gradually broaden their portfolios, hence reaching scope and scale economies (Stulz, 2019; Navaretti et al., 2018). Consequently, cross-selling and bundling strategies help them increase and diversify revenues, improving market power and mitigating external shocks (Boot et al., 2021; Gerek, 2022; Koderisch et al., 2007).

Fintechs can disrupt this business model both horizontally, focusing on higher-margin products and services that require little or no access to the balance sheet, as well as vertically, forming an additional layer of intermediation through digital platforms, which hampers banks' control of the value chain and potentially assigns them an upstream role (Boot et al., 2021; Brodsky & Oakes, 2017; Feyen et al., 2021; Gai et al., 2018; Hornuf et al., 2020). On the other hand, banks have been able to develop a knowledge of international regulatory frameworks, insights into how financial markets function, different risk management techniques, and collect detailed data within a large client base (Ashta & Biot-Paquerot, 2018; Bratananu, 2017; Laahanen & Yrjana, 2019, Murinde et al., 2022; Varga, 2017). In addition, banks are generally financially healthier compared to fintechs, as they have access to abundant cheap deposit funding, which presents an opportunity to initiate resource-intensive projects and scale them much faster (Ashta & Biot-Paquerot, 2018; Boot et al., 2021; Haddad & Hornuf, 2018; Murinde et al., 2022; Pollari, 2017).

II.III.I. Institutional pressures

The banking sector has been shaped through extensive government supervisory interventions imposing an environment of high barriers to entry as regulators essentially aimed at decreasing incentives to compete because of financial stability and consumer protection worries (Anagnostopoulos, 2018; Arner et al., 2015; Ashta & Biot-Paquerot, 2018; Bratananu, 2017; Murinde et al., 2022). Furthermore, banks' core infrastructure was developed through a decades-long process of mergers and acquisitions, gradually stacking different platforms on top of each other to integrate the new products, services, and processes (Hornuf et al., 2020; Philipon, 2017; Stulz, 2019). These information systems were programmed in computer languages that are now becoming obsolete as the datasets are not organized in a way that could leverage emerging technologies (Stulz, 2019).

As a result, these factors, combined with banks' complex organisational structures, present obstacles in acclimatizing to the rapidly changing market landscape (Anagnostopoulos, 2018; Magnuson, 2018; Murinde et al., 2022; Rashid & Shahara, 2020; Stulz, 2019). Undertaking the needed transformation to promote an agile culture of open innovation and gain technology trend awareness entails operational and reputational risks, in other words, jeopardises profitability, at least in the short-run (Boot et al., 2021; Lee & Shin, 2018; Murinde et al., 2022; Stulz, 2019; Varga, 2017).

II.III.II. Competitive dynamics

Although most banks initially adopted a wait-and-see approach, considering fintechs as too-small-to-care, they soon began to perceive them as enablers of a competitive advantage over their traditional rivals (Ashta & Biot-Paquerot, 2018; Gomber et al., 2017; Lee & Shin, 2018; Laahnen & Yrjana, 2019; Schmidt et al., 2018). However, some fintechs directly challenge banks in certain areas while simultaneously being supportive in others, hence can be both adversaries and allies with opposing and common interests, respectively (Haddad & Hornuf, 2018; Gozman et al., 2018; Pollari, 2017; Romanova & Kudinska, 2016). Simply put, fintechs' strengths complement banks' weaknesses and vice versa, in other words, mutual cooperation can be critical (Mention, 2019; Schmidt et al., 2018).

Consequently, banks are taking a wide range of approaches to procure transformative ideas and enhance internal capabilities, including strategic alliances, joint ventures, accelerators, acquisitions, and incubators (Hornuf et al., 2020; Lee & Shin, 2017; Machkour & Abriane, 2020; Pollari, 2017; Vives, 2019b). More specifically, strategic alliances appear to be the ideal option, allowing banks to benefit from fintechs' mentality and product-related innovations without the need to build upon their legacy infrastructures and rigid corporate cultures, which in turn can lower the associated costs and risks (Gomber et al., 2017; Hornuf et al., 2020; Mention, 2019; Romanova & Kudinska, 2016). Nevertheless, it should be ensured that in the long term, alliances remain exclusive, as successful fintechs may try to prompt contest among the interested banks in order to gain leverage in negotiations (Boot et al., 2021).

II.IV. Theoretical framework

II.IV.I. Industry convergence

Advancements in information and communication technology, and shifting customer sentiment, have led to the pioneering of virtual organisations (Bengtsson & Raza-Ullah, 2016; Chandy & Tellis, 2000). Consequently, the transformation of the market landscape alters the environmental threats and opportunities, therefore incumbents are urged to respond through collaboration, cooperation, and coordination strategies rather than solely focusing on competition with their rivals (Bouncken & Kraus, 2013; Gnyawali & Park, 2011; Lado et al., 1997; Padula & Dagnino, 2007; Zineldin, 2004). Moreover, incumbents have to mitigate the potential diminishment of their competitive advantage originating from new entrants with superior

resources and capabilities, in turn leading to inferior performance and damaged brand prominence (Eisenhardt & Schoonhoven, 1996; Gnyawali & Park, 2011).

In order to sustain their market position, incumbents should aspire to be the first mover or close follower of trends in the industry by constantly seeking to develop novel resources and capabilities while exploiting the existing ones within and beyond their boundaries (Gnyawali & Park, 2011; Lado et al., 1997; Mention, 2011). In fact, resources and capabilities are the primary sources of competitive advantage (Barney, 2001; Peteraf, 1993; Prahalad & Hamel, 1990). Therefore, interdependent knowledge sharing can be vital for the refinement of the established processes and structures, and the development and commercialisation of new ideas, as mutual value creation can be greater than the sum of individual efforts (Bouncken & Kraus, 2013; Dorn et al., 2016; Gnyawali & Park, 2011; Loebecke et al., 1999; Ritala & Hurmelinna-Laukkanen, 2009).

As a result, organisations tend to form strategic alliances, where the best partner is usually a strong competitor or an actor on which they depend the most (Gulati & Gargiulo, 1999). In other words, incumbents can be attractive counterparts as they are often situated at the confluence of large information flows, hence benefit from a positive information asymmetry (Brass & Burkhardt, 1992; Chen et al., 1992; Gnyawali et al., 2006). Consequently, these central players, together with newcomers, who are highly structurally autonomous, tend to form the strongest and most advantageous links, allowing them to set industry standards and norms (Gnyawali & Park, 2011; Gomes-Casseres, 1994; Luo, 2007; Mione, 2009).

II.IV.II. Mechanisms of coopetition

Competitors often possess complementary resources and capabilities due to different specialisations, and face similar pressures, prompting them to cooperate in order to access, acquire, and leverage expertise almost immediately and without any major investments (Bouncken & Kraus, 2013; Emden et al., 2006; Gnyawali et al., 2006; Ritala & Hurmelinna-Laukkanen, 2009; Ritala & Sainio, 2014). Accordingly, coopetition is a relationship between organisations that compete with each other due to conflicting interests and simultaneously cooperate with each other due to common interests (Bengtsson & Kock, 2000; Padula & Dagnino, 2007; Zineldin, 2004). Some authors argue that co-opetition, as the most advantageous relationship between competitors, is crucial to the survival of companies, especially in technologically dynamic sectors (Bengtsson & Kock, 2000; Jorde & Teece, 1989).

Coopetition can result in a win-win situation, where both sides reap economic benefits in the form of increased profitability and brand recognition through market penetration and expansion (Bouncken et al., 2015; Luo, 2007; Ritala & Hurmelinna-Laukkanen, 2009). Moreover, cooperative arrangements often enhance economies of scope and scale, and lower the costs of research and development activities, hence stimulating innovations which can be then conveniently brought to the mass market and help organisations achieve long-run performance targets (Gnyawali & Park 2009, 2011; Park et al., 2014; Ritala, 2001; Ritala & Hurmelinna-Laukkanen, 2009).

However, coopetition also entails a high probability of tensions and thus can be difficult to balance properly (Bengtsson & Johansson, 2012; Hamel, 1991; Khanna et al., 1998; Ritala & Hurmelinna-Laukkanen, 2009; Zineldin, 2004). Although a high-trust/high-dependency environment tends to promote positive outcomes the most, both parties should ensure that they do not eventually become locked in (Bouncken & Fredrich, 2012). The resource-rich side may focus on individual interests, leading to opportunistic behaviour where it exploits its technical, political, and financial power to compel the smaller, more vulnerable partner to act in a way that is not in the latter's best interests (Hakansson & Ford, 2002; Osarenkhoe, 2010; Park & Russo, 1996; Tidstrom, 2014; Zineldin, 2004). Consequently, this can make organisations rather suspicious and cautious when sharing the secret sauce (Baumard, 2009; Lado et al., 1997; Tidstrom, 2014).

In conclusion, trustworthiness and commitment are fundamental to achieving a non-zero-sum game (Zineldin, 2004). Nevertheless, initial objectives change as both sides constantly evolve, reformulate, and reconfigure their strategies based on changes in the environment and how each of them reinterprets different interactions during the life cycle of the cooperative agreement (Dagnino, 2007; Koza & Lewin, 1998; Luo, 2007; Padula & Dahl, 2014; Zineldin, 2004). In other words, new actors join and others leave, some reduce and others increase their commitment (Pathak et al., 2014; Williamson & De Meyer, 2012).

II.V. Research gap

A number of scholars have reported that banks and fintech companies tend to cooperate proactively with each other, especially through strategic alliances. For instance, Harasim (2021) suggests that because banks' and fintechs' resources and capabilities are mostly complementary, they should cooperate with each other rather than compete. Consequently, Drasch et al. (2018)

claim that strategic alliances are the most common form of cooperation, while acquisitions and in-house development represent only a minority.

It has been explored in academic papers what are the driving forces behind these dynamics. To give an illustration, Holotiuk et al. (2018) found that for banks, the main reasons to form strategic alliances are to adopt dynamic capabilities and operational agility in pursuit of competitive advantage through rapid innovation, and for fintechs to achieve stable revenue flows, leveraging banks' brand reputation and client base. Similarly, Fonseca & Meneses (2020) maintain that the primary motives for banks and fintechs to engage in cooperative strategic alliances are to acquire niche technological know-how and organisational flexibility, reach scale economies and access insights into financial markets, respectively.

There is also some evidence regarding the decision-making process of how banks approach fintechs. For example, Schmidt et al. (2018) propose an analysis of seven collaborative business models, considering different areas within banks where fintechs' solutions can be applied. In addition, Anand & Mantrala (2019) define five strategic options for banks based on the type of threat fintechs present, characterized by high and low levels of market and technology-centred disruption.

However, it appears that no research has been done on the degree of conflict between competition and cooperation in the case of banks and fintechs. According to Khanna et al. (1998), there are private and common motives for organisations to engage in strategic alliances, and although most participants enjoy the combination of both, those earned by one do not have to be equal to those earned by the other. In the same vein, Gnyawalli & Charleton (2018) refer to joint value creation, where all sides contribute resources and capabilities to solve a mutual problem, however, with the potential for different firm value creation, where additional benefits are generated by combining the former with internal resources and capabilities.

II.V.I. Research objectives

This undergraduate dissertation has three research objectives. First, clarify the competitive dynamics between banks and fintechs and the types of fintechs banks primarily cooperate and compete with. Second, examine the primary form of cooperation between banks and fintechs along with the key benefits for both sides that prompt their formation, the life stage of fintechs that banks choose to cooperate with, and the innovation that fintechs supply to banks

in the cooperation. Third, explore the value creation motives of banks in the cooperation with fintechs and the likelihood of opportunistic behaviour.

III. Methodology

III.I. Research paradigms

Research paradigms can be described as conceptual patterns, structures, frameworks, systems, or sets of common beliefs, values, propositions, or assumptions about the nature of the world that guide research in a particular field, in other words, a culture within a group of academics that influences how knowledge is produced, analysed, and interpreted (Alharahsheh & Piu, 2020; Kivunja & Kuyini, 2017; Krauss, 2015; Rahi, 2017; Rehman & Alharthi, 2016). There is no single approach applicable in all cases, each paradigm rather clarifies scholars' distinct philosophical intents, motivations, and expectations for the study, meaning that the selection entails its own advantages and drawbacks (Mackenzie & Knipe, 2006; Schulze, 2003; Taylor & Medina, 2011; Tuli, 2011). Research paradigms comprise three interconnected dimensions: ontology, epistemology, and methodology (Alharahsheh & Piu, 2020; Taylor & Medina, 2011). In addition, Scotland (2012) distinguishes methods as the fourth one.

III.I.I. Ontology

Ontology seeks to understand and explain the nature of existence or being, what constitutes reality, how the world is structured, and how different phenomena are linked (Alharahsheh & Piu, 2020; Kivunja & Kuyini, 2017; Scotland, 2012). Researchers interpret the gathered data in a way that fits their perceptions and assumptions about the investigated area (Kivunja & Kuyini, 2017; Scotland, 2012; Rehman & Alharthi, 2016).

III.I.II. Epistemology

Epistemology studies the nature and forms of human knowledge and, therefore, how it is created, acquired, validated, and communicated to others (Kivunja & Kuyini, 2017; Scotland, 2012). Researchers contribute to the broader learning in their field of interest based on how they uncover and comprehend the knowledge (Alharahsheh & Piu, 2020; Kivunja & Kuyini, 2017).

III.I.III. Methodology

Methodology is an overall strategy or plan that converts the ontological and epistemological choices into research design, outlining how to conduct the study (Alharahsheh & Piu, 2020; Antwi & Hamza, 2015; Mackenzie & Knipe, 2006; Tuli, 2011). Although methodology focuses on the procedures which should be pursued in order to achieve the research objectives, it articulates the logical flow rather than determining the specific methods (Alharahsheh & Piu, 2020; Kivunja & Kuyini, 2017).

III.I.III.I. Interpretivism

Interpretivists believe that multiple realities are constructed through human observations and experiences, and that their interpretations are constantly evolving in social discussions (Antwi & Hamza, 2015; Kivunja & Kuyini, 2017; Krauss, 2015; Rehman & Alharthi, 2016; Ryan, 2018). They argue that the world does not exist independently of our consciousness, hence knowledge is created rather than discovered (Rehman & Alharthi, 2016; Yilmaz, 2013). Consequently, interpretivists attempt to explore standpoints and meaning-making processes of individuals in a particular context that is being researched, while considering the differences in cultural and historical circumstances (Alharahsheh & Piu, 2020; Antwi & Hamza, 2015; Kivunja & Kuyini, 2017; Krauss, 2015; Rahi, 2017). They aim to develop an understanding of the phenomena through their own thinking and cognitive processing of interactions with the participants (Kivunja & Kuyini, 2017; Krauss, 2015; Scotland, 2012; Taylor & Medina, 2011; Yilmaz, 2013).

On the one hand, the contributions of authors with diverse backgrounds can support more comprehensive intellectual progress (Smith, 1983). On the other, interpretivists are often influenced by their personal values and beliefs, in other words, despite investigating the same issue, the outcome may differ (Mackenzie & Knipe, 2006; Scotland, 2012; Rahi, 2017; Rehman & Alharthi, 2016; Ryan, 2018). They value the notion that truth is subjective, which can lead to a lack of trustworthiness and credibility (Krauss, 2015; Ryan, 2018; Scotland, 2012; Tuli, 2011). Nevertheless, interpretivists can achieve more legitimacy by acknowledging that although their conclusions are defensible and reasonable, they are not certain (Scotland, 2012; Weber, 2004).

III.I.III.II. Positivism

Positivists believe that reality is singular, does not depend on human senses, and can be rather understood through immutable laws that provide generalisable cause-and-effect relationships leading to its discovery (Alharahsheh & Piu, 2020; Antwi & Hamza, 2015; Rehman & Alharthi, 2016; Ryan, 2018; Yilmaz, 2013). Consequently, positivists seek to describe a world where the surrounding forces can be predicted and controlled with certainty into the future (Antwi & Hamza, 2015; Krauss, 2015; Rehman & Alharthi, 2016; Scotland, 2012; Yilmaz, 2013). Positivists test theories or hypotheses as only scientifically confirmed knowledge through precise measurements can be considered an objective truth (Antwi & Hamza, 2015; Scotland, 2012; Taylor & Medina, 2011; Ryan, 2018; Yilmaz, 2013). They aim to remain detached from

the participants in order to gather pure facts without any interruption (Bryman, 1984; Rehman & Alharthi, 2016; Scotland, 2012; Tuli, 2011). Therefore, if the study is reliable, the same conclusions can be replicated or are applicable when investigating similar phenomena (Kivunja & Kuyini, 2017; Rehman & Alharthi, 2016; Weber, 2004).

This undergraduate dissertation will adhere to the positivist research paradigm mainly because the research objectives are to validate previous studies in the area of competitive dynamics, cooperation between banks and fintechs, and apply the related theory to fill the research gap regarding the value creation motives and opportunism, discovering knowledge that will potentially be viable beyond the context of this paper.

III.I.IV. Methods

Methods refer to techniques and tools used for the collection and analysis of data and can be tracked back to the epistemological, ontological, and methodological mindset of the researcher (Alharahsheh & Piu, 2020; Kivunja & Kuyini, 2017; Mackenzie & Knipe, 2006; Scotland, 2012; Rehman & Alharthi, 2016). Methods navigate the researcher whether a qualitative or a quantitative type of data, in some cases a combination of both, is suited for the purpose of the study (Alharahsheh & Piu, 2020; Rehman & Alharthi, 2016; Scotland, 2012). Interpretivists predominantly utilise qualitative research methods, collecting non-numerical data usually through different types of interviews, while positivists tend to rely on quantitative research methods, hence numerical data obtained through questionnaires (Antwi & Hamza, 2015; Kivunja & Kuyini, 2017; Mackenzie & Knipe, 2006; Rehman & Alharthi, 2016; Ryan, 2018).

III.I.IV.I. Qualitative

In general, the following five qualitative methods are distinguished: case studies, ethnographic studies, grounded theory studies, phenomenological studies and content analyses (Khan, 2014; Weber, 2004; Toloie-Eshlaghy et al., 2011; Williams, 2011).

III.I.IV.II. Quantitative

Quantitative research methods can be classified into these three categories: causal-comparative, experimental, and descriptive (Lowhorn, 2007; Nenty, 2009; Williams, 2011). Causal-comparative research examines cause-effect relationships between independent and dependent variables through a retrospective lens (Williams, 2011). Experimental research manipulates variables to test theory against hypotheses, and can be further divided into pre-

experimental, true-experimental, and quasi-experimental (Rehman & Alharthi, 2016; Lowhorn, 2007; Williams, 2011). Descriptive research describes the attributes of the chosen phenomenon in its present state and as accurately as possible (Atmowardoyo, 2018; Lowhorn, 2007; Salaria, 2012; Williams, 2011).

This undergraduate dissertation will employ descriptive quantitative research, which seems to suit the investigated problem as it has not been adequately explored. Hence, it can provide a valuable foundation for further research into this topic. In addition, this approach complements the positivist view.

III.II. Survey design

Survey design explains how a sample is selected from the target population and whether an interview or questionnaire is used to collect data (Kelley et al., 2003; Rahi, 2017). How the survey is designed then translates into the success of the research as it significantly impacts both the number of responses as well as their relevance (Bee & Murdoch-Eaton, 2016; Kelley et al., 2003; Murray, 1999; Roopa & Rani, 2012).

Questionnaires can be either open-ended, where participants formulate their own answers, close-ended, where predefined choices are offered, or a mixture of both (Kelley et al., 2003; Leung, 2001; Murray, 1999; Roopa & Rani, 2012). Nevertheless, each question should serve a specific purpose, avoid ambiguous wording, jargon, acronyms, and rather use clear and concrete language, considering the background of the target population so that the meaning can be comprehended effortlessly (Bee & Murdoch-Eaton, 2016; Kelley et al., 2003; Leung, 2001; Roopa & Rani, 2012; Song et al., 2015). Questions should not be structured to lead the respondents to a particular answer, and double negatives should be circumvented as they often result in confusion (Kelley et al., 2003; Murray, 1999; Song et al., 2015). Furthermore, questions should be numbered and flow smoothly from one theme to another (Murray, 1999; Roopa & Rani, 2012; Song et al., 2015). In other words, the questionnaire should be convenient to navigate and not excessively long (Bee & Murdoch-Eaton, 2016; Song et al., 2015). Additionally, in the case of close-ended questions, it should be ensured that the options are mutually exclusive and collectively exhaustive, and a contingency category such as “other, please specify” should be included because it can be difficult to cover all alternatives (Murray, 1999; Roopa & Rani, 2012).

In general, questionnaires are time-efficient, easy to administer, and allow the participants to remain anonymous. It was decided that a close-ended questionnaire will be employed in this undergraduate dissertation as the possible answers were identified throughout the literature review. The questionnaire will be designed considering the general principles in order to achieve a maximum response rate. More specifically, each question will be numbered and clearly articulated in simple language with the intention to convey a single unbiased thought. There are sixteen questions in total which can be grouped into four main areas in a logical flow according to the research objectives (Appendix A).

III.II.I. Target population

Target population is the entire group of individuals that the researcher wants to investigate and deduce conclusions about (Martinez-Mesa et al., 2016; Rahi, 2017)

The target population of this undergraduate dissertation will be middle and top managers engaged in the financial sector and located mainly across the four European regions. The higher levels of organisational hierarchy will be targeted because they enjoy greater responsibility, and often possess the authority to make strategic decisions and supervise their implementation. In other words, they should be more knowledgeable than the lower echelons and have a broader overview of the market landscape. The study will target professionals engaged in the financial sector because the banking sector is typically classified as a subset of the former, meaning that banks are dependent on and interconnected with a diverse range of entities.

III.II.II. Sampling method

Sampling is a process of selecting part of the target population (Martinez-Mesa et al., 2016; Salaria, 2012; Rahi, 2017; Turner, 2020). Compromise usually must be made between the perfect and feasible sample, as the former cannot be achieved in the majority of cases (Martinez-Mesa et al., 2016; Shorten & Moorley, 2014). There are two sampling methods: probability and non-probability (Acharya et al., 2013; Berndt, 2020; Etikan, 2017; Rahi, 2017; Turner, 2020).

III.II.II.I. Probability

Probability sampling assigns every individual from the target population a known equal chance of being selected and further includes simple random, stratified, cluster, and systematic sampling (Acharya et al., 2013; Etikan, 2017; Martinez-Mesa et al., 2016; Rahi, 2017; Taherdoost, 2016).

III.II.II.II. Non-probability

Non-probability sampling determines the sample in a non-systematic way, hence some individuals have a higher chance of being selected than others (Elfil & Negida, 2017; Martinez-Mesa et al., 2016; Rahi, 2017; Shorten & Moorley, 2014; Turner, 2020). This sampling method further includes convenience, purposive, voluntary, and snowball sampling (Berndt, 2020; Etikan, 2017; Rahi, 2017; Taherdoost, 2016; Turner, 2020).

Although quantitative researchers or positivists, often pursue probability sampling methods that help them achieve objectivity and generalisability, they may also employ non-probability sampling, which is not as ideal but can be necessary in some cases (Elfil & Negida, 2017; Holt, 2009; Kriska et al., 2013; Meadows, 2003). Obtaining access to a reliable database of the target population may often be quite challenging or nearly impossible (Elfil & Negida, 2017; Etikan et al., 2016; Panacek & Thompson, 2007; Quick & Hall, 2015). Consequently, via non-probability sampling, researchers can reach out to members of special populations who can be reluctant to take part in the research due to various reasons (Berndt, 2020; Martinez-Mesa et al., 2016; Quick & Hall, 2015; Shorten & Moorley, 2014; Turner, 2020).

Convenience sampling allows researchers to recruit participants that are easily accessible to them and suit the characteristics of the target population (Elfil & Negida, 2017; Etikan, 2017; Rahi, 2017; Taherdoost, 2016; Turner, 2020). On the one hand, this method can save time and costs, on the other, it can lead to biased outcomes when the sample differs significantly from the target population (Elfil & Negida, 2017; Rahi, 2017; Shorten & Moorley, 2014; Turner, 2020). In addition, snowball sampling essentially builds on the former as the initial respondents refer the researcher to or directly contact others, in their social and professional networks, who may be interested and fit the description (Elfil & Negida, 2017; Etikan, 2017; Rahi, 2017; Taherdoost, 2016; Turner, 2020).

The target population of this undergraduate dissertation can be considered hardly accessible. The University of Huddersfield provides a license for Orbis from Moody's, a database of over 450 million companies, including the financial sector. However, there is no unified list of middle and top managers within these institutions. When certain filters are applied, the contact information of chief executives can be found. Nevertheless, this approach would be quite inconvenient as it would require inspecting thousands of organisations one by one and then importing all the data into a spreadsheet where probability sampling could be performed.

Moreover, it can be argued that the chance of these managers completing the questionnaire would be negligible.

Therefore, convenience sampling will be employed for the purpose of this undergraduate dissertation. The reason why it was chosen is that I have been able to develop a number of good relationships with relatively senior managers engaged in the financial sector throughout my studies at European universities, proactively seeking opportunities to take part in different projects and competitions, as well as professional experience, getting an internship in a strategy consultancy in one of their European offices. However, because only eight potential participants were identified (Figure 1), the research further relies on snowball sampling with the aim to reach a higher number of responses.

Figure 1

Potential Respondents Identified via Convenience Sampling

Primary professional area	Location	Level of seniority
Venture capital	Central and Eastern Europe	B-level
Retail banking	Western Europe	B-level
Advisory and consulting	Central and Eastern Europe	D-level
Advisory and consulting	Central and Eastern Europe	D-level
Technology	Central and Eastern Europe	C-level
Corporate banking	Central and Eastern Europe	Chair or member of the board
Government regulation	Central and Eastern Europe	Chair or member of the board
Brokerage	Central and Eastern Europe	Chair or member of the board

III.II.III. Distribution method

The questionnaire will be distributed electronically. Depending on our previous communication, private messages will be sent to the potential participants through the professional network LinkedIn, or they will be contacted by my university or personal email, as some are familiar with one of these addresses, and thus the message is unlikely to fall into the spam folder. Consequently, the data will be primary and collected cross-sectionally, meaning at a single point in time. However, a short period of 14 days from the initial contact will be allowed for the snowball effect to occur.

III.II.IV. Ethical considerations

Questionnaires should be conducted so that respondents can be assured of anonymity where possible, as they will usually be more inclined to participate if their privacy is protected and the legal requirements are met (Kelley et al., 2003; Murray, 1999; Roopa & Rani, 2012). The introduction should briefly inform about the purpose, who is the initiator, and contain a statement regarding confidentiality along with the consent to take part in the study (Bee & Murdoch-Eaton, 2016; Kelley et al., 2003; Leung, 2001; Murray, 1999). The ending should thank the respondent for completion (Leung, 2001; Murray, 1999).

The beginning of the questionnaire will shortly describe for whom it is intended, what is the research problem, and who is conducting the study. Consent will be given by acknowledging all the given information and clicking the arrow on the bottom right side of the first page. It will also be stated that participants can stop at any time by just leaving the questionnaire and closing the browser. However, once their responses are submitted, it will not be feasible to remove them as the questionnaire is anonymous. Respondents' browsers, operating systems, internet protocol addresses, location data, and contact information will not be recorded in any form. Their responses will be stored securely on a password-protected account accessible only to the researcher, and on Qualtrics servers which are independently audited and comply with the latest industry standards.

IV. Data analysis

IV.I. Data types

Data types depend on the level of detail measured within a response (Kaliyadan & Kulkarni, 2019; Thompson, 2009). In general, quantitative and qualitative variables are distinguished (Thompson, 2009).

IV.I.I. Quantitative variables

Quantitative or numerical variables are further divided into continuous and discrete (Kaliyadan & Kulkarni, 2019). Continuous variables represent any value within a given infinite range, where the increments are of equal distance (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019). Continuous variables are either intervals or ratios, with the difference that the latter has a true zero point (Kaur et al., 2018). Discrete variables are essentially counts of individual items and cannot be subdivided, meaning they do not assume any middle value (Kaliyadan & Kulkarni, 2019).

IV.I.II. Qualitative variables

Qualitative or categorical variables are divided into nominal and ordinal (Kaliyadan & Kulkarni, 2019; Kaur et al., 2018; Thompson, 2009). Nominal variables group data into mutually exclusive categories with no hierarchy (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019; Thompson, 2009). Nominal variables that contain just two categories are classified as dichotomous (Kaur et al., 2018; Thompson, 2009). Ordinal variables are similar to nominal, the difference is that here the categories are ranked in an inherent order (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019; Kaur et al., 2018; Thompson, 2009).

In this undergraduate dissertation, most of the gathered variables seem to be nominal (Appendix A). Just 4 out of the total 16 questions measure ordinal variables, and 3 of them are of demographical nature, including age, highest education completed, and level of seniority in the organisational hierarchy. The last one examines the life stage of fintechs banks primarily cooperate with.

IV.II. Statistical approach

IV.III.I. Descriptive

Descriptive statistics is often the first step when analysing data, used to summarise and communicate the characteristics of the sample as simply as possible (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019; Kaur et al., 2018; Mishra et al., 2019; Thompson, 2009).

Descriptive statistics typically entails measures of frequency, central tendency, dispersion, and variation (Chanoknath & Louangrath, 2015; Kaur et al., 2018). Measures of frequency count how many times each nominal or ordinal variable occurs within the sample (Mishra et al., 2019; Thompson, 2009). They are usually presented in the form of tables, bar charts, and pie charts (Kaur et al., 2018). Measures of central tendency describe the representative value of the data, which then serves as input for further statistical analyses (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019; Mishra et al., 2019; Thompson, 2009). They include mean, median, and mode (Kaur et al., 2018). Measures of deviation and variation show the degree to which values differ from the mean and median (Kaur et al., 2018; Mishra et al., 2019). They encompass standard deviation and error, quartile, percentile, range, and coefficient of variation (Fisher & Marshall, 2009; Kaliyadan & Kulkarni, 2019; Kaur et al., 2018; Mishra et al., 2019).

The basic demographics of the sample will be visualised through pie charts and organised into crosstabulations to provide additional detail. It can be argued that calculating the mode for nominal and ordinal variables or minimum, maximum, and range for ordinal variables would not necessarily provide any valuable insights. IBM SPSS platform will be used to conduct descriptive analyses and present the outputs.

IV.II.II. Inferential

Inferential statistics employs parametric and non-parametric tests to assess the significance of associations within the data and their generalisability to the target population (Bettany-Saltikov & Whittaker, 2014; Kaliyadan & Kulkarni, 2019; Allua & Thompson, 2009). In other words, it enables researchers to draw conclusions (Chanoknath & Louangrath, 2015; Mishra et al., 2019). However, one of the conditions for parametric tests is that the variables must be interval or ratio (Bettany-Saltikov & Whittaker, 2014). If this is violated, non-parametric tests should be utilised (Allua & Thompson, 2009).

Pearson's Chi-squared test of independence determines relationships between two nominal variables (Franke et al., 2012; Marshall & Jonker, 2011; McHugh, 2013). Along with Fisher's exact test, it is the only non-parametric test that can measure the relationships between nominal variables (Nowacki, 2017). Nevertheless, certain assumptions must be met for Pearson's Chi-squared test of independence to be reliable (Nowacki, 2017). More specifically, at least 80% of the cells should have a minimum expected count of 5 (Kim, 2017; McHugh, 2013; Nowacki, 2017). Hence, if more than 20% of the cells have an expected count of less than 5, Fisher's exact

test should be employed (Kim, 2017; McHugh, 2013; Nowacki, 2017). Both are built on the same foundations, but the latter does not rely on approximations and thus is better suited for small sample sizes (Kim, 2017). Furthermore, for contingency tables larger than 2x2, an extension of Fisher's exact test, that is, Fisher–Freeman–Halton exact test, should be used (Ruxton & Neuhauser, 2010).

For the purpose of this undergraduate dissertation, non-parametric tests will be used. Fisher-Freeman-Halton exact test was identified as the appropriate one to pursue, while Pearson's Chi-squared test of independence will be employed where the requirements are met. IBM SPSS platform will be used to perform these tests and to present the findings in the form of tables, bar charts, or clustered bar charts when there is a significant association.

IV.III. Demographics

In total, 19 respondents took part in the questionnaire, from which 74% (14) and 26% (5) were males and females, respectively (Figure 2, 3). Consequently, it could be stated that a considerable snowball effect occurred. The most frequent age group was 25-34, followed by 35-44, meaning that 37% (7) participants selected the former, and 32% (6) the latter (Figure 2, 4). Furthermore, 21% (4) were between 45-54 years old, and 11% (2) were between 55-64 (Figure 2, 4). The participants were predominantly located in Western Europe, representing 74% (14), followed by Central and Eastern Europe at 16% (3), and surprisingly North America at 11% (2) (Figure 2, 5). Additionally, all participants completed a university education. 74% of them hold postgraduate degrees, that is, 4 were doctors, and 10 were masters, while the remaining 26% (5) were undergraduates or bachelors (Figure 2, 6).

Figure 2*Gender * Age, Highest Education Completed, and Location*

		Gender				Total	
		Male		Female		N	%
		N	%	N	%	N	%
Age	25–34	3	21.4%	3	60.0%	6	31.6%
	35–44	6	42.9%	1	20.0%	7	36.8%
	45–54	3	21.4%	1	20.0%	4	21.1%
	55–64	2	14.3%	0	0.0%	2	10.5%
Total		14	100.0%	5	100.0%	19	100.0%
Highest education completed	Bachelor's degree	4	28.6%	1	20.0%	5	26.3%
	Master's degree	6	42.9%	4	80.0%	10	52.6%
	Doctoral degree	4	28.6%	0	0.0%	4	21.1%
Total		14	100.0%	5	100.0%	19	100.0%
Location	Central and Eastern Europe	3	21.4%	0	0.0%	3	15.8%
	Western Europe	9	64.3%	5	100.0%	14	73.7%
	North America	2	14.3%	0	0.0%	2	10.5%
Total		14	100.0%	5	100.0%	19	100.0%

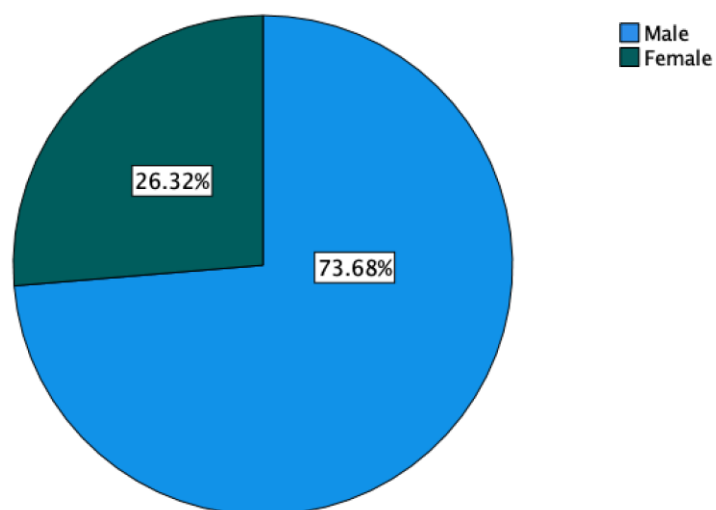
Figure 3*Gender*

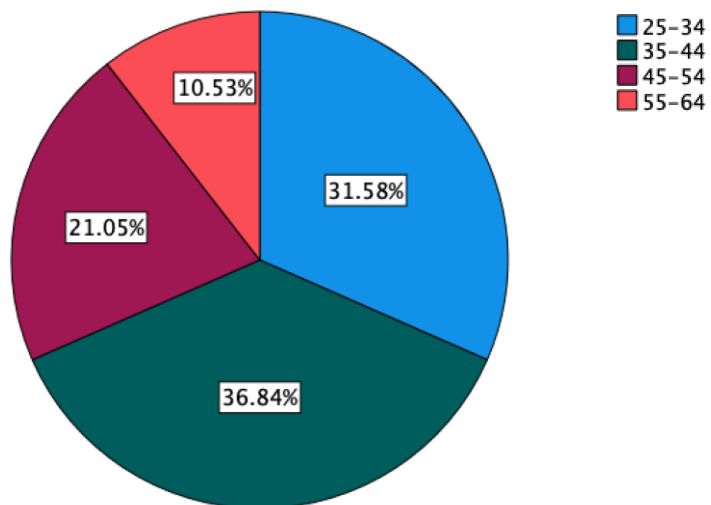
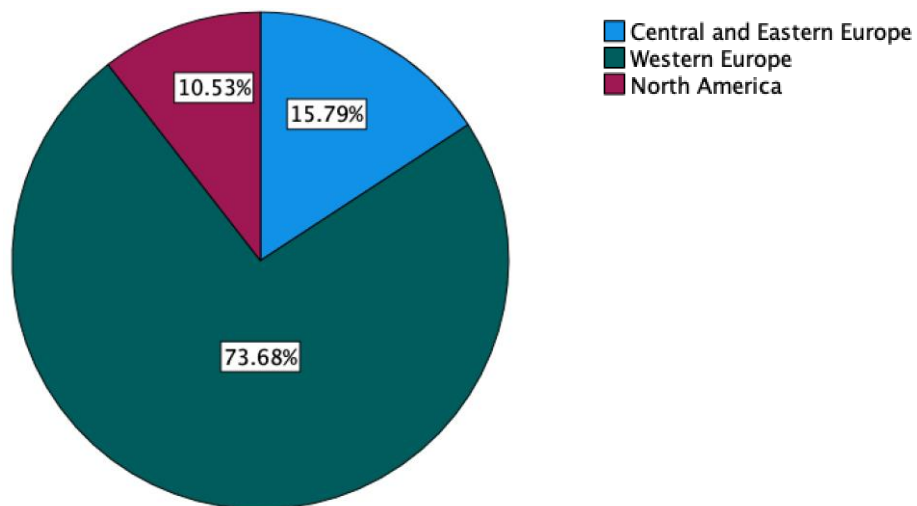
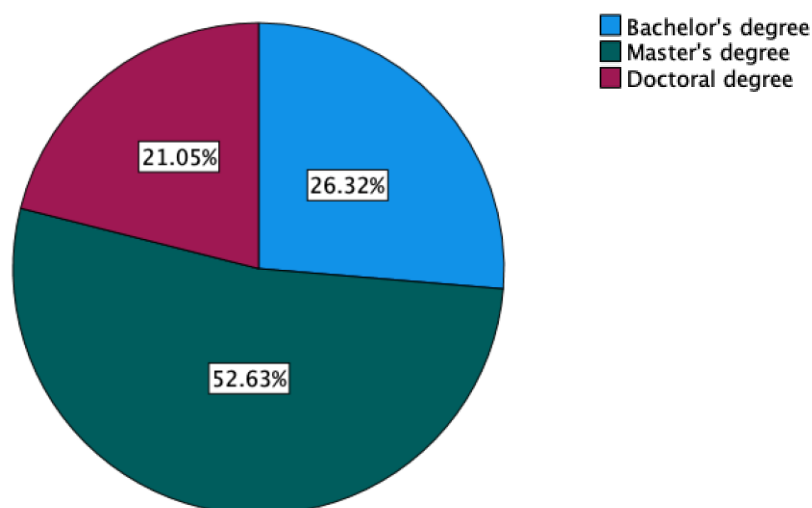
Figure 4*Age***Figure 5***Location*

Figure 6
Highest Education Completed



Over half of the respondents selected advisory and consulting as their primary professional area, while the remaining 47% were quite fragmented, ranging from brokerage, corporate banking, government regulation, investment banking, retail banking, venture capital, and corporate taxation to technology (Figure 7, 8). Hence, 16% (4) work directly in the banking sector (Figure 7, 8). Moreover, 58% (11) of the participants occupied the top of the organisational hierarchy, including 32% (6) at the director level, 21% (4) at the vice president level, and 5% (1) chairman or member of the board. However, chief officers did not take part in this study. The remaining 42% (8) were at B-level, in other words, middle managers.

Figure 7

*Level of Seniority in Organisational Hierarchy * Primary Professional Area*

		Level of seniority in organisational hierarchy									
		B-level		D-level		V-level		Chairman or member of the board		Total	
		N	%	N	%	N	%	N	%	N	%
Primary professional area	Advisory and consulting	5	62.5%	4	66.7%	1	25%	0	0.0%	10	53%
	Brokerage	0	0.0%	1	16.7%	0	0.0%	0	0.0%	1	5.3%
	Corporate banking	1	12.5%	0	0.0%	1	25%	0	0.0%	2	11%
	Government regulation	0	0.0%	0	0.0%	0	0.0%	1	100%	1	5.3%
	Investment banking	0	0.0%	0	0.0%	1	25%	0	0.0%	1	5.3%
	Retail banking	1	12.5%	0	0.0%	0	0.0%	0	0.0%	1	5.3%
	Venture capital	1	12.5%	0	0.0%	0	0.0%	0	0.0%	1	5.3%
	Corporate taxation	0	0.0%	1	16.7%	0	0.0%	0	0.0%	1	5.3%
	Technology	0	0.0%	0	0.0%	1	25%	0	0.0%	1	5.3%
Total	8	100%	6	100%	4	100%	1	100%	19	100%	

Figure 8

Primary Professional Area

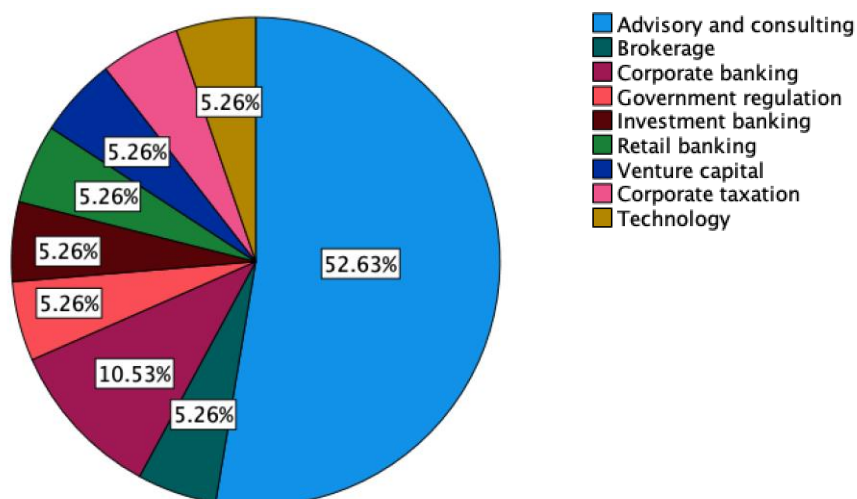
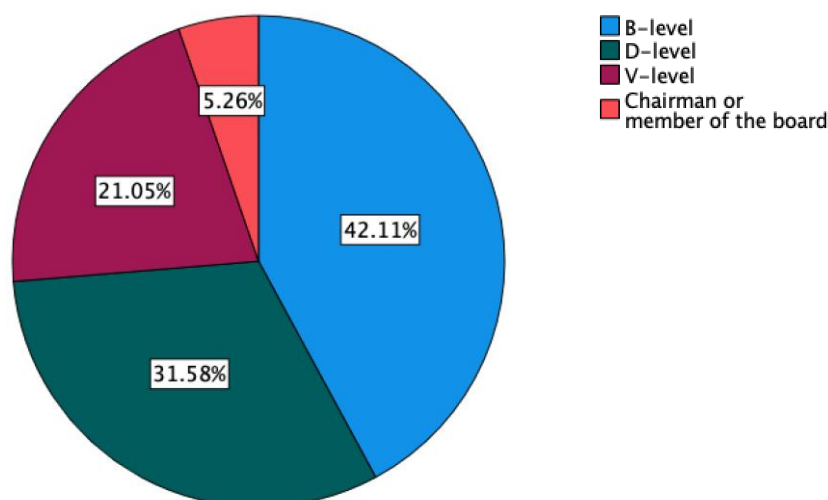


Figure 9*Level of Authority in the Organisational Hierarchy***IV.IV. Findings and discussion**

Fisher–Freeman–Halton exact test was performed in the majority of cases, and a significant association was found only in one. Pearson’s Chi-squared test of independence was deployed in a single case where the assumptions were met, and a significant association was not found. The results of individual questions will be further discussed and analysed in regard to the research objectives, and the selected key literature will be incorporated.

IV.IV.I. Competitive dynamics

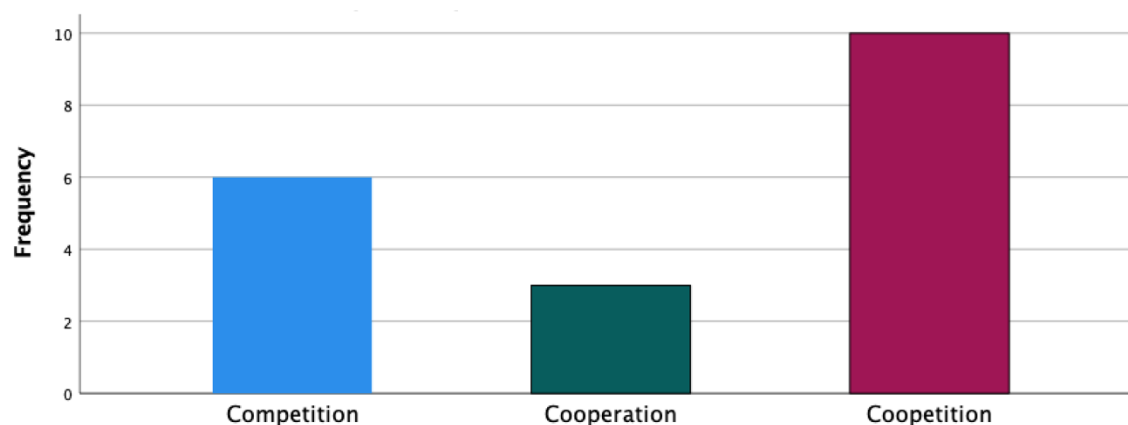
The results show that cooptation was selected as the most common competitive dynamic between banks and fintechs (Figure 10). The majority of identified studies appear to perceive competition and cooperation as separate phenomena that are not necessarily related to each other. For instance, Harasim (2021), Hornuff et al. (2020), and Schmidt et al. (2018), suggest that banks tend to cooperate rather than compete with fintechs. Moreover, Mention (2019) and Romanova & Kudinska (2017), remark that cooperating with fintechs is of utmost importance for banks, implying they have no other choice. Although it could be argued that the authors were referring to cooptation as a form of cooperation with competitive elements, it does not seem conceivable. To give an illustration, only Harasim (2021) acknowledges the possibility of competition, and despite that, she still places great emphasis on cooperation versus competition.

Perhaps because the research on the bank-fintech competitive dynamics is still in the very beginning, there seems to be a broad bias towards the positives of the cooperative paradigm. Padula & Dagnino (2007) support this discovery, concluding that “cooperative game structure is based on both positive and negative interdependences”, which is often overlooked (p. 33).

It should also be addressed that competition was found to outweigh cooperation (Figure 10). An explanation could be that banks which possess the necessary resources and capabilities and are ambitious enough can pursue the development of niche technologies in-house. This notion would be consistent with Anand & Mantrala (2019), who suggest that an independent pathway is relevant for banks in certain scenarios and provides concrete examples. Additionally, pursuing innovation alone is attractive because the potential gains do not have to be shared (Ritala & Hurmelinna-Laukkanen, 2009). However, it should be noted that the same principle then applies to any losses which must be absorbed. On the other hand, Ashta & Biot-Paquerot (2018) claim that at first, banks try to compete, but they usually cannot, and thus over time, they gravitate towards various forms of cooperation. Hence, even strong players cannot go through industry convergence alone (Gnyawali & Park, 2011). These appear to be two opposing observations. It is likely that the decision ultimately depends on the strategic objectives of individual banks and their ability to execute them.

Figure 10

Competitive Dynamics between Banks and Fintechs



Payment fintechs were the most frequently selected primary type that banks both cooperate and compete with (Figure 11, 12). Drasch et al. (2018) share similar evidence in regard to cooperation. These results seem to underpin the outcome of the first question, meaning that if banks predominantly engage in cooperation, then the primary types of fintechs they cooperate and compete with should be the same. However, statistical testing did not uncover any significant association, implying this logic does not necessarily hold merit (Figure 13, 14). Then what are the underlying causes for such tensions in the payment space?

According to Hornuff et al. (2020), banks benefit the most from cooperation with payment fintechs. In turn, it could be reasonable to assume that certain fintechs acknowledge the vulnerability of banks in payments and choose to compete with them instead. As Boot et al. (2021), Navaretti et al. (2018), and Stulz (2019) highlight, the traditional model of universal banking is essentially built on deposits, which are then invested into loans, while valuable data are gathered along the value chain. Consequently, it could be stated that facilitating transactions is the holy grail, around which all higher-margin offerings are bundled. Moreover, banks encounter the biggest threats in highly standardizable, less knowledge-intensive products and services (Romanova & Kudinska, 2017). Payments appear to fit this description perfectly. In general, the number of transactions conducted on a daily basis is immense, and an increasing portion is done electronically. As a result, payment fintechs could be able to deploy big data analytics tools with negligible costs. Schmidt et al. (2018) call it the data-processing business model where payment fintechs convey insights to their customers through digital platforms. The restructuring of information flows then allows payment fintechs to circumvent banks in their role of intermediaries (Gomber et al., 2017; Gozman et al., 2018; Navaretti et al., 2018). Perhaps this is the most pressing issue for banks because they could lose the point-of-sale interaction. Lastly, payments seem to be one of the less regulated areas. Ashta & Biot-Paquerot (2018) mention three directives introduced in the EU since 2007, enabling payment fintechs to access information about their customers' bank accounts directly from banks. Hence, these conditions could significantly lower the barriers to entry, accelerating the mushrooming of payment fintechs.

It can be understandable why banks would want to preserve this crucial function and why fintechs would target it. However, how do banks manage to cooperate with fintechs? Ritala (2001) theorise that under fierce competition, cooperation is not rational. The view of Ritala &

Hurmelinna-Laukkanen (2009) further clarifies that innovative companies rarely gain a powerful position in highly competitive markets. It could be concluded that because the landscape appears so favourable for payment fintechs, new ones are enticed to enter the market constantly, making it very difficult to establish themselves. Therefore, some could be essentially forced to cooperate with banks, possibly from a disadvantageous position.

Figure 11

Types of Fintechs that Banks Primarily Compete with

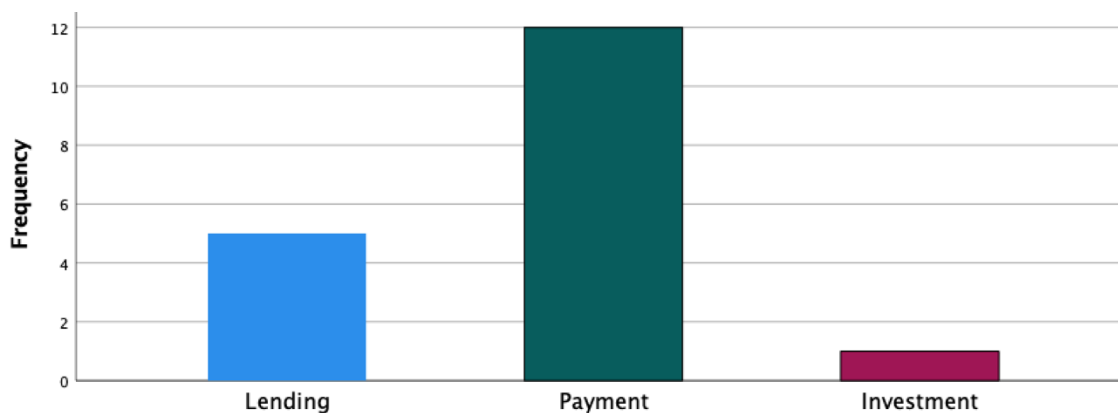


Figure 12

Types of Fintechs that Banks Primarily Cooperate with

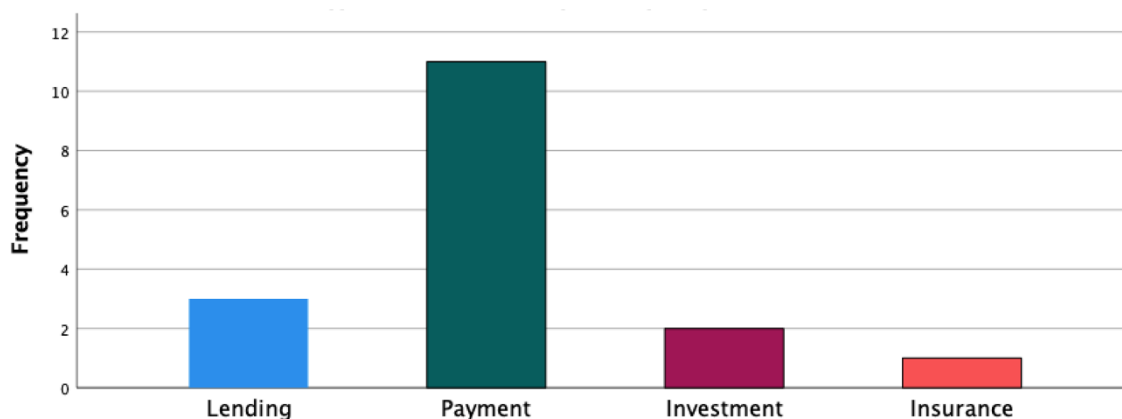


Figure 13

*Competitive Dynamics between Banks and Fintechs * Types of Fintechs that Banks Primarily Compete with*

	Value	degrees of freedom	Asymptotic Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	6.000 ^a	4	.199	.226
Fisher-Freeman-Halton Exact Test	4.174			.453
N of Valid Cases	18			

a. 8 cells (88.9%) have expected count less than 5. The minimum expected count is .17.

Figure 14

*Competitive Dynamics between Banks and Fintechs * Types of Fintechs that Banks Primarily Cooperate with*

	Value	degrees of freedom	Asymptotic Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	4.622 ^a	6	.593	.653
Fisher-Freeman-Halton Exact Test	5.501			.629
N of Valid Cases	17			

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .12.

IV.IV.II. Attributes of cooperation

Strategic alliance was the most frequently selected primary form of cooperation for banks with fintechs, along with product innovation as the primary innovation type fintechs supply to banks (Figure 15, 16). These results are consistent with the evidence of Drasch et al. (2018), that alliances and product innovation represent 78%, and 72% of bank-fintech cooperation, respectively. Similarly, Hornuf et al. (2020), maintain that banks usually interact with fintechs through alliances and that the cooperation is product related. Strategic alliances are an ideal solution for experimentation with uncertain technologies in markets that are not well-defined (Hagedoorn & Narula, 1996). However, it could be argued that compared to acquisitions, strategic alliances curb banks' ability to intervene in product development. If this premise holds grounds, then why would banks prefer them?

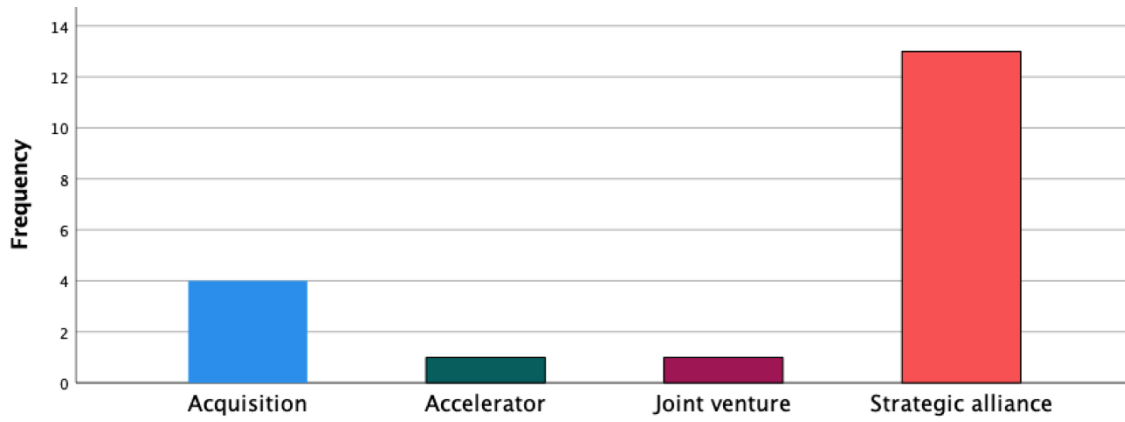
A possible explanation could be that although acquisitions allow banks to align the development of technology with their organisational structures, assessing the value of fintechs

accurately can be dicey. As Harasim (2021) and Mention (2019) put it, the business models of young fintechs are often not yet proven. In fact, Drasch et al. (2018) report that banks predominantly cooperate with fintechs in the growth stage. Their evidence is also confirmed by the results of this study (Figure 17). Therefore, it could be speculated that banks rather seek to outsource the innovations from fintechs, and thus hedge their downside of unsuccessful acquisitions. This can be linked back to Drasch et al. (2018), who offer two contradictory perspectives. However, to some degree, these could be interrelated instead. Perhaps, fintechs do not usually sell their innovations not because they are reluctant to, but because banks are not aspiring to fully integrate them, as it can be a complicated process. More specifically, banks are usually behemoth institutions, so in order to conduct their needed transformation, they could aim to deploy resources in the most cost-effective way. Indeed, high resource commitment can result in suboptimal allocation, and thus hamper productivity (Lado et al., 1997). In the same vein, Lee & Shin (2017) suggest that banks cooperate with fintechs to access novel technology without requiring substantial internal change. Holotiuk et al. (2018) further show that banks' main objective in cooperation with fintechs is to essentially outsource the development of high-risk/high-reward innovations. Similarly, accessing superior technology was also identified as the primary benefit for banks when cooperating with fintechs (Figure 18). This discovery could be supported by Fonseca and Meneses (2020), arguing that a lack of technological know-how is one of the principal weaknesses of banks.

The above discussion then invokes a question of how sustainable is the cooperation between banks and fintechs, in other words, is it just a short-term trend? Perhaps the last part of the analysis could help shed some light on this topic. Finally, a considerable discrepancy was found within the primary benefits that banks derive from cooperation with fintechs. Holotiuk et al. (2018) surprisingly corroborate that banks' ambitions in cooperation are diverse. It could be argued that initially, superior technology is the underlying driver from which other benefits stem over time.

Figure 15

Primary Form of Cooperation for Banks with Fintechs

**Figure 16**

Primary Innovation Fintechs Supply to Banks

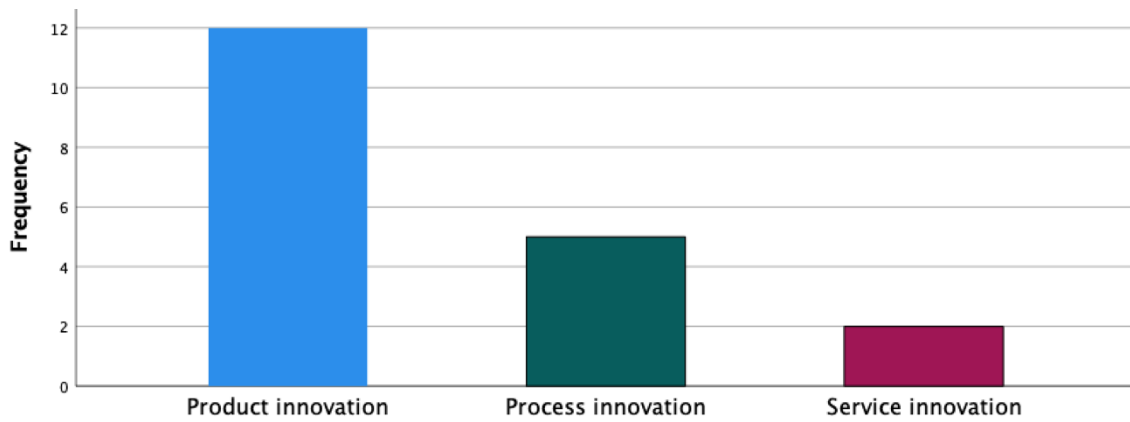
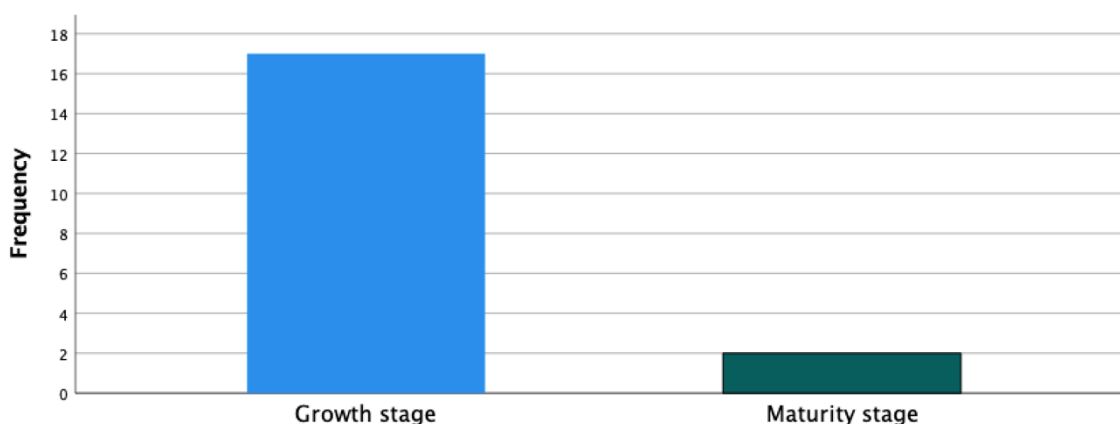
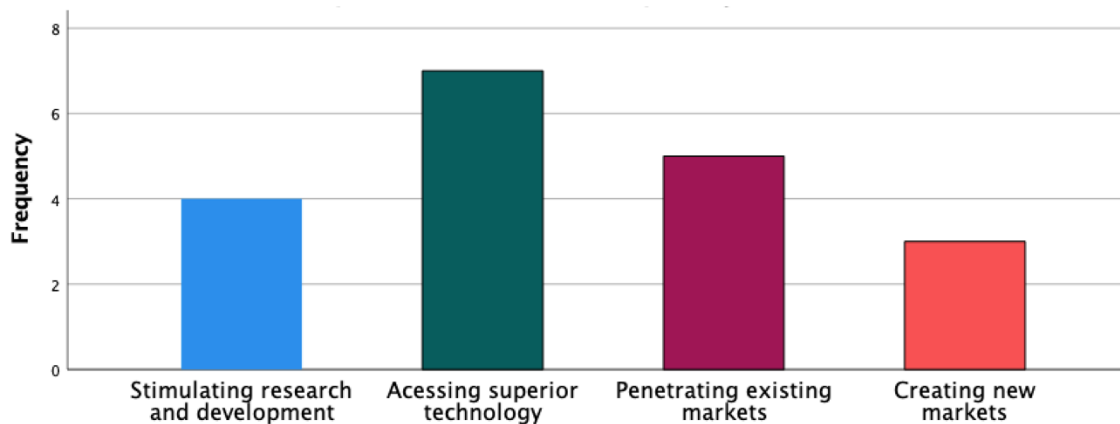


Figure 17

Life Stage of Fintechs that Banks Primarily Cooperate with

**Figure 18**

Primary Benefit for Banks when Cooperating with Fintechs



IV.IV.III. Value creation and opportunism

Individual value creation was found as the primary motive of value creation for banks when cooperating with fintechs, while banks are also much more likely to act opportunistically (Figure 19, 20). Moreover, a significant association was identified between the type of fintechs that banks primarily cooperate with and the primary motive of value creation for banks, implying that banks tend to cooperate with payment fintechs for individual value creation (Figure 21, 22). Perhaps, further clarification could be derived from the theoretical perspective.

According to Bengtsson & Kock (2000), coopetition is an important characteristic of strategic alliances. Nevertheless, statistical testing did not reveal any significant association between the bank-fintech competitive dynamics and the primary form of cooperation (Figure 23). In other words, perhaps bank-fintech strategic alliances are not competition-oriented in every case. Indeed, some alliances can be cooperation-oriented (Das & Teng, 2000). However, how could it justify banks' individual value creation motives in cooperation with payment fintechs?

Ritala & Hurmelinna-Laukkanen (2009) suggest that in cooperation among non-competitors, value is created collectively, but individual factors determine its appropriation. This logic could be linked to the fundamentals of strategic alliances. Simply put, strategic alliances are usually structured considering the uncertainty of their outcomes (Das & Teng, 2000). Consequently, it could be argued that because contractual agreements are flexible, strategic alliances can be easily terminated. In turn, this could also explain the outsourcing nature of the product-related innovation in bank-fintech cooperation. Hagedoorn & Narula (1996) highlight that companies often take part in multiple alliances at the same time. As a result, banks' approach in regard to strategic alliances could be short-term, pressing payment fintechs to deliver results. Although one might argue that by outsourcing the technology, banks eventually become reliant on payment fintechs, it could be the opposite. It could be stated that namely fintechs in the growth stage often lack the resources to make a wider impact. In fact, reaching scale and scope economies was found as the primary benefit for fintechs when cooperating with banks (Figure 24). This evidence is also consistent with Holotiuk et al., (2018), Hornuf et al. (2020), and Mention (2019), who propose that access to large customer bases is essential for fintechs as they tend to fail in scaling up. Furthermore, Khanna et al. (1998) point out that a larger player has more opportunities outside the boundaries of the alliance, hence greater bargaining power. Therefore, it could be argued that there are only a few banks with the ability to set industry norms and standards, while vast amounts of payment fintechs compete for their recognition. Perhaps, the ones that turn out to be worthy of resource-intensive integration could get acquired.

Figure 19

Primary Motive of Value Creation for Banks when Cooperating with Fintechs

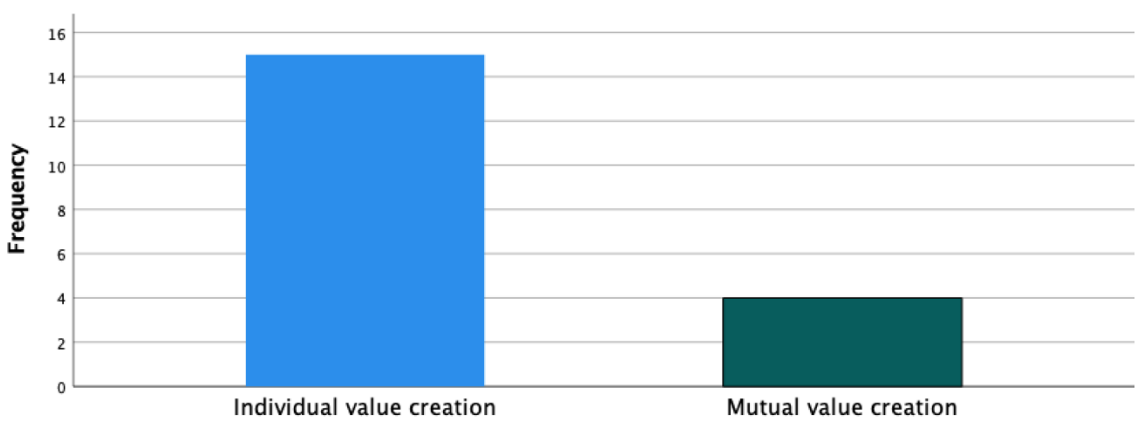


Figure 20

More Likely to Act Opportunistically in the Cooperation between Banks and Fintechs

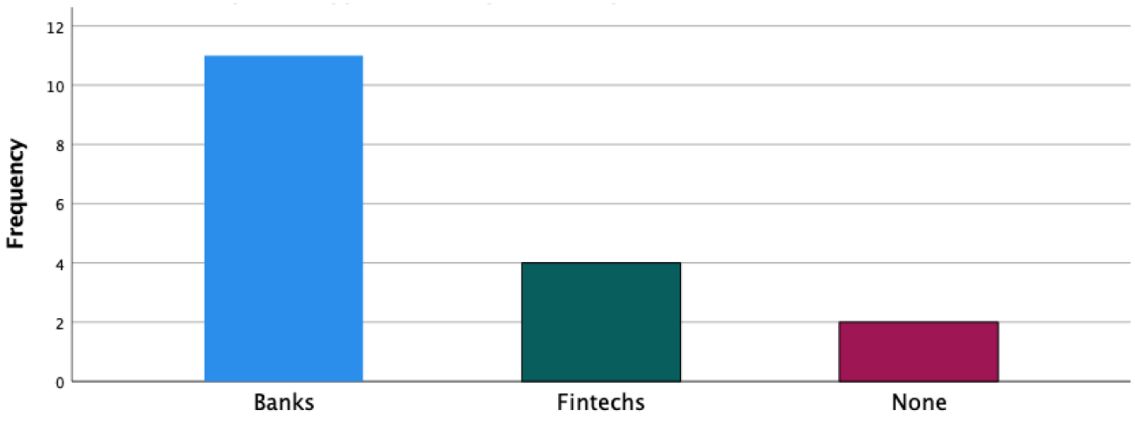


Figure 21

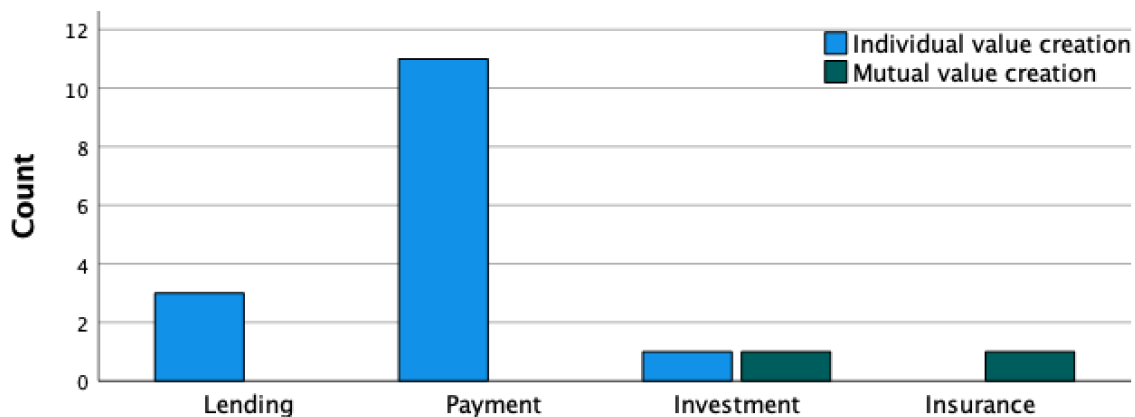
*Type of Fintechs that Banks Primarily Cooperate with * Primary Motive of Value Creation for Banks*

	Value	degrees of freedom	Asymptotic Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	12.183 ^a	3	.007	.022
Fisher-Freeman-Halton Exact Test	8.365			.022
N of Valid Cases	17			

a. 7 cells (87.5%) have expected count less than 5. The minimum expected count is .12.

Figure 22

*Type of Fintechs that Banks Primarily Cooperate with * Primary Motive of Value Creation for Banks*

**Figure 23**

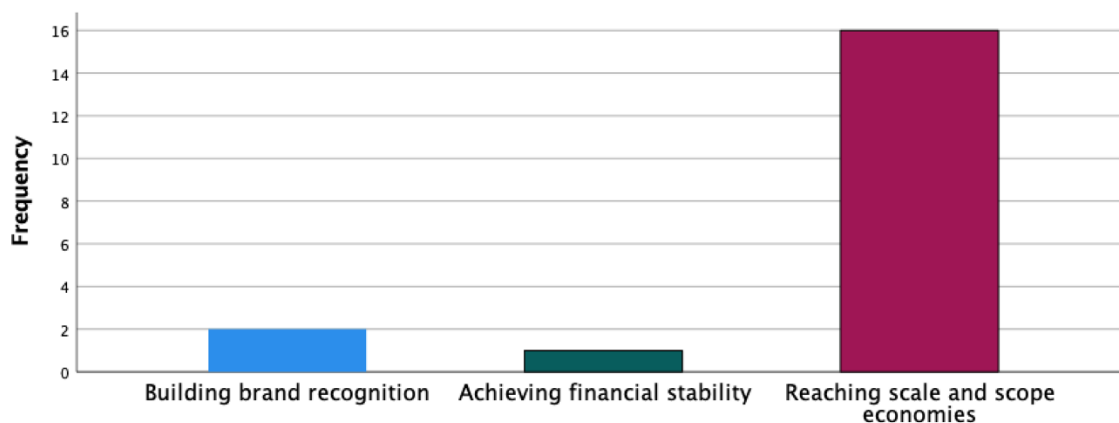
*Competitive Dynamics between Banks and Fintechs * Primary Form of Cooperation for Banks with Fintechs*

	Value	degrees of freedom	Asymptotic Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	3.033 ^a	6	.805	.944
Fisher-Freeman-Halton Exact Test	4.328			.898
N of Valid Cases	19			

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .16.

Figure 24

Primary Benefit for Fintechs when Cooperating with Banks



V. Conclusion

V.I. Summary

This undergraduate dissertation investigated the impact of financial technology on the banking sector. All three research objectives were achieved. First, although coopetition is the most common bank-fintech competitive dynamic, banks either cooperate or compete with payments fintechs. Banks depend on higher-margin products and services which are linked to their ability to facilitate transactions. Moreover, payments are attractive for fintechs as favourable regulation in Europe allows them to effectively leverage big data analytics. As a result, this market segment is overcrowded, forcing smaller payment fintechs to cooperate with banks. Conversely, agile banks develop technologies in-house and compete with more established payment fintechs. Second, banks cooperate with fintechs through strategic alliances and for product innovation. On the one hand, strategic alliances limit banks' control of product development. On the other, the majority of fintechs are situated in the growth stage, meaning that assessing their value is difficult for banks. In addition, banks aim to save costs on integration, as the digital transformation of their complex structures is a resource-intensive process. Consequently, banks outsource superior technology from fintechs, limiting the downside of unsuccessful acquisitions. Third, banks cooperate with payment fintechs with the motive of individual value creation and are far more likely to act opportunistically. The flexibility of strategic alliances allows banks to approach them from a short-term perspective, pressing payment fintechs to deliver fertile innovations. These strategic alliances are not competition-oriented, a multitude of payment fintechs rather compete for banks' recognition as they struggle to reach scale and scope economies. Those that are successful then get acquired by banks and partially shape the industry norms and standards.

V.II. Limitations

The design of this undergraduate dissertation has certain flaws that should be acknowledged. The respondents were recruited based on the accessibility to the researcher, and their willingness to participate. In other words, it could be argued that the sample is not representative of the target population, which could negatively impact the validity and generalisability of the results. More specifically, this bias seems to be reflected in the small sample size, and its demographics, as the majority works in advisory and consulting and is located in Western Europe. Therefore, the reliability of the results should be validated by

conducting larger-scale studies, where thorough statistical testing of associations between the variables could be performed.

V.III. Recommendations

In order to better understand the findings of this undergraduate dissertation and thus further advance knowledge of the bank-fintech phenomena, future research could address two main inquiries that arise from the discussion. As the business relationships continue to evolve, they can provide the foundation for more clarity in regard to the best practices. Hence, assess whether or not can be cooperation or competition between banks and fintechs potentially as fruitful as their competition. Additionally, conceptualise if and in what manner retail, corporate, investment, and private banks differ in their interactions with fintechs and how distinct regulatory environments impact these interactions.

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Appendix A. Questionnaire

. This questionnaire is part of a Huddersfield Business School student survey investigating the impact of financial technology on the banking sector. It is intended for middle and top level managers engaged in the financial sector. If this description does not fit you, please leave the survey now and close your browser.

This survey is anonymous, that is, we will not ask for your name or any other personal information that can identify you. It is also confidential - only the student researcher will have access to the data. The data will be securely stored and will be password protected. The questionnaire will take approximately 5-10 minutes to complete. Participation is entirely voluntary. If you do decide to take part, you can stop at any time by just leaving the survey and closing your browser, but once your responses have been submitted, it will not be possible to withdraw your data as the survey is anonymous.

If you have any questions, you would like to ask before going ahead with completing the questionnaire, you can contact the student researcher Vit Helesic, at u2280034@unimail.hud.ac.uk or his supervisor Dr Royston Meriton, at r.meriton@hud.ac.uk. If you are happy to take part in the survey on the basis of the above information, please continue by clicking the arrow on the bottom right side of your screen. Otherwise, please leave the survey now.

→

Q1. What is your age?

- Less than 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 85 and over

Q2. What is your gender?

- Male
- Female
- Other (please specify below)

Q3. Where are you located?

- Central and Eastern Europe (i.e., Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Estonia, Georgia, Hungary, Moldova, Montenegro, North Macedonia, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Ukraine)
- Northern Europe (i.e., Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden)
- Southern Europe (i.e., Cyprus, Greece, Holy See, Italy, Malta, Portugal, San Marino, Spain, Turkey)
- Western Europe (i.e., Andorra, Austria, Belgium, France, Germany, Ireland, Liechtenstein, Luxembourg, Monaco, Netherlands, Switzerland, United Kingdom)
- Other (please specify below)

Q4. What is the highest education you have completed?

- Less than high school
- High school diploma or equivalent

- Technical or vocational school
- Some college, no degree
- Associate degree or equivalent
- Bachelor's degree
- Master's degree
- Professional degree
- Doctoral degree
- Other (please specify below)

Q5. What professional area do you primarily work in?

- Advisory and consulting
- Asset management
- Brokerage
- Central banking
- Clearing and settlement
- Corporate banking
- Corporate law
- Financial law
- Government regulation
- Insurance
- Investment banking
- Private banking
- Private equity
- Retail banking
- Venture capital
- Wealth management
- Other (please specify below)

Q6. What is your level of seniority in the organisational hierarchy?

- B-level (e.g., manager within department)
- D-level (e.g., director of department)
- V-level (e.g., vice president)
- C-level (e.g., chief officer)

- Chairman or member of the board
- Other (please specify below)

Q7. What are the competitive dynamics between banks and fintechs?

- Competition
- Cooperation
- Coopetition (cooperation among competitors)
- Other (please specify below)

Q8. What type of fintechs do banks primarily compete with?

- Lending
- Payment
- Investment
- Insurance
- Other (please specify below)

Q9. What type of fintechs do banks primarily cooperate with?

- Lending
- Payment
- Investment
- Insurance
- Other (please specify below)

Q10. What is the primary form of cooperation for banks with fintechs?

- Acquisition
- Accelerator
- Incubator
- Joint venture

- Strategic alliance
- Other (please specify below)

Q11. What life stage of fintechs do banks primarily cooperate with them?

- Start-up stage
- Growth stage
- Maturity stage
- Decline stage
- Other (please specify below)

Q12. What is the primary benefit for banks when cooperating with fintechs?

- Stimulating research and development
- Accessing superior technology
- Penetrating existing markets
- Creating new markets
- Other (please specify below)

Q13. What is the primary benefit for fintechs when cooperating with banks?

- Building brand recognition
- Achieving financial stability
- Reaching scale and scope economies
- Accessing market know-how
- Other (please specify below)

Q14. What is the primary innovation fintechs supply to banks?

- Product innovation
- Process innovation
- Service innovation

- Organisational form innovation
- Other (please specify below)

Q15. What is the primary motive of value creation for banks when cooperating with fintechs?

- Individual value creation
- Mutual value creation
- Other (please specify below)

Q16. Who is more likely to act opportunistically in the cooperation between banks and fintechs?

- Banks
- Fintechs
- None
- Other (please specify)

→

Appendix B. Ethical Approval

APPLICATION FOR ETHICAL REVIEW – E1

- Please complete and return via email to HBSethics@hud.ac.uk along with the required documents.
- Before completing this application, please refer to the [Huddersfield Business School Research Ethics web pages](#). Applicants should consult the appropriate ethical guidelines.
- ALL Sections must be completed. You will only be able to start the research when you have been granted permission to use the specified material.
- Please provide sufficient detail to assess strategies used to address ethical issues in the research proposal. Forms with insufficient detail will need to be resubmitted.
- This form should be completed and kept by the principal investigator.
- The final responsibility for ensuring that ethical research practices are followed rests with the principal investigator for staff research projects.

SECTION A: APPLICANT(S) DETAILS

This application is for:

Staff	<input type="checkbox"/>
Student	<input checked="" type="checkbox"/>

Name of the Applicant (Principal Investigator/PGR)	Vit Helesic
Student number (if applicable)	U2280034
Names of the other Researchers in the project	N/A
Names of supervisors (if applicable)	Dr Royston F. Meriton
Title of research	An Investigation on the Impact of Financial Technology in the Banking Sector
Proposed project start date	11 October 2022 – first meeting

SECTION B: DECLARATIONS

I confirm that I have read, understood and followed the guidance in the Ethical Review Guidance document: available here	<input checked="" type="checkbox"/>
I confirm that I have read and understood the University Research Ethics Policy: available here	<input checked="" type="checkbox"/>
I confirm that I have read and understood the University of Huddersfield research data management policy: available here	<input checked="" type="checkbox"/>
I confirm that I will respect and adhere to the decision and guidance that result from this application	<input checked="" type="checkbox"/>

<p>I confirm that if the circumstances and/or methods of my research change, I will seek further advice/approval from the Huddersfield Business School Research Ethics and Integrity Committee</p>	<input checked="" type="checkbox"/>
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SECTION C: RESEARCH STUDY DETAILS

<p>Rationale, aims and objectives</p>	<p>Details: The aim of the undergraduate dissertation is to build upon the research in the area of competitive dynamics between fintech and banks by providing additional evidence regarding the driving forces of cooperation. Moreover, a research gap is identified on whether or not a win-win outcome is possible in this situation; hence further contribution will be made by exploring this issue.</p>
<p>Brief overview of methodology Needs to be explained in sufficient detail to show the approach used (e.g. survey) and explain the research methods to be used during the study.</p>	<p>Details: The research adheres to the positivist paradigm, which perceives a singular reality understood through cause-and-effect relationships that can be predicted and replicated in other studies if objectively true. Quantitative methods will be used to collect primary data through close-ended questionnaires cross-sectionally. Multiple choice options were identified throughout the literature review.</p>
<p>Is this a retrospective application? If Yes, please provide details of why it was not possible to obtain ethical approval before the project started.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes explain here why this has arisen.</p>
<p>Has this research received funding?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes please give details.</p>

SECTION D: DATA COLLECTION AND PARTICIPANT DETAILS

<p>Does the research involve any of the following?</p> <ul style="list-style-type: none"> • Patients recruited because of their past or present use of the NHS or Social Care • Relatives/carers of patients recruited because of their past or 	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If you have answered yes then you must seek the appropriate external approvals from the NHS, Social Care or the National Offender Management Service (NOMS) under their independent Research Governance schemes.</p>
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<p>present use of the NHS or Social Care</p> <ul style="list-style-type: none"> • Access to data, organs or other bodily material of past or present NHS patients • Foetal material and IVF involving NHS patients • NHS Staff • The recently dead in NHS premises • Prisoners or others within the criminal justice system recruited for health- related research • Police, court officials, prisoners or others within the criminal justice system • Participants who are unable to provide informed consent due to their incapacity even if the project is not health related 	<p>Contact HBSEthics@hud.ac.uk for information and support.</p>
<p>Who will be the participants of your research?</p>	<p>Details: The questionnaire is intended for middle and top-level managers engaged in the financial sector and located mainly across different regions of Europe.</p>
<p>What are the arrangements for selecting/sampling and contacting potential participants?</p>	<p>Details: Convenience and snowball sampling methods will be used as the target population can be considered hard to access, and the researcher has sufficient network that can be leveraged. Potential participants will be contacted via private messages on LinkedIn and both university as well as personal email address, depending on the previous communication.</p>
<p>Will any of the participants be vulnerable? 'Vulnerable' people include children and young people, people with learning disabilities, people who may be limited by age or sickness or</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, describe here how you will implement safeguarding procedures during data collection.</p>

disability, etc.	
<p>Will the research involve working with/within an organisation, and require their approval (e.g. business, charity, government department, international agency, etc.)?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, do you have granted access to conduct the research? If you do not have permission yet, explain here how you plan to gain approval.</p>
<p>Is there any reasonable and foreseeable risk of physical or emotional harm to any of the participants?</p> <p>Harm may be caused by distressing or intrusive interview questions, uncomfortable procedures involving the participant, invasion of privacy, topics relating to highly personal information, topics relating to illegal activity, etc.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, please explain further here.</p>
<p>Are any of the below questions relevant to the research?</p> <ul style="list-style-type: none"> • Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind? • Will tissue samples (including blood) be obtained from participants? • Is pain or more than mild discomfort likely to result from the study? • Will the study involve prolonged or repetitive testing? 	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, please explain further here.</p>
<p>Are any of the below questions relevant to the research?</p> <ul style="list-style-type: none"> • Is it covert research? ('Covert research' refers to research that is conducted without the knowledge of participants). 	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, please explain further here, and give details of how you plan to carry out the research within the guidelines of the University Research Ethics Policy.</p>

<p>Please give details of why this is the only approach possible.</p> <ul style="list-style-type: none"> • Will anyone be taking part without giving their informed consent? • Will the research output allow identification of any individual who has not given their express consent to be identified? 	
<p>Describe the arrangements for obtaining participants' consent. Please explain how you will inform your participants about the study and whether they will be in a position to give informed consent. Please attach the forms you plan to use.</p>	<p>Details: There is an introduction part (form provided by the course leader on Brightspace) at the beginning of the questionnaire describing the research problem and for whom is the questionnaire intended. Consent is given by acknowledging all the given information and clicking the arrow on the bottom right side of the page to start the survey.</p>
<p>Describe how participants will be made aware of their right to withdraw from the research. This should also include information about participants' right to withhold information and a reasonable time span (such as a clear point in the research process) for withdrawal should be specified.</p>	<p>Details: The introduction also states that participants can stop at any time by just leaving the survey and closing the browser, but once their responses have been submitted, it will not be possible to withdraw their data as the survey is anonymous.</p>
<p>Describe the arrangements for ensuring participant confidentiality. This should include details of:</p> <ul style="list-style-type: none"> • how the data will be recorded • how data will be stored to ensure compliance with University of Huddersfield data protection procedures and other relevant wider legislation • how results will be presented • exceptional circumstances where confidentiality may not be preserved 	<p>Details: The data will be recorded and stored securely on a password protected account via Qualtrics. The data will only be accessible to me. The account is linked to my university email address protected by different password. Additionally, all passwords are stored in Apple Keychain which uses encryptions. Results will be presented, and thus the data analysis will be conducted in IBM SPSS.</p>

<ul style="list-style-type: none"> • how and when confidential data will be disposed of 	
<p>Will you offer anonymity to your participants?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes explain here how this will be achieved. All responses will be anonymised. Respondent's browser, operating system, IP address, location data, and contact information will not be recorded.</p>
<p>Are there any conflicts of interest in you undertaking this research? (E.g. are you undertaking research on work colleagues or in an organisation where you are a consultant?)</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes explain here how this will be addressed.</p>
<p>Are there any potential risks to researchers' (i.e. your and other investigators') health and wellbeing associated with:</p> <ol style="list-style-type: none"> the venue where the research will take place traveling to the research venue and/or the research topic itself? Time of day research is taking place Lone working <p>IMPORTANT NOTE: The Research Ethics and Integrity Committee cannot evaluate the changing risks arisen from travelling to other countries. Appropriate Huddersfield Business School risk assessment procedures has to be followed and permission has to be obtained at the time of travel.</p>	<p><input checked="" type="checkbox"/> No, none that I am aware of</p> <p><input type="checkbox"/> Yes</p> <p>If Yes, outline the risks here, including steps taken to minimise risk.</p>
<p>Please provide a summary of the ethical issues that you envisage and any action that will be taken to address the issues</p>	<p>Details: Respondents are more likely to participate if their privacy is protected accordingly. To conclude, all personal information will be anonymised by the software. The data will be stored on a password</p>

	protected account and secure servers which comply with numerous standards and regulations. The opening statement in the questionnaire will provide potential respondents with all the necessary information to decide whether or not to participate.
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SECTION E - STORAGE OF RESEARCH DATA

<p>Please provide details of how you will store data gathered during the research Include information about the length of time the data will be stored.</p>	<p>Details: The data will be stored for 6 months as this is the default data retention time for a Qualtrics free account. Qualtrics servers are protected by high-end firewall systems, and vulnerability scans are performed regularly. Qualtrics uses encryptions for all transmitted data and its services are hosted by data centres that are independently audited using the industry standards.</p>
<p>Do you plan to store the research data into a research data repository? If there are requirements from funders or other bodies to store data in a repository (for example, data from ESRC funded projects must be stored in the ReShare data archive), please give details here.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes please provide details</p>
<p>Will the research involve working with <u>copyrighted</u> documents, films, broadcasts, photographs, artworks, designs, products, programmes, databases, networks, processes, existing datasets or secure data?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, are the materials you intend to use in the public domain? Be aware that you may need to consider other ethics codes (such as code of the Association of Internet Researchers). If the material is <u>copyrighted</u> then explain here how you have explicit permission to use these materials as data.</p>

SECTION F – DOCUMENTS CHECKLIST (TO BE COMPLETED BY THE APPLICANT)

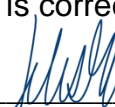
Please supply copies of all relevant supporting documentation electronically. If this is not available electronically, please provide explanation and supply hard copy.

I have included the following documents	
• Participant Information Sheet	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Participant Consent Form	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Organisational Consent Form/letter	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Letters (and other)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Any recruitment materials (e.g. posters, letters, etc.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Details of measures to be used (e.g. questionnaires, survey interview questions etc.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
• Outline survey interview schedule / focus group schedule	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• Fieldwork risk assessment	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

SECTION G – STATEMENT BY APPLICANT

Please complete the relevant section below.

Staff
<p>I, as the principal investigator undertaking this research, confirm that:</p> <ul style="list-style-type: none"> • this research will conform to the principles outlined in the University of Huddersfield and Huddersfield Business School research procedures, • the information I have given in this form on ethical issues is correct. <p>Applicant Signature (Electronic is acceptable): _____</p> <p>Date: _____</p>

Student
<p>I, as the PGR undertaking this research, confirm that:</p> <ul style="list-style-type: none"> • this research will conform to the principles outlined in the University of Huddersfield and Huddersfield Business School research procedures, • the information I have given in this form on ethical issues is correct. <p>PGR (i.e. applicant) Signature (Electronic is acceptable):  _____</p> <p>Date: <u>12/03/2023</u></p>

Affirmation by Supervisor (where applicable)

I can confirm that, to the best of my understanding, the information presented by the applicant is correct and appropriate to allow an informed judgement on whether further ethical approval is required

Supervisor Signature (Electronic is acceptable): **SHarrington (module leader)**

Date: 13.03.23