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Exploring the Effects of Inter-Firm Coopetition on Firm Performance

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Abstract

This purpose of this paper is to explain the mediating role of inter-firm coopetition in the relationships between competition and firm performance, and cooperation and firm performance. Studies on the effects of coopetitive relationships have mainly been based on developed economies, with a few focusing on developing economies. Further, the paper provides an assessment of how inter-firm coopetition affects performance in the context of developing countries, specifically, the emerging coopetitive relationships among the digital financial services providers (DFSPs) in Zambia. The financial services industry is undergoing rapid digitalisation and industry convergence. These developments have caused the entry of non-traditional financial services providers including mobile network operators and FinTechs. These are threatening the survival of traditional commercial banks through intensified competition in providing digital financial products. The intense competition has changed the business models of the digital financial services providers. Instead of competition, they now engage in non-conventional relationships which involve both competition and cooperation. Game theory's stag-hare hunt was used to understand how the DFSPs engage in simultaneous competition and cooperation. The study employed a mixed method design to assess the effect of joint decisions and actions on market performance and financial performance. Purposive sampling was used in identifying the sample. 32 respondents were surveyed and 6 key informants were interviewed. Quantitative and qualitative data were collected from a sample of 14 digital financial services providers (DFSPs) in Zambia. Quantitative data were analysed using SPSS PROCESS, and qualitative data used Nvivo 12. The findings reveal that inter-firm coopetition mediates the relationships between competition and firm performance, and between cooperation and firm performance. Firm performance is significantly associated with inter-firm coopetition (β = .570; t-value = 3.862; Sig <.002). The key informants from the interviews, all confirmed the quantitative findings on inter-firm coopetition as a mediator in firm performance. The simultaneous combination of competition and cooperation improved both the market and

financial performance of the DFSPs. These results contribute to existing evidence that inter-firm coopetition is able to improve performance better than competition on its own or cooperation on its own. Interventions aimed at promoting inter-firm coopetition have helped with this model and regulation on discouraging negative outcomes should be developed.

Keywords: Competition, Cooperation, Coopetition, Firm Performance; Market Performance; Bank, Collaboration, Competition, Cooperation, FinTech, Inter-firm coopetition, Mobile Network Operators (MNO); Inter-Firm Coopetition, Digital Financial Services Providers (DFSPs), Financial Inclusion; Digital Financial Inclusion; Financial Technologies; FinTech

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Introduction

Disruptive technological advancements are changing the way of doing business across the world (Chai *et al.*, 2018). Shrinking profits, intensifying competition due to digitilisation, and changing customer behaviour, fueled by increased use of digital devices, have threatened the survival and growth of financial institutions (Grewe *et al.*, 2016a) (Stern, 2021). Industry boundaries between the banking sector and the telecommunications sector have faded as non-traditional financial services providers have now entered the financial services sector. The disruption has led to a wide ecosystem of complex technologies used in service delivery. This cannot be acquired by a single firm and hence a single firm cannot provide a full range of all digital products and services (Chai *et al.*, 2018).

The blurred industry boundaries and the intense pressure to perform digitally have led banks and the new entrants to collaborate as they each have different capacities and experience across a range of products and technology disciplines (Chai *et al.*, 2018). Through the collaborations, the parties are able to create additional value which they cannot create independently on their own (Shah, 2019). Inter-firm coopetition is one of the models by which companies collaborate. It is a form of strategic alliance where companies simultaneously engage in competition and collaboration. Inter-firm coopetition is increasingly being used in different industries, although it is only recently that it is being used in the financial services industry. Car manufacturers, pharmaceutical companies and electronic products manufacturers have been using this business model in providing products that were previously manufactured by individual companies for many decades. For instance, Ford of America and Volkswagen of Germany, are competitors in the motor vehicle industry. They are cooperating in the development and distribution of electric and self-driving cars, with the aim of cutting carbon emissions (Naughton *et al*., 2019). More recently, Pfizer, an American pharmaceutical and biotechnology company, Merck, a Germany lipid producing company, and BioNTech, a Germany biotechnology company, successfully collaborated in the research, development and delivery of the Pfizer Covid-19 vaccine to accelerate world-wide supply (Kefford, 2021; Levine, 2021). The service industries have also been engaging in similar coopetition. This has been enabled by new developments in the Information Communication and Telecommunication (ICT) industry, such as interoperability of digital systems (Klus *et al.*, 2019). Particularly, the tourism sector (Kylänen & Rusko, 2011) and the banking sector (Grewe *et al.*, 2016b) have recently been known to cooperate with competitors in order to survive and grow. In the banking sector, there has been a shift

from the traditional brick-and-mortar banking model to digitally driven products and services (Ernest and Young Global, 2018). For instance, the smartphone has caused a shift to the way financial services are delivered (Stern, 2021). Mobile banking and mobile money transfers, micro-savings and micro-credit have taken over the conventional banking of physically going to que at the bank in order to transact (Stern, 2021). Using digital devices, customers have been able to transact online. They are provided with digital platforms to pay bills, send and receive money, and procure loans in their locations, within a short time (Little, 2015).

Background

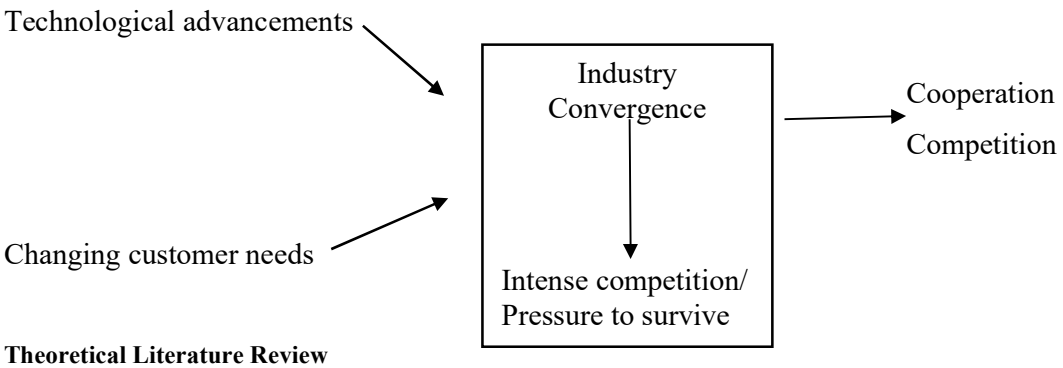
Approximately 60 percent of all commercial bank branches are in Lusaka and the Copperbelt, and about 18 percent of the districts in Zambia are completely not served by any regulated financial institution and hence lack physical access points (MoF, 2017). Further, branch networks are reducing in number as most of the commercial banks have closed their brick and mortar branches (Kabamba, 2020)). The traditional banking model is being replaced with ICT driven services (Ernest and Young Global, 2018). Digital banking is transforming banking from the old culture of huge staff numbers working at brick and mortar branches to more flexible flat structured new systems which spell efficiency (Ernest and Young Global, 2018).

There is an upward trend in access and usage of DFS. While bank use in Zambia dropped from 24% to 20% from 2015 to 2020, The use of DFS accelerated from 14% to 59% of the total population within the same period (BOZ, 2022). This is due to an increase in mobile phone ownership, and access to the internet (BOZ & UNCDF, 2020). In 2015, mobile phone subscribers were at 70 percent of Zambia's 16 million population, and 36 percent of these were able to access the internet (IBRD, 2020). By the end of 2019, mobile phone subscribers had increased to 99.1% with a national mobile network geographic coverage by MNOs at 87%, and an internet penetration at 53.1% (BOZ, 2020). In turn, there has been increased uptake of mobile money services, from 14 percent in 2015 to 58.5 percent in 2020 (BOZ, 2020).

The DFS providers in Zambia are mainly commercial banks, MNOs and financial technology companies (FinTechs) (Wang & He, 2020). Commercial banks have the most financial services products, with the largest volume of transactions. MNOs use mobile money services to offer DFS. The major MNOs in Zambia are Airtel, MTN and Zambia Telecommunications Company (Zamtel). Their mobile money services initially only included sending and receiving money. They have since expanded to include savings, bill payments, funds transfer between a service provider and a bank account, giving credit without the need for detailed paper work, and handling business transactions for companies, such as salary payments. However, the bulk of the digital services is still in mobile money transactions with very few savings of about 15% (Bamukunde & Chibuye, 2021). MNOs cover the largest areas geographically using their communications systems (GSMA, 2021). Financial Technology companies (FinTechs) also offer varied DFS to the public. They differ in their product offerings, with some offering remittances, insurance, others targeting farmers, ICT solutions and others providing financial platforms to financial services providers. FinTechs have the advantage of advanced technology. Banks have therefore started to reframe their businesses models to include partnering with the new entrants in providing digital services, further reducing the need for brick and mortar branches (Ernest and Young Global, 2018).

The Bank of Zambia has developed the national financial switch (NFS) and made recommendations for the financial services sector to collaborate in the development and delivery of innovative products for the Zambian

market (BOZ & UNCDF, 2019). They specified that, since financial services providers are not self-sufficient, they need to cooperate to acquire resources from others and share capacities to reduce costs and make financial services affordable to a wider market (MoF, 2017). Banks, FinTechs and MNOs are now able to use the same network to deliver high quality financial products to the same market, because of the NFS (Rokandla & Moorthy, 2014). Through the NFS, the government thus is an important moderator in facilitating cooperation among competing organisations. It is from this background that this study assessed the effect of cooperation among competitors in the financial services sector of Zambia.



Theoretical Literature Review

Game Theory

Game theory is a theoretical framework which is used for the analysis of the effects of optimal decision making among independent and competing actors in a strategic set-up (M. A. Brandenburger & Nalebuff, 2009). According to the theory, a game involves two or more players who participate in pursuing conflicting objectives, known as a game (Bauso, 2014; Carfi & Okura, 2014). Game theory is based on the concept that players' choices are interdependent and directly affect the payoffs of others in inter-relationships (Carfi & Okura, 2014). According to the theory, games are classified as cooperative and non-cooperative games (Bauso, 2014). In non-cooperative games, there are no agreements on joint actions and each player seeks to maximise his payoff based on the available information. For cooperative games the players engage in joint actions and have payoff sharing rules (Bauso, 2014). Just like game theory, coopetition is a process requiring continuous decisions which lead to mutual transformation (Zhao *et al*., 2015). In coopetition, game theory suggests that the best business partner is a competitor, who both collaborates and competes to provide a suitable win–win strategy by pursuing new markets, despite imperfect information (Feng, 2018; Heiets et al., 2021; Ozkan-Canbolat et al., 2016). The theory demonstrates how competition and cooperation are aligned to jointly create advantages which an individual firm would ordinarily not achieve.

Skyrms, (2003) suggested that the stag-hare hunt game better explains the coopetition strategy as it involves both risk and benefit considerations for the players. He argues that there are two equilibria, in the stag hare hunt games, which match with the risk-benefit outcomes among actors (Skyrms, 2003). The risk dominant equilibrium is where the hunter minimizes the cooperation risks by defecting and hunting hare alone; the benefit dominant equilibrium is where the hunter maximizes his benefits by cooperating to hunt a stag (Zhao et al., 2015). Bauso (2014) uses the Stag-Hare hunt game model to mathematically analyse decisions made on whether

to cooperate or not to cooperate in hunting a stag (S) a large animal, or a hare (H) a small animal. According to (Bauso, 2014), stag hunting is at equilibrium when players are all willing to cooperate to hunt stag. Hare hunting is also at equilibrium if the players decide not to cooperate in hunting stag and each hunt hare instead (Bauso, 2014). The Nash equilibrium takes place when an outcome is reached that, once achieved, no player can increase his payoff by changing his decisions unilaterally (Carfi & Okura, 2014).

According to(Prisner, 2014), the stag-hare hunt game can be extended to a simultaneous three-player game. The decisions and payoff are depicted by use of two matrices (Prisner, 2014). For this study, the three players are FinTechs, banks and MNOs. FinTechs (F) are assumed to choose the cooperate or compete matrices, since their influence and market dominance is relatively lower than banks (B) and MNOs (M) (Damen, 2021). For the example, the bank chooses the row and the MNO chooses the column;

Matrix 1: Where F cooperates

	M Cooperates	M Defects
B Cooperates	(4/3,4/3,2/3)	(4/2, 1,4/2)
B Defects	(1, 4/2,4/2)	(1,1,0)

Matrix 2: Where F defects

	M Cooperates	M Defects
B Cooperates	(4/2,4/2,1)	(0, 1,1)
B Defects	(1, 0,1)	(1,1,1)

The 4 assumes the total value of the big animal, the stag and the 1 represents the value of the small animal, the hare. 0 represents failure to hunt either animal. The payoff (4/3, 4/3, 4/3), where all the three players cooperate and receive a share of 4/3, provides the best outcome for all the three players from which none would be better off by changing their decision. The payoff, where all the players defect, get the best value for their defection (1,1,1), a hare each. This game shows two Nash Equilibria. The beneficial payoff outcome is where each player receives a 4/3 value of the outcome.

Empirical Literature Review and Hypothesis Development

The literature review aimed to determine the current state of knowledge about inter-firm coopetition and its effects on firm performance in order to provide direction for this research. The literature review focused on two

themes namely; the process and the outcome of inter-firm coopetition. In the process of inter-firm coopetition, the review answered to the questions of how and why decisions on collaboration are made. Outcomes are in form of firm performance and the impact to society. This paper focusses on the performance of the firm.

Competition and cooperation in inter-firm coopetition

According to Bengtsson & Kock, (2014). inter-firm coopetition is a form of strategic alliance where parties cooperate in value creation and then compete in sharing the benefits. The paradox of simultaneous competition and cooperation is the main differentiating factor from other strategic alliance models, and this paradox represents the essence of the concept of coopetition (Raza Ullah et al., 2014). According to Bengtsson et al., (2010), the interactive choices may be that players compete with some players and cooperate with other players within the same market. Players may also interact between activities such that they compete in an activity and cooperate in an another (Bengtsson et al., 2010). Therefore, coopetition stands on viewpoints from both competition theory, originally developed by Adam Smith in the 18th century, and cooperation theory, popularised by Dyer and Singh (Ricciardi et al., 2021). Ricciardi *et al.*, (2021) assets that there is a temptation to call coopetition as competitive maneuvering, and another temptation to see it as an extension of cooperation theory, calling it cooperative maneuvering. However, the literature has shown that there are differences between competition, cooperation and coopetition.

The classical view in economics states that competition is the driving force for economic activities, and that the more the number of competitors, the higher the level of competition in that industry (Walley, 2007). Canto *et al.*, (2017) defined competition as a dynamic situation where several rival actors fight for a specific market by producing and delivering similar goods and services that meet the needs of similar customers in that market. According to Moen *et al.*, (2018), competition stimulates innovation and value addition, and in turn results in low cost products that increase profitability. Competition is often viewed as the opposite of cooperation (Ricciardi *et al.*, 2021). Ricciardi *et al.*, (2021) argues that competition is the pursuit of private interests at the expense of others. He argues that cooperation is better as actors share resources and risks, and leads to quality improvements (Ricciardi et al., 2021). He defines cooperation as the pursuit of mutual benefits and collective interests. However, Hoffmann *et al.*, (2018) put forward arguments against cooperation and asserts that cooperation encourages collusion in price fixing and reduced innovation because of the tendency towards conformity. From these arguments, Bengtsson *&* Kock, (2014) have suggested that, since there are benefits from both competition and cooperation, their simultaneous use, in form of coopetition is better in order to benefit organisations and society. Coopetition therefore means the coexistence of the two opposite phenomena of competition and cooperation in a business relationship (Jámbor, 2018). Coopetition mainly relies on other disciplines for its theoretical approach. For instance, coopetition involves collaboration among competitors. In collaboration two or more players collectively mobilise and develop capacities in response to special interdependent needs and to solve complex problems, which they cannot achieve without the other parties (Yamazumi, 2021). (Kayo et al., 2010). (Alhussan et al., 2017) considered coopetitive relationships to be a result of a network of complex interdependencies in the environment in which firms operate. These networks or value should benefit everyone in the network (Bengtsson et al., 2010). From this background, the following hypothesis were developed;

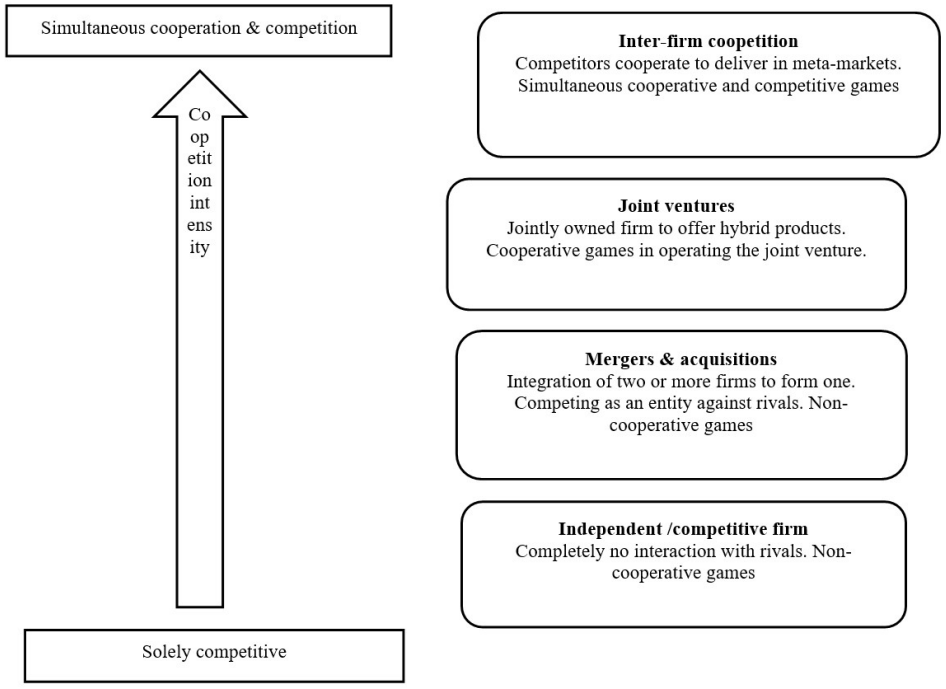
H_1 – A positive relationship exists between competition and firm performance.

H_2 –A positive relationship exists between cooperation and firm performance.

Competition, inter-firm coopetition and firm performance

Telecommunications companies and FinTechs have been able to enter the financial services sector, and provide new financial services such as mobile money transfers, e-wallets, micro savings and micro loans (Stern, 2021). Thus the traditional banking model is being replaced with ICT driven services (Ernest and Young Global, 2018). Digital transactions are transforming banking from the old cultures involving brick and mortar branches with huge numbers of staff and old banking systems which use underdeveloped analytics to flexible flat structured new systems (Ernest and Young Global, 2018). Business models in the financial services sector have thus changed due to these technological advancements and industry converge, as they seek to compete more effectively. Inter-firm coopetition is increasingly being used, in addition to intense competitive rivalry, and the growth models of mergers and acquisitions and joint ventures. This evolution is depicted in figure 1.

Figure 1: Transition of business models from competition to inter-firm coopetition



Source: Author's construct adapted from World Bank, (2020)

Canto *et al.*, (2017) defined competition as a dynamic situation where several rival actors fight for a specific market by producing and delivering similar goods and services that meet the needs of similar customers in that market. According to Moen *et al.*, (2018), competition stimulates innovation and value addition, and in turn results in low cost products that increase profitability. Amidst coopetition, competitive rivalry continues as players pursue their own individual strategic goals (Zakrzewska-Bielawska, 2013). Ricciardi *et al.*, (2021) however, argues that competition is the pursuit of private interests at the expense of others. He argues that

cooperation is better as actors share resources and risks, and leads to quality improvements (Ricciardi et al., 2021). Bengtsson & Kock, (2014) have suggested that, since there are benefits from both competition and cooperation, their simultaneous use, in form of inter-firm coopetition is better in order to benefit organisations. While competition has an effect on firm performance, it has an effect on inter-firm coopetition and therefore, there is need to determine the significance of the effect;

H_3 – There is a mediating effect of inter-firm coopetition on the relationship between competition and firm performance.

Cooperation, inter-firm coopetition and firm performance

In cooperation two or more players collectively mobilise and develop capacities in response to special interdependent needs and to solve complex problems, which they cannot achieve without the other parties (Yamazumi, 2021);(Kayo et al., 2010). (Alhussan et al., 2017) considered coopetitive relationships to be a result of a network of complex interdependencies in the environment in which firms operate. These networks or value should benefit everyone in the network (Bengtsson et al., 2010). Coopetition mainly involves cooperation among competitors. Coopetition therefore means the coexistence of the two opposite phenomena of competition and cooperation in a business relationship (Jámbor, 2018). Since cooperation is a major discipline in coopetition, it is important to examine its effect in relation to how it is affected by coopetition. The following hypothesis was therefore set;

H_4 - There is a mediating effect of inter-firm coopetition on the relationship between cooperation and firm performance.

Inter-firm coopetition and firm performance

Literature categorises two factors that may determine the use of coopetition strategies; these are external and internal factors (Zgarni, 2019). There are four external factors and include; firstly, environmental changes, changes in regulation, and uncertainty that makes firms to find ways of survival and growth; secondly, shortened product life cycles that require quick and efficient development of new products and services leads to the need to pool resources for innovation, development and delivery of products (Bengtsson & Kock, 2014); thirdly, industry concentration/convergence which both increases competition and provides opportunities for growth which were not previously available; and fourthly, sector maturity which requires a rejuvenation of the product life cycle through coopeting with other parties (Cygler et al., 2018; Park et al., 2014; Robert et al., 2018). Internal factors mainly involve the need for survival and perceived mutual benefits. The achievement of those benefits would be through acquisition of expertise, capacities or resources from industry players (Zgarni, 2019).
Evidence on coopetition indicates that it performs better than competition or cooperation since the overall value created for the parties and the customers is higher (Le Roy & Sanou, 2014). Several scholars attribute this performance from different perspectives. For instance, actors acquire new resources and new markets (Bouncken *et al*., 2017); new knowledge and expertise (Said *et al.*, 2010); and share risks and costs to create mutually beneficial value (Ritala & Sainio, 2014). According to Ritala & Sainio, (2014), the higher performance is attributed to resource efficiency, increased competitiveness and market growth due to joint efforts. Other

performance benefits found in literature include stimulating innovation among partners (Ritala & Sainio, 2014), technology development (Park *et al.*, 2014) , reduction of operational costs (Le Roy & Sanou, 2014), reduction of functional risk (Cygler *et al.*, 2018), and development of new processes and products, and building of new channels to unreached markets (Bengtsson & Kock, 2014). At industry level, coopetition may change the competitive dynamics since if one competitor decides not to cooperate, the rival might choose to cooperate with other competitors and jointly outperform the refusing competitor (A. Brandenburger & Nalebuff, 2021). In addition, Bengtsson *et al.*, (2010) found that, through coopetition, firms enable each other to innovate and develop new, creative solutions which result in them achieving growth and remaining competitive. This thus means that firms gain coopetitive advantages which are higher in value than they would obtain from separate cooperation or competition advantages (Ritala & Sainio, 2014). The hypothesis is thus set as follows;

H_5 – Inter-firm coopetition has a significant influence on firm performance.

Inter-firm coopetition in the financial services sector

MNO/bank alliances have shown to be effective models for creating scale and sustainability (EIB, 2014). This is because they share agent management, liquidity management, savings, loans and insurance products while sharing agent networks and direct interoperability between financial wallets and accounts (EIB, 2014). The Global System Mobile Association (GSMA, 2014) have also observed that although MNOs have been providing financial services, they need certain capabilities which they can acquire at a relatively lower cost by partnering with banks and FinTechs. They established that while FinTechs bring rapid innovation and flexibility, MNOs provide a wide access to market through their marketing and distribution networks (GSMA, 2014).

According to Grewe et al., (2016b), most FinTechs are able to offer banking services at lower costs, while providing competitive, flexible and easy to use digital real-time products. This is because they do not carry much overheads as they rarely open physical facilities (Grewe et al., 2016a). Grewe et al., (2016b) further contend that the survival of banks now depends on their ability to offer digital products to its customers at the same standard as FinTechs. They however, have pointed out that FinTechs have their own challenges such as heavy dependence on external capital for funding of their businesses, and focusing on very limited service offerings from a whole range of the banking services portfolio. The other challenge for FinTechs is the fragmented manner in which they operate, and their not so clearly defined regulation (Dupas *et al*., 2012). To counter the challenges, (Grewe *et al.*, 2016b) urges banks and Fin Techs to cooperate. They argue that FinTechs need access to a critical number of customers, and in some cases, banks' infrastructure, while banks need the FinTechs' disruptive capabilities, flexibility and speed in innovation, digitalisation and service delivery. It was noted that some banks recognised that working with FinTechs may enlarge the total market and increase customer satisfaction, although the relationship between the two is unlikely to be an equal and perfect symbiosis. The partial congruence of interests allows them to work together while they inherently remain competitors (Grewe *et al*., 2016a).

Conceptual framework

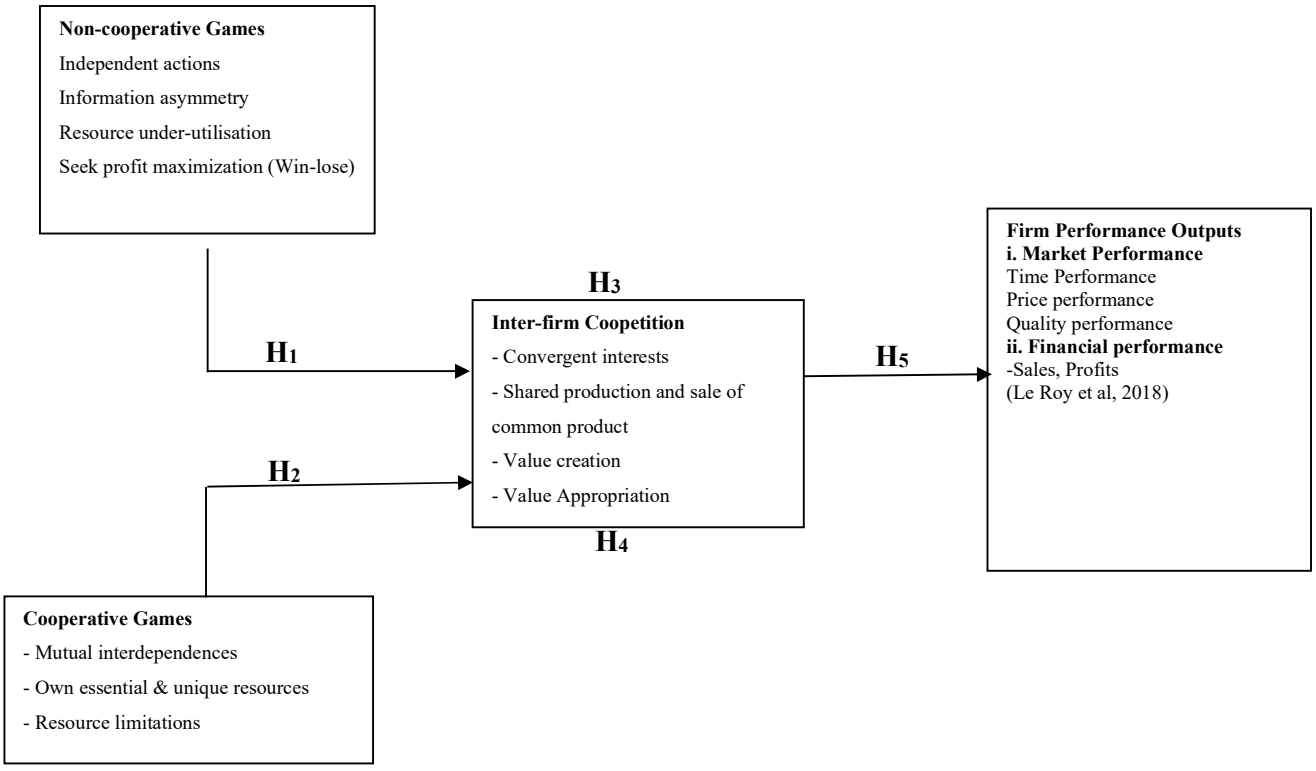
(Bengtsson & Kock, 2000) suggest that the two logics of competition and cooperation need to be separated as they involve two different types of interactions and activities (Bengtsson et al., 2010). The variables that were used in this conceptual framework were obtained from literature and theory. Game theory was used to separately

explain competition and cooperation in relation to inter-firm coopetition. Competition, known as non-cooperative games, was measured by resource under-allocation, independent actions, information asymmetry and profit maximization decisions (Chang *et al.,* 2021). Cooperative games were measured by; ownership of essential shareable resources, resource limitations, the number of mutual dependencies, and information sharing. inter-firm coopetition were; convergent interests, shared production and delivery of common products, value creation for both the customer and the firm, and value sharing among the coopeting firms. Firm performance, as a result of value creation and sharing, was measured by financial performance and market performance. Financial performance is the output from policies, managerial decisions and activities of a firm, while market performance is the growth, in volumes and value, from increased market coverage. Firm performance is the dependent variable of competition, cooperation, and inter-firm coopetition.

The literature confirms the existence and benefits of inter-firm coopetition. The following questions however need to be answered;

1. Does inter-firm coopetition exist in Zambia?
2. How does inter-firm coopetition mediate the relationship between competition and firm performance?
3. How does inter-firm coopetition mediate the relationship between cooperation and firm performance?
4. How has inter-firm coopetition affected the performance of financial services firms in Zambia?

The answers to these questions are guided by the conceptual framework below;



Source: Author construct from empirical and theoretical literature revie

Research Methodology

Approach

A cross sectional, explanatory, mixed method design was employed to investigate the existence of inter-firm coopetition and examine its effect on firm performance. This approach was the most appropriate method of data collection for this study because cross sectional studies are relatively easier, faster and inexpensive, faster and easier to conduct, useful for generating and clarifying hypotheses and can lay the groundwork for decisions about follow-up studies (Zikmund et al., 2013). Purposeful sampling (Sibona et al., 2020) was used to identify the digital financial services providers that are engaging in collaborations with competitors. The unit of analysis was a digital financial services provider engaged in collaborations with competitors. The study population included 15 commercial banks, 3 MNOs and 3 FinTechs. The targeted sample size was 63 respondents calculated by multiplying a total of 21 digital financial services providers multiplying by 3 respondents per firm. The unit of enquiry included managers heading a department which engages in digital financial services. Information Technology staff involved in interoperability of digital systems, and digital financial services staff who deliver the digital services. The study area was Lusaka, Zambia, since the unit of analysis is either based in Lusaka or have their headquarters in Lusaka.

Inclusion criteria	Exclusion Criteria
DFSP domiciled in Zambia registered by BOZ, ZICTA or CCPC	DFSP not based in nor doing business in Zambia
Must be a commercial bank, a FinTech or an MNO	Non-Bank MFIs, International money transfer organisations
Works in collaboration with competing DFSPs	No collaboration with competing DFSPs
Provides DFS to the masses	Does not provide DFS to the masses, such as corporate clients only.
Clearance for survey from Compliance Departments	Clearance request rejected
Willing to provide responses to survey	Unwillingness to provide responses to survey
FinTechs must be providers of both DFS and digital systems	Those providing either DFS only or digital systems only

Source: primary data

For quantitative data collection, a questionnaire, comprising 52 questions, was administered on 36 of the 63 targeted respondents. The data was cleaned and analysed using SPSS. For qualitative data collection, semi-structured interviews were carried out on 6 key informants. The data was then recorded, and transcribed. It was then coded and grouped into themes by use of Nvivo 12. The data was supplemented by collecting additional evidence from documents, market reports and newspaper articles. Triangulation of multiple data sources was used to improve data validity (Cresswell, 2012).

Data Collection

Data was collected with the help of one research assistant, who has previously been involved in data collection. Managers and support staff who are directly involved in digital financial services delivery and relationships with other providers, were surveyed using a 5-point Likert scale questionnaire. For qualitative data, interviews were conducted on management staff. The eligibility of the respondents was assessed by considering their age, academic qualifications, job title, department and years worked in a financial institution. The aim was to ensure that all the respondents are qualified and are knowledgeable enough to provide responses regarding inter-firm coopetition in the provision of digital financial services. The targeted sample which refused to respond was not surveyed. The respondents were asked about the existing competition among DFSPs, the kind of collaborations taking place; and how these collaborations with competitors are affecting their firm performance.

Data Analysis

SPSS version 29.0.0.0 for windows was used in carrying out data management and analysis of quantitative data. The Analysis of variance (ANOVA) was used to simultaneously measure, explain, and predict the relationships among the variables, known as variates (Hair et al., 2014). From simple linear regression analysis, R^2, p-value and the t-test were the measures used to test hypotheses (Mindrila & Balentyne, 2022).

The analysis of qualitative data which was obtained from in-depth interviews and related documentation. All interviews were transcribed verbatim from voice recordings to word documents. NVIVO 12 was used to group the qualitative data from the interviews, into themes and sub-themes. Triangulation of the findings from the

different data sources was then done to confirm the results derived from more than one point of view (Vosloo, 2004).

Results

Demographics

For quantitative data, the response rate was at 53%, corresponding to 32 respondents from 14 out of 21 digital financial services providers. Descriptive statistics show that the male gender accounted for 75% of the respondents with 25% females. For the ages of respondents, 20 – 29 accounted for 15.6%, 30-39 were 37.5%, 40-49 were 37.5% and the 50 and above, accounted for 9.4% of the respondents. In terms of educational qualifications, bachelor's degree holders constituted 46.9% of the respondents, master's degrees at 43.8%, diploma holders were 6.3% and 3.1% have a PhD. 94% of the respondents have worked in their firms for at least one year. 72% have worked for more than 4 years while only 3% have worked for less than a year. 40.1% of the respondents were from the digital services departments. 15.5% were from sales and marketing departments, and from support departments, IT 6.3%, Corporate 6.3%, compliance 3.1% Treasury 6.3% and Finance 3.1%. 50% of the respondents were managers. Of these, 62.5% are directly managing digital retail services. Of the remaining 50% of non-managers, 31% are directly involved with DFS while the rest are providing support services such as IT support, compliance and customer relationships.

For qualitative results, 6 participants were interviewed. The descriptive statistics show that the male gender accounted for 83% of the respondents with 17% females. For the ages of respondents, 50% were between 30-39 years, and the other 50% were between 40 -49 years. 50% had MBAs, 17% had a first degree, 17% had a diploma, and 17% had a professional qualification. 100% of the respondents have worked in their firms for at least 6 years. 100% were either managers or heads of departments. 50% were directly dealing with digital banking services, 33% were IT and innovations specialists, while 17% were support staff in cash management and transactions.

Questionnaire responses

To gauge the existence of inter-firm coopetition, respondents were asked a number of questions on whether or not there are interactions, and their level of interaction in business activities. Further, questions were asked on whether inter-firm coopetition creates value, and how value is shared. Regression analysis, using SPSS PROCESS was used to determine whether inter-firm coopetition enhances the effects of competition and of cooperation on firm performance.

The results on effect of inter-firm coopetition on firm performance included answering questions on whether collaborations with competitors yielded market and financial improvements for the firm.

Inter-firm coopetition

Respondents were asked on convergent interests with their competitors. The results revealed that convergent interests were associated with the propensity to engage in inter-firm coopetition. The most notable responses were on existence of common interests and firms having positive interactions among themselves. 81.3% (26) agreed that they have common interests with the other DFSPs; and 81.2% (26) agreed that they have positive interactions with other DFS providers.

In terms of joint production and sale of common products, 53.1% (17) of the respondents disagreed that they do not undertake joint product research. In terms of joint product development, 53.1%(17) agreed that they jointly develop product. On product and service delivery, 68.8% (22) of the respondents agreed that they jointly deliver products. 50% (16) of the respondents agreed that they undertake joint branding and marketing of their products. Respondents were asked questions assessing outcomes of coopetition. 71.9% (23) agreed that their common goals involve joint value creation for their customers. 78.2% (25) agreed that their interactions with the other DFSPs have produced shareable benefits for all of them. Further, 59.4% (19) agreed that their common goals involve sharing of the benefits from the collaborations, and 56.3% (18) of the respondents agreed that they have been able to share the joint benefits from the collaborations.

Firm Performance

Regarding market performance, questions on speed of product delivery, quality improvements, and price reductions were asked to ascertain the impact of inter-firm coopetition on firm performance. 59.4% (19) of the respondents agreed that the time it takes to deliver their products has improved due to collaborations with other DFSPs, and 62.5% (20) agreed that the quality of their products has improved from the time they started collaborating

with other DFSPs. The results, however, show that prices have hardly reduced due to collaborations, with only 37.5% (12) agreeing that their product prices have reduced because of the collaborations with other DFSPs.

In terms of financial performance, questions on effects of inter-firm coopetition on sales improvement, market coverage, cost reductions and profitability, were asked. The results showed that 71.9% (23) of the respondents agreed that their sales performance has improved; 75% (24) agreed that their market coverage has increased due to collaborations; and 50.9% agreed that their profit margins have improved. However, only 40.7% (13) agreed that their business costs have reduced due to the collaborations.

Hypothesis Testing

H_1 – A positive relationship exists between competition and firm performance.

The hypothesis is not supported (β = .367, p = 0.125, t-value = 1.883, R^2 = .003). This means that competitive behaviours which encourage independent actions, non-sharing of resources and information, and the objective of profit maximisation do not favourably affect inter-firm coopetition among the DFSPs. Competition has a very weak influence on coopetition as it varies minimally when competition changes.
The statistical findings are supported by the following extract from interviews;
"Now when it comes to competing, I think that it creates a new different way of competing in the sense that, if I do not collaborate with you as a player, then I'm collaborating with somebody else. And in that sense, I'm competing because it'll not be like you're collaborating with all the financial players in the industry".
The interview extract explains that there is competition although it now involves cooperation with others, in other areas. There, therefore, is no pure competition where there is no cooperation at some level. The null hypothesis remains supported.

H_2 –A positive relationship exists between cooperation and firm performance.

The hypothesis is supported (β = .752; p = <.001; t-value = 5.478; R^2 = .566). Cooperation is positively associated with inter-firm coopetition. These results imply that mutual interdependences, ownership of unique and needed resources, and resource limitations drive the need for in inter-firm coopetition.

This result is supplemented by the following interview respondent views;
"So you are better off partnering and connecting with those FinTechs to provide that capability that you don't have."
This shows that cooperation is undertaken and one of the reasons for this is the need to cover resource limitations.

H_3 – There is a mediating effect of inter-firm coopetition on the relationship between competition and firm performance.

The hypothesis is supported (β = .6584, t- value = 3.4628 p = .0017). Inter-firm coopetition has a significant influence on company performance. The direct effect of competition is not significant (β = .2711, p=.4172, t-value = .8230). The total effect of competition and inter-firm coopetition on company performance indicates that it is non-significant (β = .5869, p = .1232, t-value = .1856). The total effect is a product of the effect of competition (P-value = 0.4172) and inter-firm coopetition (P-value = 0.017) on company performance P-value = 0.021**.** inter-firm coopetition therefore mediates the non-significant effects of competition on firm performance. This interview extract shows that while competition exists, there is inter-firm coopetition among DFSPs.
"Our collaborations with the MNOs or FinTechs is very wide. MNOs, to some extent, are our competitors because they've come into the financial sector. But at the same time we're cooperating with them. When it comes to, you know, this modern age it calls for both competition and cooperation". Head of digital innovations.

H_4 - There is a mediating effect of inter-firm coopetition on the relationship between cooperation and firm performance.

The hypothesis is supported (β = .6848, t-value = 2.6750, p<0.0122). The total effect of cooperation and inter-firm coopetition (β = .8128, t-value = 5.0188, *p* = .0000) has a large effect of .8128 and is significant (p<.001). This indicates that effects of cooperation on company performance is mediated by coopetition These findings are supplemented by views from interview participants;

…. partnering with other financial service providers, Mobile Network Operators and Banks in order to become totally interoperable, with the aim of making a Zoona Outlet a one stop shop for all consumer needs….. with

over 15 new partner products and more coming soon, available at over 700 trusted and valued outlets nationwide". Zoona MD.

H_5 – Inter-firm coopetition has a significant influence on firm performance.

The hypothesis is supported. Inter-firm coopetition has a significant influence on company performance (β = .570; t-value = 3.862, Sig <.002). These results indicate that coopeting organisations have convergent interests, which they jointly meet, by sharing resources, expertise and capacities, in order to create and appropriate value, which positively impacts their performance. This implies that inter-firm coopetition acts as a conduit in the association between competition and cooperation, and firm performance. This narration by an interview participant supports the hypothesis;
"So now your customers have broadened because you just had your bank customers as sources of revenue, now, you have even included those ones that are not necessarily your bankers, but are receiving payments from those people that are in the bank or sending payments to those people that are not."

Discussion

H_1 – A positive relationship exists between competition and firm performance.

Hypothesis one results indicated that competition is one of the drivers of firm performance in Zambia. In this study, the DFSPs indicated that they compete favourably because of their continuous innovations, and increased production and delivery of a variety of digital products. This is supported by Canto et al., (2017) whose findings indicated that firms independently adopt an aggressive stance against rival actors in ensuring production and delivery of new products and services to their market, for their continued profitability and survival. DFSPs agreed that they had difficulties in reaching their targeted profitability and struggled to maintain their existing market share, and therefore created new markets. These results support existing literature on competition in terms of the possibility of reduced profitability due to new agile entrants with different capabilities and service offerings. The literature shows that competition leads to a win lose situation as explained in the prisoner's dilemma which posits a win-lose situation for players (Heiets *et al.*, 2021). Competition has advantages. The results showed that DFSPs have been able to develop and imitated competitor products. In addition, they have benefited from markets created by their competitors. However, the possibility of increased costs in individually providing products and services has been highlighted. In the study, it was established that the cost for each entity was high if they tried to imitate, produce and deliver similar products to a wider market. Each DFSP has its core competences; FinTechs bring rapid innovation and flexibility in their product offerings, MNOs provide a wide access to market through their communication and distribution networks and banks provide a wide array of products these are at a high cost (GSMA, 2014).
The quantitative findings were discussed with interview participants whose responses agreed to the effect that competition has an effect on firm performance;
"…Banks have evolved to include interactive systems that allow for mobile banking interactions to enable bill payments and mitigate the risk of flight cash and competing with an MNO and be able to eat into that cake…."

"…You find that the same service that the bank offers others also offer…."

The responses agreed to the fact that similar services were being offered by DFSPs and that imitations were done to capture part of the market (the cake).

H_2 –A positive relationship exists between cooperation and firm performance

The results indicate a significant positive relationship between cooperation and inter-firm coopetition. This means that cooperation plays a major role in inter-firm coopetition. When a DFSP creates a relationship with other players, they work together and make joint decisions that are beneficial to the parties involved. These results imply that, at the start, there should be mutual interests and interdependences in order to engage in inter-firm coopetition. DFSPs depend on each other to use the resources which they require, but do not have, and would be expensive for them to acquire. Secondly, ownership of unique resources, capabilities or expertise is part of the mutual expectations for a DFSP to engage in inter-firm coopetition. Thirdly, the coopeting firm should have resource limitations to drive them to seek for resources from other DFSPs. Literature supports these findings as found by Ricciardi et al., (2021) who argued that cooperation is the pursuit of mutual benefits and collective interests, which enable sharing of resources and risks (Ricciardi et al., 2021). The findings support the stag-hare hunt game theory which based on the principle of reciprocity in the actions of partners leading to mutual benefits and loss mitigation Skyrms, (2003). Interview participants supplemented this finding as shown in this extract;

"... you cannot be an expert in 10 of those things that those FinTechs are offering. So you are better off partnering and connecting with those FinTechs to provide that capability that you don't have."

The participants acknowledged the need for partnering in order to gain expertise that a DFSP is lacking.

H_3 – There is a mediating effect of inter-firm coopetition on the relationship between competition and firm performance.

The effect of competition on firm performance is increasingly reducing among DFSPs as results shows that it is to a large extent becoming more inclined towards inter-firm coopetition. The effect of competition on company performance is better off if mediated by coopetition since it increases firm performance. This implies that firm performance is highly dependent on inter-firm coopetition and that competition on its own is not very effective to reach targeted performance objectives. These findings are supported by the statements from ministry of finance and national planning, Zambia, that, financial services providers should recognise that they are not self-sufficient and need to cooperate to acquire resources and share capacities so as to reduce costs and make financial services available to a wider market (MoF, 2017). In line with this, the national financial switch was developed by the ministry of finance to enable interoperability of financial systems (MoF, 2017). DFSPs have invested in technology which connects their digital systems across different organisations (FSD Zambia, 2019). Yami et al., (2010) asserted that convergent interests lead to joint value creation while maintaining their competition in other areas.

The findings are supplemented by the following vignette;

"When it comes to, you know, this modern age it calls for both competition and cooperation….
No one entity can be a master of everything."

The vignette provides a view that even with competition, there is need to cooperate to gain benefit from the expertise of other firms.

H_4 - There is a mediating effect of inter-firm coopetition on the relationship between cooperation and firm performance.

The effect of cooperation on company performance is significant. The effect increases with inter-firm coopetition. The results confirm that inter-firm coopetition mediates the relationship between cooperation and firm performance. This implies that firm performance improvements will occur by establishing inter-firm coopetition relationships. These findings affirm the understanding that inter-firm coopetition improves firm performance as established by Prahalad, (2019), who stated that stakeholders need to collaborate to create new sources of competitive advantage and wealth for themselves, especially through shared digital infrastructure and technology which would reduce costs and increase service provision. coopetition involves cooperation, which is one side of the coin (Brandenburger & Nalebuff, 2021). This finding confirms the theory that firms which are able to engage in coopetition take up a number of cooperative maneuvers including aligning themselves with competitors who possess capabilities which they do not have (Grewe et al., 2016a). These findings are supplemented by views from interview participants;

"*MNOs, to some extent, are our competitors because they've come into the financial sector. But at the same time we're cooperating with them".*

This vignette shows that the new entrants into the financial services sector are competitors with whom banks cooperate with. This is because the new entrants came with new capabilities and resources to reach new markets.

H_5 – Inter-firm coopetition has a significant influence on firm performance.

Inter-firm coopetition has a significant effect on firm performance. This means that the interactions among competing DFSPs lead to improvements in their performance. DFSPs are now exposed to capabilities and functionalities that lead to increased market coverage at lower costs and a faster rate. A firm which collaborates with its competitors is able to improve its sales performance and profitability as it is able to reach previously unreached markets. For instance, banks, through their collaborations with MNOs are able to deliver their digital products to a wider market which was not previously reachable with brick and mortar facilities. By combining the DFSP's individual capabilities there is real-time delivery of more and high quality products to a wider market. The combined flow of ideas and the use of digital technologies is enabled by restricted information sharing among the players. The national financial switch (NFS) has been an important channel which has encouraged

and enhanced inter-firm coopetition among the DFSPs. This supports the findings by Dagnino *and* Mariani, (2010), that parties perceive coopetition as a source of economic value creation which provides mutual benefits through economic value sharing. The findings lend support to game theory which posits that players' choices are interdependent and directly affect the payoffs of others in inter-relationships (Carfi & Okura, 2014). Game theory also suggests that the best business partner is a competitor, who both collaborates and competes to provide a suitable win–win strategy by pursuing new markets (Feng, 2018; Heiets et al., 2021; Ozkan-Canbolat et al., 2016).

> *"So people that were traditionally not our customers are finding their ways in, as a result, we're able to have returns that we never had opportunities." "Where you participate in interoperability, it gives you increased volume, money that you would not have gotten if you had not participated. Increased volumes obviously increase revenues because each of the transaction volumes will be going at a fee which the bank will charge."*

This vignette highlights the increased benefits for coopeting DFSPs, in form of increase sales volumes and profits.

Conclusion and implications

Over the years, financial services providers have been fragmented in service delivery. this study explored why these collaborations are undertaken by using game theory's stag-hare hunt game. This theory was used to highlight the effect of decision choices between cooperation and competition. The essence of game theory is to show that each player makes his own selection of a strategy, but the overall result depends on the choices of all. DFSPs make choices on who to collaborate with and in which activities. Ultimately, each player only partially controls the outcome of a game as they each are able to decide with who and what kind of interactions they would engage in.

Both competition and cooperation were evident among DFSPs. While they are competing in service delivery and profit maximisation, they are also cooperating in creating new markets and sharing in the benefits of these markets. DFSPs have remained competitive by creating new markets for some products and entering new markets for common products, despite the intense competition. DFSPs have moved from engaging purely in competition to engaging in cooperation as well, in certain activities. They cooperate in product innovation, development and delivery of DFS although cooperation is more defined at the level of product delivery. Competitors should have convergent interests included the ability for them to have positive interactions among themselves, acknowledging that they have similar interests and be willing to share in achieving mutual partial goals. For cooperation to take place, the players have to have interoperable platforms in order to take part in resource sharing, branding, cost sharing, and joint market accessibility.

With the introduction of the national financial switch, DFSPs have redefined their roles and built integrated service delivery models to more efficiently and effectively meet customer needs. This is in support to the changing demographics, heightened customer expectations and demand for high quality affordable products. Firms have a choice to select the best relationships and solutions for the customer with considerations to process and system improvements.

The theoretical implication, from the findings, is the study's contribution to the stag-hare hunt game. The findings confirm the suitability of the theory in explaining coopetitive relationships, in terms of its focus on benefits over and above what a player can gain on their own, and risk mitigation. The policy implications are that the findings may be used to review existing policy on regulation of interoperability of digital systems, and development of regulation on engagement of firms in such relationships. The managerial implication is the study's contribution towards collaboration decisions within specific decision parameters such as similar interests and goals.

In terms of study limitations, inter-firm coopetition exists in other industries such as education and health. A non-probability sampling method was used because of the few financial services institutions. There are other theories of coopetition that were not part of this study. This provides an opportunity for further investigation. Finally, while this study contributes to knowledge in existing literature, there are several opportunities for further research. Some areas of further study emerged during the research and these include; the moderating effect of forced coopetition by the central bank's national financial switch on coopetition; The effect of multiple branding in joint service delivery.

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