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PICTURE BY LEREMY GAN

How can the internal barriers towards disruptive and radical innovation within firms in the Dutch Financial Services and Banking sector, be further validated?

Preface

This master thesis trumpets the end of a prolonged second study era, my life as a working student; working as a lecturer at the NHL Stenden University of Applied Sciences. This research is the railhead of the Master of Science in Business Administration with the focus on Financial Management at the University of Twente in Enschede, The Netherlands. It has been an incredible journey!

During the research and writing of this thesis I have been fortunate to receiving great support from several persons in various ways; knowing I can't be fully capacious and comprehensive enough in expressing my gratitude, I would like to take this opportunity to thank them.

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Abstract

Firms in the Dutch financial services sector fully recognizing the necessity and importance of radical and disruptive innovation. Yet at the same time, banks face considerable (internal) barriers when attempting to embrace disruptive innovative trends or even new business models. Das, Verburg, Verbraeck, & Bonebakker, (2018) have explored a case study within this sector regarding internal barriers towards disruptive and radical innovation. They procreated a framework for large Financial Services firms, consisting of six key barriers towards disruptive innovation: a lack of exploiting new idea's, inertia caused by (local) systems architecture, an unsupportive organizational structure, too much focus on risk avoidance, absence of fundamental research and development as well as the not-invented-here-syndrome. This research focuses on further validating that framework. To enrich this framework six innovative projects within three large firms within the Dutch Financial Services and Banking sector that failed were researched. Interestingly, this study found evidence of subsistence of those barriers within these firms with the exception of inertia caused by (local) systems architecture. The enriched framework was then measured against innovative projects that were deemed successful resulting in the nuancing of the two barriers: an unsupportive organizational structure and a lack of exploiting new idea's.

Keywords: Financial Services and Banking sector, radical and disruptive innovation, internal barriers.

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1. Introduction

In the beginning of 2018 it was published that Bank A was considering entering the world of crypto coins by launching a website, for the purpose of this research called 'Project 2'(banks, project and persons/respondents have been anonymized for this thesis though known to professors). One of the purposes of Project 2 was to safeguard crypto coins in a so-called digital wallet. Until then, digital wallets were merely facilitated by crafty digital entrepreneurs. However, these platforms offer no real security against hacking and, in theory, these platforms could simply evaporate into thin air without their customers ever seeing the sight of their digital fortunes again (Betlem, 2018). In the beginning of 2019 Bank B started a pilot with a project for the purpose of this research called project 7, a digital wallet in which customers could safely store bitcoins and other crypto coins. The pilot encompassed no less than 500 customers and was to determine their customers' specific needs and wants associated with crypto currencies as well as the extend of the trade facility role suitable to the Bank B (Goeij de, 2019). Both Bank A and Bank B claim that no service was fully developed into a ready-for-market concept and state they merely investigated the possibilities (Banken.nl, 2019a).

Already in May 2019, Bank B corroborated that it cancelled plans to further develop Project 7 stating it to be too risky. Merely a few days afterwards, Bank A also confirmed that they were no longer working on Project 2; "After careful consideration with our customers in mind we recently decided that now is not the time to develop the idea further and bring it to the next phase of innovation" (Banken.nl, 2019a; Banken.nl, 2019b; Beedham, 2019a; Beedham, 2019b). According to Beedham (2019a), Bank B have always been anxious about cryptocurrencies such as bitcoins.

According to Respondent A, currently CEO at Bank A, the above described cases were not successful due to numerous fierce (internal) challenges, impediments and obstacles. Such projects were illustrative for similar projects that perished because of these challenges, impediments and obstacles. These could, for instance, be described as inertia or tardiness of the *system*, plain risk adversity or other (collective) emotional impediments e.g. what is at a later stage in this thesis described as the Not-invented-here syndrome. In the past, Respondent A has held omnifarious positions within Bank A such as Transition Manager Operations at Bank A North America Wholesale and Senior Vice President of Loan Operations at Bank A.

Just like Bank B and other firms in the Dutch financial services sector, the Bank A is fully recognizing the necessity and importance of radical and disruptive innovation (Das et al., 2018; Sandberg & Aarikka-Stenroos, 2014). Crowdfunding, for instance, which is a method of raising finance for projects based on networking through internet and software platforms; meaning *"digitally rendered economic space which has the capacity to challenge established funding practices in banking, capital markets and venture capital networks, offering a more open and egalitarian source of capital for economic, social and cultural entrepreneurship"* (Langley & Leyshon, 2017, p 1019). The block chain technology, as per above examples, allows for digital information to be distributed though not copied which resulted in the

conception of a digital currency called the Bitcoin (Pilkington, 2016); it is projected by some scholars and practitioners that this technology will severely impact the global economy (Narayanan, Bonneau, Felten, Miller, & Goldfeder, 2016; Schilling & Uhlig, 2019). Furthermore, there is the development of the so called Internet of Things (IoT) which allows the internet, still nearly entirely dependent on humans for information provision, capture data by connecting every day (and not so every day) devises to the internet and therefore each other (Ashton, 2009; Noura, Atiquzzaman, & Gaedke, 2019) empowering computers to gather data for themselves. This may well change business models in healthcare, transportation and not least finance (Balan, Ganesan, Otto, Sundararajan, & Ganesan, 2017), add to this Big Data and Artificial Intelligence amongst other trends and we are arguably on the verge of the 4th industrial revolution (Hyun Park, Seon Shin, Hyun Park, & Lee, 2017).

Returning to the block chain technology as an example, Ross (2016) postulated in 2016 that it would take the Financial Services and Banking sector an anticipated 5-10 years before block chain technology would substantially be incorporated in their core practices. Contrastingly, IBM projected even from 2017 onwards a considerable more intensive boarding on this development (Kelly, 2016). However, the disruptive nature of this development for the financial sector is eminent: "*banking financial intermediaries operate through a centralized control of authority and the autonomous, serf-serving, and decentralized applications of block chain replace the intermediaries"* since the technological innovations have developed so swiftly, the payment infrastructure is struggling to keep pace (Ross, 2016, p 366). Yıldırım (2019) postulates that the insurance sector in Turkey and even internationally are confronted with fintech startups rising to the innovation occasion whereas traditional insurance companies fail to materialize their settled advantages. Established (successful) firms in the Financial Services and Banking sector with established goods and services are challenged by newer, better, cheaper goods and services and potentially pose a serious threat unless managers disembark on traditional business practices and capitalize on (disruptive) innovative trends (Berry, Shankar, Parish, Cadwallader, & Dotzel, 2006; Christenson, 1997). Therefore it is imperative that established firms in Financial Services and Banking sector adapt to the challenges the aforementioned trends bring forth, positively impacting its performance (Parida, Sjödin, Lenka, & Wincent, 2015; Scott, Van Reenen, & Zachariadis, 2017).

At the same time, banks face considerable (internal) barriers when attempting to embrace disruptive innovative trends and even new business models entering the Financial Services and Banking sector (Das et al., 2018). According to Sandberg & Aarikka-Stenroos (2014), the traditional internal barriers are a restrictive mindset, a lack of discovery competencies and an unsupportive organizational structure. Das et al. (2018) have explored a case study within Financial Services and Banking sector regarding internal barriers towards disruptive and radical innovation. They procreated a framework for large Financial Services firms, consisting of 6 key barriers towards disruptive innovation: a lack of exploiting new idea's, inertia caused by (local) systems architecture, an unsupportive organizational structure, too much focus

on risk avoidance, absence of fundamental research and development as well as the not-invented-here-syndrome.

The case study that Das et al. (2018) conducted, was to explore internal barriers towards at least potential disruptive and radical innovation that may hinder the effectiveness of innovative projects like the above mentioned examples of Bank B and Bank A. Though the research of Das et al. (2018) presents valued vistas for managers and management in order to further re-determine the flux of innovation and to increase innovation effectiveness, the research is not without limits. Foremost, the case study was carried out at a single organization within the Dutch financial services sector examining merely a limited number of projects therefore confining the scope of the research. In their research, it is hypothesized that projects in other large organizations within the Dutch financial services sector are headed up analogous barriers when conducting potential disruptive and radical innovation (Das et al., 2018).

1.1 Problem Statement

Like Bank A and Bank B, other organizations in the Dutch financial services sector fully recognize the imperativeness and essence to embrace disruptive and radical innovative trends; moreover, economic growth within and beyond the sector will stagnate unless such disruptive and innovative financial innovation takes place (Amore, Schneider, & Žaldokas, 2013; Das et al., 2018; Laeven, Levine, & Michalopoulos, 2015).

Many fields of innovations within or related to the Financial Services and Banking sector remain largely underexplored both externally and internally e.g. how to manage the proliferation of cryptocurrencies or the development of new business-to-consumer fintech solutions (Breidbach, Keating, & Lim, 2019). Similarly, Prior to the case study conducted by Das et al. (2018), much research has focused on barriers towards disruptive and radical innovation within more traditional technological companies. As mentioned, the subsequent case study conducted by Das et al. (2018) was carried out at a single organization within the Dutch Financial Services and Banking sector, limiting the scope of their research. Consequently, it merits further validating the internal barriers postulated in their research within the Dutch Financial Services and Banking sector as the external validity is somewhat limited. Therefore, current literature is subpar and falls short of providing validated insights into the internal barriers towards disruptive innovative trends (Das et al., 2018; Scott, Van Reenen, & Zachariadis, 2017).

To enrich literature, it is desirable further validating the framework procreated by Das et al. (2018) by conducting a multiple-firm comparison. To the best of the authors knowledge, no study of posturing such a theoretical framework using a multi-firm comparison has been carried out to date.

1.2 Research Design

This thesis proposes a multi-firm comparison to include firms from the Financial Services and Banking sector subject to multiple (technological) innovations trends to further validate the framework procreated by Das et al. (2018) which may create the setting for rich analogy or antilogy between such firms, and perspectives on barriers towards disruptive and radical innovation. This may pave the way for eliciting sectoral trends and further increase the generalizability of the conclusions.

1.3 Research goal and Central question

To address the above mentioned research gap, this thesis sets out to further validate and clarify the above mentioned internal barriers towards disruptive and radical innovation within firms in the Financial Services and Banking sector as they seek to meet the innovative challenges. An important aspect of this study is to focus on the framework proposed by Das et al. (2018) as to how they affect these firms and to further validate their existence and functioning. In addition, this thesis is to explore the root causes of these barriers which may lead to a richer analogy and antilogy.

The central research question of this thesis therefore is*: how can the internal barriers towards disruptive and radical innovation within firms in the Dutch Financial Services and Banking sector, be further validated?*

1.4 Key terms

Radical innovation implies drastic deviation from existing practices, business models, market categories or customer groups (Jarvenpaa & Standaert, 2017). Lee, R., Lee, & Garrett (2019) refer to radical product innovation as totally new products that involve considerable change in basic technologies and methods. Disruptive innovation implies an innovation with radical functionality, discontinuous technical standards, and/or new forms of ownership that reshape expectations of the market (Nagy, Schuessler, & Dubinsky, 2016).

Barriers towards radical and disruptive innovation refer to challenges, barricades, and obstacles disturbing the process of innovation. They may be external such as customer resistance, an undeveloped network, ecosystem dynamics, as well as technological impetuosity. Internal barriers may comprise of a restrictive mind-set, a lack of or inferior discovery competencies as well as an unsupportive organizational structure (Chandy & Tellis, 2000; Das et al., 2018; Sandberg & Aarikka-Stenroos, 2014).

The financial services sector can be broadly defined inclusive of banks, insurance companies, pension funds or even clearing institutions (Financial firms as defined in the wft.2020).

1.5 Research questions

Having outlined the key terms of the central research question the main focus of this thesis so to manifest to what extend the framework proposed by Das et al. (2018) can be further (externally) validated to other firms within the Dutch Financial Services and Banking sector. The analysis will be strategic and on Financial Services and Banking sector level. Ultimately, the outcomes will not be limited to one single firm strategy however a rather inclusive, encompassing one.

The research questions are:

1. How are barriers towards disruptive and radical innovation in the Dutch Financial Services and Banking sector characterized?
2. In what way do barriers towards disruptive and radical innovation hinder firms in the Dutch Financial Services and Banking sector?
3. How can these barriers towards disruptive and radical innovation in the Dutch Financial Services and Banking sector be validated?

The first research question is utilized to explain the full concept of internal barriers towards disruptive and radical innovation in the Dutch Financial Services and Banking sector and to possibly enrich the framework proposed by Das et al. (2018) with possible subsequent relevant additions. The answer to research question two is outlined both using theory and using empirical research. Lastly, the answer to research question three will be the result of empirical research.

1.6 Structure of the thesis

Chapter one embraces the motivation, research goals, research question and background information pertinent to this research.

Chapter two renders the literature availed for this research. The chapter reviews the tradition barriers towards innovation leading up the framework proposed by Das et al. (2018).

Chapter three accounts for the methodology utilized in this research.

Chapter four renders the findings inclusive of the measuring against successful cases.

Chapter five reviews the findings regarding the validation of the internal barriers, discusses the theoretical and managerial applications and concludes with suggestions for further research.

2. Theoretical Framework

Picture by Mikko Lemola

In literature, innovations are defined as new ideas, improvements or solutions transformed and synthesized into operable results (Adams, Jeanrenaud, Bessant, Denyer, & Overy, 2016; Tidd & Bessant, 2018); in other words, it is imperative to acknowledge that not all ideas lead to innovation however merely if they are synthesized and absorbed in a valuable manner. This proves to be rather cumbersome as innovating financial companies face several challenges and experience different (internal) obstacles and barriers towards disruptive and radical innovation (D'Este, Iammarino, Savona, & von Tunzelmann, 2012; Das et al., 2018; Sandberg & Aarikka-Stenroos, 2014). As financial innovation and economic growth are positively correlated (Beck, Chen, Lin, & Song, 2016), it is imperative to examine those internal barriers (Das et al., 2018).

In order to enrich a roadmap towards a rich analogy and antilogy, it is imperative to look at how barriers to radical and disruptive innovation are defined ensued by what those barriers entail for the Dutch Financial Services and Banking sector. Therefore a literature walkthrough into the construct development of the aforementioned internal barriers within the Dutch Financial Services and Banking sector is the essence of this chapter, followed by an clarification as to the root cause of those barriers: ambidexterity.

2.1 Internal barriers towards disruptive and radical innovation

According to Madrid-Guijarro, Garcia, & Van Auken (2009) manufacturing firms, like most other firms, deploy successful innovation when the firm manages to combine a broad ranges of competencies, abilities, skills and capacities such as understanding market needs and recruiting high-skilled staff. Yet, distinct from manufacturing firms, established firms in the financial services sector and banking sector, do not traditionally have an R&D departments embedded in their corporate structure and therefore are predominantly focused on incremental upturns to already existing offerings according to (Das et al., 2018; Dewar & Dutton, 1986). However firms in the financial services and banking sector should be acquiring and implementing new to the firm abilities, skills and capacities even though embedding those may have an considerable impact on their subsystems such as HR, Marketing & Sales not to mention IT (Colakoglu, Erhardt, Pougnet-Rozan, & Martin-Rios, 2019; Geerts, Blindenbach-Driessen, & Gemmel, 2010; Henderson & Clark, 1990; Ibrahim, Rizal, Kamarudin, & Husin, 2019).

The prosperous development and liftoff of innovation adhere to an abundance of both external and internal company aspects. For instance, a company must be capable to acquire and embed fresh technologies, assume and embed new-to-the-organization innovation cultivation as well as accommodate internal mechanisms that cater for exploration as well as the development of new ideas (Piatier, 1984). When in the process of innovating, firms face numerous obstructions, hindrances and burdens which can be typified as innovation barriers (D'Este et al., 2012; Madrid-Guijarro, Garcia, & Van Auken, 2009). The discrimination of interior and exterior barriers empowers the acknowledgement of barriers that an organization can influence as well as the barriers on which an organization has no or merely partial influence (Piatier, 1984).

Innovation Barriers

Barriers to innovation come in multiple shapes and forms and can be either internal or external (Hueske & Guenther, 2015). External barriers can be referred to as barriers originating from outside an organization (Sandberg & Aarikka-Stenroos, 2014). The most common external barriers entail market dynamics, competitor behavior, as well as market and technological turbulence (Alexiev, Volberda, & Van den Bosch, Frans AJ, 2016; Hung & Chou, 2013; Lichtenthaler, 2011). External barriers may include: "government regulations or policy actions not being conducive to innovation, lack of access to funding, weak contract enforcement, or less developed local labor markets, networks and relationships or knowledge networks" (Blundel & Hingley, 2001; Bougrain & Haudeville, 2002; Hotho & Champion, 2011; Keizer, Dijkstra, & Halman, 2002; NESTA, 2009). With that said, some external barriers may be country specific whereas others are internationally commonly denominated (Demirbas, Hussain, & Matlay, 2011; Keegan et al., 1997). According to Hölzl & Janger (2012) and Mohnen & Rosa (2002) the tone and stress of barriers towards radical and disruptive innovation diversifies along the format and type of business a firm conducts its affairs. In addition, it is brought forward that larger more settled companies are more (not to say 'too much') focused on risks associated with feasibility, commercial fiascos, uncertainty with expenditure as well as interior hindrances like inertia stemming from structured routines making the organization bounce back to its 'natural' state (Hewitt-Dundas, 2006; Mohnen & Rosa, 2002; Zolli & Healy, 2012). In contrast, relatively little emergent companies are confronted with barriers such as lack of access to funding and knowhow as well as market-structure (D'Este et al., 2012; Hewitt-Dundas, 2006; Mohnen & Rosa, 2002). As per Mohnen & Rosa (2002), the banking sector has been particularly overcast with interior opposition to transition. This was also postulated by Das et al. (2018).

Barriers towards innovation are rather idiosyncratic and ambiguous by definition. For instance, some scholars put forward that such barriers prevent innovative behavior in companies whereas other scholars and researchers profess these barriers not to be unsurmountable (Hölzl & Janger, 2012; Hueske & Guenther, 2015; Lee, C., Hallak, & Sardeshmukh, 2019; Witte, 1977). As can be distilled from above paragraph, the manner in which barriers towards innovation show themselves appear amply dependent to the ambit and context a firm operates in. What is seen as a barrier towards innovation and the scale of innovation hindrance depends on the company and its characteristics (Hölzl & Janger, 2012). These barriers towards innovation may be facilely surmounted by larger companies, they may be, however, determinant for smaller companies (Mohnen & Rosa, 2002). In line with the definition utilized by D'Este et al. (2012) and Larsen & Lewis (2007), Sandberg & Aarikka-Stenroos (2014) operate on the primes of 'an issue that either prevents or hampers innovative activities in the firm.

Internal Innovation Barriers

Internal barriers can be referred to as originating from within an organization (Sandberg & Aarikka-Stenroos, 2014). The most common internal barriers towards innovation entail the strategy of an

organization, its architecture, its leadership, its culture, the set-up of research and development as well as performance incentives (Baldwin & Von Hippel, 2011; Benner & Tushman, 2015; Chesbrough & Bogers, 2014; Tushman, Michael L. & O'Reilly III, 1996). Similar to external barriers towards innovation, internal barriers towards innovation come in many ways, shapes and forms. These may be divided into different categories related to resources such as a lack of funding, competencies, abilities, skills and capacities, related to culture and systems such as out-of-date practices, and related to human nature such as risk averseness from management and employee resistance towards innovation (Mannan & Haleem, 2019; Rahman & Ramos, 2010; Rush & Bessant, 1992).

Barriers towards innovation have been referred to in literature in omnifarious manners according to Sandberg & Aarikka-Stenroos (2014). For instance, Hall & Kerr (2003) use 'difficulties' and ' challenges' to embody this one concept. Sandberg & Aarikka-Stenroos (2014) summed the different manners to describe this one concept in table 1.

	Authors	**Most important findings**
Barriers	Aggarwal, Cha, & Wilemon, (1998)	Customer agents, can significantly aid overcoming barriers towards consumer adoption of really new products (RNP's).
Challenges	Wood & Brown, (1998)	Sony developers are responsible for implementation; for mass production, process and product engineers must liaise closely.
Problems	O'connor & Rice, (2001)	Breakthrough innovations are enhanced by improved opportunity recognition capabilities.
Difficulties	McDermott & O'Connor, (2002)	Project teams involved in radical innovation face different challenges to those involved in incremental innovation.
Dangers	Seeger & Ulmer, (2003)	Enron: specific centralized communication obligations of senior management facing dangers of narrow set of values and stakeholders.
Concerns	Paap & Katz, (2004)	Functioning today and innovating for tomorrow requires managing the dynamics of disruptive and sustaining innovations.
Obstacles	Costa, Fontes, & Heitor, (2004)	With disruptive innovation, human resources with management and marketing capabilities is imperative.
Bottlenecks	Maine, Probert, & Ashby, (2005)	Investment Methodology for Materials helps pursuing investment strategies identifying promising materials innovations at an early stage.

Table 1 Signifying barriers.

Not only are barriers towards innovation referred to in omnifarious manners, even the impact on disruptive and radical innovation within organizations bears omnifarious terminology. For instance, the impact of barriers towards innovation are referred to as to inhibit (Miller, Miller, & Dismukes, 2005), hinder (Nahm, Vonderembse, & Koufteros, 2003), complicate (O'Connor & Veryzer, 2001) or impede (Gurkov, 2004) and may even result in the failure of the innovation (Denning, 2005).

In their study Sandberg & Aarikka-Stenroos (2014) mention several external as well as internal barriers towards radical innovation. Since external barriers are amply beyond the ambit of grasp by individual organizations, Sandberg & Aarikka-Stenroos (2014) categorized their external barriers into 2 branches:

‘resistance or lack of support from specific actors’ and a ‘restrictive macro environment’ as was hypothesized that organizations can more facilely surmount barriers that are linked to a confined number of actors as opposed to undefined and more cohesive actors in economic surroundings (Bateman & Crant, 1993). Internal barriers towards radical innovation were categorized into: ‘a restrictive mindset, ‘lack of competencies’, ‘insufficient resources’ and ‘an unsupportive organizational structure’. Utilizing O'Connor & DeMartino (2006) the category ‘insufficient competencies’ were subcategorized to ‘a lack of discovery competencies’, ‘a lack of incubation competencies’ and ‘a lack of acceleration and commercialization competencies’.

A restrictive mindset is typified by Sandberg & Aarikka-Stenroos (2014) as the fear of and/or the resistance to innovations within an organization which shows in the apprehension of change, the apprehension of failure, conservative decision-making and a limitative organizational culture. Wolfe, Wright, & Smart (2006) illustrate this as the resistance from employees because radical innovation may be perceived as bringing variation that may bring about considerable challenges to forthcoming capabilities and job security. A lack of competencies is typified as the shortage of capabilities to elaborate on and commercialize radical innovations. A lack of discovery competencies is typified as the shortage of capabilities to create, recognize, work out and articulate radical innovation opportunities (O'Connor & DeMartino, 2006). Govindarajan, Kopalle, & Danneels (2011) illustrate this as a possible hidebound focus on meeting the needs of existing customers. A lack of incubation competencies is typified by O'Connor & DeMartino (2006) as the shortage of capabilities to emulate vigor that turns above mentioned opportunities into business proposals. McDermott & O'Connor (2002) illustrate this as the difficulties as to construct an effective business model that profits from the potential of an innovation. A lack of acceleration and commercialization of competencies is typified as the shortage of capabilities to lift the youngster to a stage where it bears survival potential irrespective of other business platforms and fulfill its potential in its markets (Birkinshaw, Bessant, & Delbridge, 2007; O'Connor & DeMartino, 2006; Story, O'Malley, & Hart, 2011). Birkinshaw et al. (2007) illustrate this as the difficulties to recognize relevant and suitable new partners and to collaborate with them. Insufficient resources is typified by Sandberg & Aarikka-Stenroos (2014) as the shortage or even misallocation of interior finance, skills and expertise, date and information, and tools within an organization. Kelley (2009) illustrates an highly innovative teams within organizations not producing enough short term profitable output, making them easy target for budgetary retrenchments. An unsupportive organizational structure is typified by Sandberg & Aarikka-Stenroos (2014) as an hierarchical setting of lines of authority, communications, rights and responsibilities. Wood & Brown (1998) illustrate this with a segregation of research and development departments from the organization resulting in communication, ordination and coordination difficulties.

In their literature study Sandberg & Aarikka-Stenroos (2014) distinguished besides external vs. internal barriers towards innovation, another dimension: the size of the organization. Considering external barriers that can be related to the behavior of specific actors, small and medium enterprises were typically linked

to a lack of external financing inasmuch larger organizations were typically linked to customer resistance. Considering external barriers than can be related to the macro environment, a less developed network as well as ecosystem were forthcoming to both small and medium enterprises as well as larger organizations. Large firms were more often linked to technological turbulence. Considering the internal barrier of a restrictive mindset; this appears both paramount to small and medium enterprises as well as larger organizations. Considering the lack of competencies, a lack of discovery competencies was typically linked to larger organizations inasmuch that a lack of incubation competencies appeared to be typically linked to small and medium enterprises. In addition, an unsupportive organizational structure appears to be typically linked to larger organizations inasmuch that insufficient resources appear to be typically linked to small and medium enterprises. Figure 1 below is derived from Sandberg & Aarikka-Stenroos (2014).

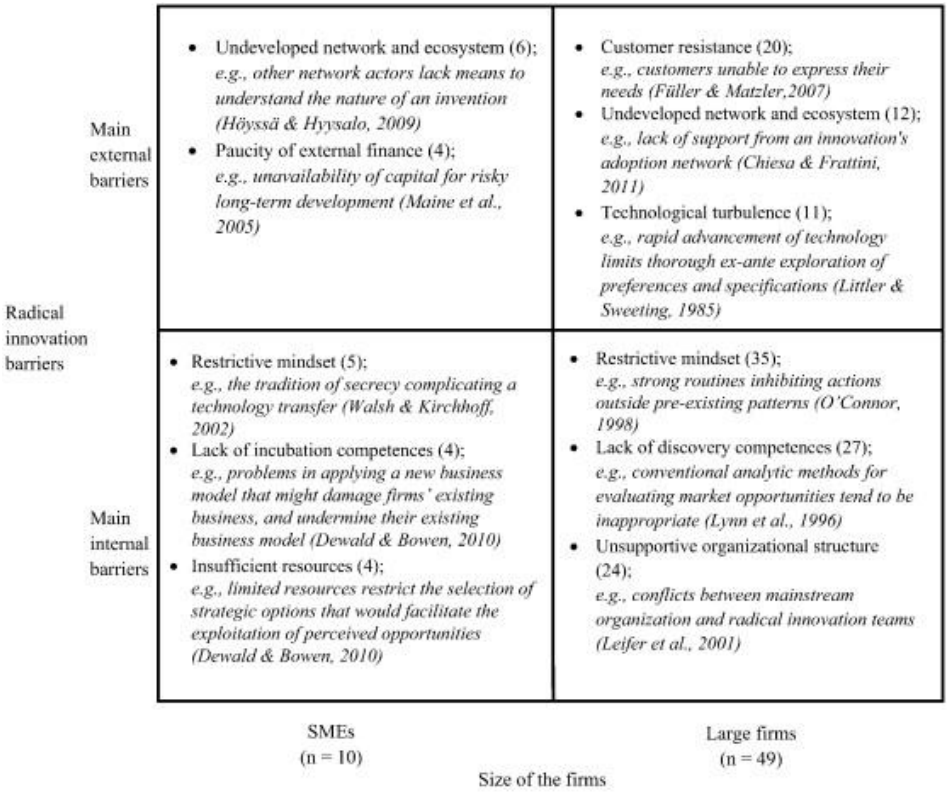

Fig. 1. Main barriers in SMEs and large firms.

Literature was also enriched by a research into innovation barriers across firm types and countries. The five different barriers towards innovation that were considered were: financial barriers towards innovation, skill barriers to innovation, lack of information on technology, lack of information on markets and, it being external of nature, lack of innovation partners (Hölzl & Janger, 2011).

2.2 Internal barriers towards disruptive and radical innovation in the Dutch Financial Services and Banking sector.

As can be seen from figure 1, the three traditional internal barriers towards disruptive and radical innovation that are typically linked to larger organizations are ‘a restrictive mindset, ‘a lack of discovery competencies’ and an ‘unsupportive organizational structure’. Das et al. (2018) comprised a literature framework of internal barriers to innovation based on figure 1 by Sandberg & Aarikka-Stenroos (2014) combined with the internal barriers postulated by Hölzl & Janger (2012). This can be found below in table 2 below.

No.	Description of barrier	Source
1	A restrictive mindset	Sandberg & Aarikka-Stenroos (2014)
2	A lack of discovery competences	Sandberg & Aarikka-Stenroos (2014)
3	An unsupportive organizational structure	Sandberg & Aarikka-Stenroos (2014)
4	Financial barriers to innovation	Hölzl & Janger (2011)
5	Skill barriers to innovation	Hölzl & Janger (2011)
6	A lack of information on markets	Hölzl & Janger (2011)
7	A lack of information on technologies	Hölzl & Janger (2011)

Table 2 Literature framework of internal barriers to innovation.

Moving forward, an empirical exploration into banks was conducted, in order to generalize the results for larger financial organizations. Their research gathered around at a large multinational bank in Europe which carried out an innovation strategy and attempted plural paths in order to lift up its innovative capacity across its several markets. The researchers evaluated and compared eight projects being undertaken in different markets across Europe, operating is different bank entities such as retail banking, corporate banking and private banking handling either radical or disruptive innovation potential as opposed to incremental upturns to already existing offerings as per Dewar & Dutton (1986). In order to further validate and enrich the framework in table 1 above, quarterly reports, meeting minutes, as well as progress reviews were analyzed for obstacles, impediments, challenges, issues and other grounds and arguments for not meeting expectancy, overflows in time and budget or even a project flop. Subsequently, through interviews and discussions with seniors such as Chief Executive Officers and others of high ranking involved in the innovation projects, the literary framework was adjusted in that barriers towards innovation were removed in case of overlap, 16 were added and some barriers were verbalized differently. Consequently, the three barriers towards innovation as postulated by Sandberg & Aarikka-Stenroos (2014) were substantiated into seven barriers whereas the four barriers towards innovation postulated by Hölzl & Janger (2011) were substantiated into seven barriers resulting in table 2 above from Das et al. (2018).

No.	Description of barrier	Literature barrier
1	Innovation projects have too low business value compared to original business plans	X
2	Lack of focus on innovation caused by local profit and loss priority	X
3	Lack of appropriate sources of finance	X
4	Lack of commercialization caused by KPI's	
5	Lack of active management support	
6	Unsupportive innovation strategies	
7	Overzealous risk management (i.e. too much focus on risk avoidance)	X
8	Too many management layers	X
9	Gap between business and IT	X
10	Unsupportive organizational structure	X
11	Inertia caused by compliance focus (i.e. slowness by internal processes)	X
12	Inertia caused by used project management styles	
13	Lack of room for incubation	
14	Lack of ability to maintain new technologies	X
15	Lack of ability to embed new technologies	
16	Too many local legacy systems	
17	Inertia caused by local systems architecture	
18	Lack of new and good radical/disruptive ideas	
19	Lack of discovery/exploring competencies	X
20	Lack of information on markets or technologies	X
21	No patenting or IP-protection mechanisms	
22	No fundamental internal R&D	
23	Lack of exploiting new ideas	
24	Lack of scaling up ideas for large-scale use	
25	Firm is more risk averse than other firms	
26	Firm is more trust-oriented than other firms	
27	Not-invented-here syndrome	
28	Resistance or lack of support from key internal stakeholders	X
29	Lack of qualified and available personnel	X
30	Lack of incubation competencies	X
31	Lack of commercialization competencies	X

Table 3 Framework of internal barriers to potentially disruptive and radical innovation within large firms.

The projects the researchers selected all underwent through the stages of the innovation process as described above, containing criteria and benchmarks for entry as well as exit (Cooper & Edgett, 2012). From the eight projects that were suitably distinguished, an evident difference was noted between barriers towards innovation and elements that were perceived in a different manner. The vocal point of this case study appears that of barriers to which there is a consensus amongst selected projects and, also, it was reckoned that this consensus was eminent when leastwise five out of eight of the selected projects concurred or disagreed.

Finding consensus on barriers

Subsequent of the consensus methodology, the researchers recognized consensus on six barriers towards innovation amongst de projects. Out of the eight selected projects, five professed 'inertia caused by (local) systems architecture' (No. 17) as well as 'a lack of exploiting new ideas by the firm' (No. 23) whereas three of them either scored neutral or was of no opinion. In addition, of these ranked them as key barriers towards innovation. To exemplify this; the organization has developed several programs value, aid and facilitate crude ideas into implementations and work streams however, the commercialization thereof remains subpar. " if we look at the power to execute disruptive ideas, the power of realizing these ideas within this firm […..] this is definitely a barrier to innovation."

Another finding was barriers towards innovations occur at the bank because of various (sub) architectures across their local entities resulting in so called stand-alone systems. This is due to the fact that local clearing systems exist, regulatory restrictions occur however also historical reasons appear eminent such as mergers and acquisitions. To exemplify this, a quote from a local manager: "Everybody wants to protect his or her domain and IT-castle." The organization procreated a special department that nurtures and incubates innovations prior to handing over innovations to other parts of the organization. In doing so exploration may be facilitated whereas, however, exploitation may be hindered: "if solution [X] is modified to integrate within business unit [Y] and has to be modified for each country in which it will be implemented afterwards, that cannot work."

Six out of the eight selected projects put forward that a barrier towards innovation is an "unsupportive organizational structure" (No. 10) whereas one disagreed on this being a barrier. The organization bears a strongly decentralized business model and abounds different entities in different markets. After the added value of the innovation is argumented, the innovation project is integrated into the local banking system. To exemplify this, a quote from a project manager: The way this firm is organized, is very locally oriented with local processes and systems. FinTechs are worldwide oriented; they will provide uniform services everywhere […]" or "Business units put their own interest first and assess what the impact of an innovation is on their KPIs before embracing it, I call it silo-innovation."

Six out of eight selected projects put forward that a barrier towards innovation is 'overzealous risk management (i.e. too much focus on risk avoidance)' which is along with 'an unsupportive organizational structure' the mere traditional barriers towards innovation that appear eminent. To exemplify this, a quote from an employee: "historically, when innovation was not part of the agenda, a lot of processes were driven by legislation and governance on how money was spent, but if you over tighten that tap you hinder speed to get certain things done."

Another key barrier towards innovation that was put forward was the 'not-invented-here syndrome' (No. 27). To exemplify this a quote from project manager: "There are impracticalities in procurement

processes. If you can avoid certain formalities in the procurement process we can increase speed, as in the innovation process it is extremely important to run lots of experiments in a short time-frame."

Lastly, a key barrier towards innovation that was put forward was 'no fundamental internal R&D'; to exemplify this a quote: "We miss a comprehensive vision as all are doing innovation and all are doing research for their own purpose."

Finding no (clear) consensus on barriers

A 'lack of appropriate sources of finance' (No. 3) is consistently perceived not to be a barrier towards innovation, consistent with the study laid out by Sandberg & Aarikka-Stenroos (2014) where it appeared to be typically associated with small and medium enterprises. To exemplify this; at this organization a so called innovation office was set up to bear funds to which innovative managers can apply aiming to both explore as well as exploit innovations in the ambidextrous organizations (Tushman, Michael L. & O'Reilly III, 1996). Barriers towards innovations, like 'lack of discovery/exploring competencies' (No.19) and 'resistance or lack of support from key internal stakeholders' (No. 28) could not be supported with clear consensus. All other mentioned barriers towards innovation found no consensus.

The barriers

On balance, the following can be established. A restrictive mindset (overzealous risk management), an unsupportive organizational structure, inertia caused by local systems architecture, lack of exploiting new ideas, the not-invented-here syndrome as well as a lack of fundamental internal R&D shape the key barriers towards disruptive and radical innovation in large financial services firms as per below table 4.

No.	Description of barrier	Traditional barrier towards innovation
1	Lack of exploiting new ideas	
2	Inertia caused by local systems architecture	X
3	Unsupportive organizational structure	X
4	Overzealous risk management (i.e. too much focus on risk avoidance)	X
5	Not-invented-here syndrome	
6	No fundamental internal R&D	

Table 4: Key internal barriers to innovation within large financial firms.

The research was performed at merely one organization limiting the scope of the study. In addition, the study was carried out utilizing merely eight projects meeting the criteria for radical or disruptive innovation. Nevertheless, Das et al. (2018) profess that projects related to radical and disrupting innovation attempted at different organizations meet corresponding barriers. Thus, organizing for potentially disruptive and radical innovation in large financial organizations utilizing innovation programs and projects, support innovation exploration in part though not per se innovation exploitation.

Even if an innovation strategy, an active management support as well as an obvious governance structure regarding innovations have been implemented, projects may get stoked up in the exploration phase but experience hindrance in the exploitation phase due to barriers like inertia caused by (local) systems architecture, an unsupportive organizational structure, a lack of exploiting new ideas and a restrictive mindset.

2.3 The root cause of internal barriers towards radical and disruptive innovation

The root cause to internal barriers towards innovation is that incremental innovations – intended to meet current clients' needs and wants- are of exploitative nature whereas radical and disruptive innovations - intended to meet new clients' needs and wants- are of explorative nature (Kang & Hwang, 2019; Schleimer & Faems, 2016; Tushman, Michael L. & Smith, 2002) and was also put forward by Das et al. (2018) for large financial organizations.

Ambidextrous firms strive for simultaneous performance of two unequal and often apparently conflicting objectives (Dorn, Schweiger, & Albers, 2016; Luo & Rui, 2009; Tang, Gu, Xie, & Wu, 2020). Ambivalence arises when organizations attempt to simultaneously both explore as well as exploit disruptive and radical innovations (Ford, S. & Despeisse, 2016; March, 1991; Powell, Koput, & Smith-Doerr, 1996). On the one hand, too much focus on exploiting feeds inertia and conservatism and is, as it were, competing with exploration (Benner & Tushman, 2002; Benner & Tushman, 2015; Sull, 1999). On the other hand, too much exploration is at odds with efficiencies and may even avert economies of scale or learning by doing (Gupta, Smith, & Shalley, 2006; He & Wong, 2004; Shalley & Gilson, 2017). According to March (1991), exploration of new alternatives to existing technologies diminishes the swiftness with which skills at existing technologies are improved which makes experimentation with new technologies less attractive. Exploitation is a continuum of the past and affiliated with a variance decreasing force and disciplined problem resolving whereas exploration is affiliated with a variance increasing force, learning by doing and even trial and error. Thus, exploration and exploitation are associated with diverse, inconsistent, competing and even conflicting organizational structures and processes (Smith & Tushman, 2005; Venugopal, Krishnan, & Kumar, 2018; Zhang, Liu, Shi, & Chen, 2020). The key to long term survival and success is to "engage in enough exploitation to ensure the organization's current viability and to engage in enough exploration to ensure future viability" (Levinthal & March, 1993p.105) albeit solutions are presented to support ambidexterity (Raisch & Birkinshaw, 2008; Smith & Lewis, 2011; Wang & Wang, 2020).

2.3.1 Ambidexterity

Organizational ambidexterity comprises of an complex range of decision makings as well as routines which enable firms to both sense and seize nouveau opportunities as well as immediate reliability without risking future obsoleteness (Holmqvist, 2004; Zhang et al., 2020). Raisch & Birkinshaw (2008)

distinguish several literature streams related to organizational ambidexterity: organizational learning, technological innovation, organizational adaptation, strategic management and organizational design which are explained below.

Organizational Learning

In order to increase organizational learning (Mom, Van Den Bosch, Frans AJ, & Volberda, 2007) demonstrate that managers may combine high levels of both exploration and exploitation activities. For an individual manager this means, practically, that knowledge inflows from higher echelons have a higher degree of exploitation. In contrast, knowledge inflows from horizontal inflows as well as knowledge coming from lower echelons have a higher degree of exploration. Therefore, the more a manager is involved in obtaining knowledge inflows from higher, lower and horizontal echelons, the higher the degrees of exploration and exploitation.

Technological Innovation

Though exploiting existing product and technical innovation proficiencies may, as it were, scare off exploration of new proficiencies (Adams et al., 2016; Leonard-Barton, 1992; Ocasio, Rhee, & Milner, 2020), the reciprocity between (technological) exploration and exploitation encompasses a complex talent accommodating an additional corporate advantage to those furnished by each innovation individually (Colbert, 2004; Jeong & Shin, 2019; Raisch & Birkinshaw, 2008).

Organizational adaptation

Organizational adaptation has its bearing on an organization's ability to balance the need to implement changes and the need to maintain daily operations (Heckmann, Steger, & Dowling, 2016; Meyer & Stensaker, 2006) and is associated with organizational identity (Dutton & Dukerich, 2004), absorptive capacity (Jansen, Van Den Bosch, Frans AJ, & Volberda, 2005) and organizational routines (Feldman & Pentland, 2003). Though some researchers argue that managers are at the linking pin between the forces of variance decreases as well as variance increases (Burke, 2017; Tushman, Michael L. & Romanelli, 1985) top managers are predominantly regarded as drivers of radical and disruptive change and, in contrast, middle managers are predominantly expected to undertow incremental change as per Floyd & Wooldridge (1996) and supported by Walter (2016). Huy (2002) theorized that middle managers lighten and cater for organizational change by emotionally balancing of both continuity and change.

Strategic Management

On a strategic management level, two pursuits can be distinguished: induced strategic processes which are concerned with existing knowledge and are within the magnitude of a firm's strategy and is specifically related to exploitation, and autonomic strategic processes which are concerned with initiatives that stem from outside the magnitude of a firm's strategy and is specifically related to exploration

(Burgelman, 1991; Burgelman, 2002). A conjunction between the two strategies at all times may be most remunerative, if not key to survival, even though current short term strategic goals may not be achieved to maximum satisfaction (Forés & Camisón, 2016; Kim, Song, & Nerkar, 2012; Volberda, Baden-Fuller, & Van Den Bosch, Frans AJ, 2001). This is consequence of the organizational trade-off between the above mentioned strategic processes (Ghemawat & Ricart Costa, Joan E I, 1993; Vrontis, Thrassou, Santoro, & Papa, 2017).

Organization Design

From an organizational design perspective there, too, appears to be a paradox between achieving efficiency as well as being flexible (Thompson, 1996). Mechanistic structures build on standardization, centralization as well as hierarchy and is associated with efficiency, as opposed to organic structures which are bear a higher condition of both decentralization and autonomy and is associated with flexibility; both are difficult to reconcile within one single organization (Ford, J. D. & Ford, 1994; Schad, Lewis, Raisch, & Smith, 2016). From this standing, ambidexterity may be described as an organization's ability to function complex organizational designs that cater for both short-term efficiency and long-term innovation (O'Reilly III & Tushman, 2013a; Raisch & Birkinshaw, 2008; Tushman, Michael L. & O'Reilly III, 1996).

Ambidextrous design

Ambidextrous designs refer to organizational forms, that amalgamate interior inconsistent architectures and cultures into business units so that the organization can pursue exploration as well as exploitation (Adler, Goldoftas, & Levine, 1999; Koryak, Lockett, Hayton, Nicolaou, & Mole, 2018). Consequently, these organizational architectures are exceedingly engaged in both differentiated units and top management team integration (Gibson & Birkinshaw, 2004; He & Wong, 2004; Tushman, Michael, Tushman, & O'Reilly, 2002). Structural differentiation allows organizations to pursue both exploration and exploitation, however it is imperative that top management team facilitates the reconciliation between two conflicting sides of the ambidexterity spectrum. The top management team that decides upon organizational forms, cultures as well as resources allocations to serve abovementioned streams as organizational learning, technological innovation and organizational adaptation (Hambrick, 1994; Raisch & Birkinshaw, 2008; Romanelli & Tushman, 1994; Schad et al., 2016; Smith & Tushman, 2005). As a result, it is imperative for the top management team to facilitate a purposeful cohesion of the contradictions and reap the gains and advantages of conflicting strategic agendas (Barnard, 1968; Thompson, 1967; Thompson, 1996; Vrontis et al., 2017; Weick, 1979).

2.3.2 Top Management Teams, Team Outcomes, and Barriers to Exploring and Exploiting

Managing pursuits of short term performance as well as long term adaptability requires strategic decisions from the top management team that will facilitate the accomplishments of both through, amongst others, resources allocation trade-offs and organizational design decisions (Edmondson, Roberto, & Watkins, 2003; Zhang et al., 2020). Based on negotiation and conflict management literature, (Smith & Tushman, 2005) define balanced strategic decisions on two criteria; (1) their distributive kind which they postulate as making balanced trade-offs over time, and (2) their integrative kind which they postulate as identifying synergies (Bazerman & Moore, 1994; Lax & Sebenius, 1987; Walton, 1965). The distributive kind refers to the distribution of available resources among the current products and services as well as the innovation; teams may (consciously or subconsciously) favor either one and their decisions may coincide however decisions that favor both, in the long run, are balanced decisions (Smith & Tushman, 2005) as opposed to value claims (Lax & Sebenius, 1987). The integrative kind refers to the establishment and recognition of opportunities and possibilities, junctions as well as synergies that may stem from the explorative and exploitative agendas (Smith & Tushman, 2005). As opposed to value claims, this is deemed as value creation (Lax & Sebenius, 1987) in which value is leveraged as both parties benefit from creative solutions. Integrative value may be achieved by top management through decisions when courses are established and recognized to benefit from either shared resources or shared trading on the market; e.g. online sales may not hamper, per se, the offline sales of a company however they may rather complement each other (Gilbert, 2005; Smith & Tushman, 2005).

Internal barriers and ambidexterity

Top management that can efficaciously counterweight between the two conflicting strategic agendas, may significantly enhance a firms performance albeit in achieving that several internal barriers will be met (Bazerman & Watkins, 2004; Das et al., 2018; Sandberg & Aarikka-Stenroos, 2014; Van de Ven, Andrew H, Polley, Garud, & Venkataraman, 1999; Virany, Tushman, & Romanelli, 1992). A firms benefits when internal structures are aligned both internally and with its strategy (Chandler, 1990; Smith & Tushman, 2005; Tushman, Michael & Nadler, 1992); the flipside however is that these aligned internal structures are affiliated with social and structural tardiness and inertia (Smith & Tushman, 2005). Moreover, the more the internal structures are aligned both internally and with its strategy, the more hesitant managers are willing to modify them (Kaplan, 2003; Sandberg & Aarikka-Stenroos, 2014; Smith & Tushman, 2005).

Importantly, firms historic achievements are affiliated with a set of basic cognitive biases that steer both predictable organizational pathology and predictable social pathology (Bazerman & Watkins, 2004). According to Smith & Tushman (2005) these structural as well as psychological drivers for tardiness and inertia, inherently favor existing products and services over innovations. Firms most successful in the short run, suffer from top management most hesitant to change even endangering the long term continuity

of the firm (Audia, Locke, & Smith, 2000; Hoskisson, Chirico, Zyung, & Gambeta, 2017; Kaplan, Murray, & Henderson, 2003). Also, both individual and team driven forces for consistency and risk diminution add to the predictable organizational pathology (Leana & Barry, 2000; Milosevic, Bass, & Combs, 2018). Both individuals and teams may favor consistency and risk diminution over inconsistencies and risk and variance increases. The result may be an individual or more collective behavior towards diminishing these inconsistencies and variances and, as it happens, shifting towards a more cohesive collection of aligned behaviors, cognitions, activities and social networks with each other (Lewis, 2000; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018; Uhl-Bien & Arena, 2018).

The explanation for the inclination of maintaining consistencies stems from a deeply rooted believe in a single truth and inconstancies cannot coincide, signifying inconsistencies must be fixed and conflicts must be solved (Ford, J. D. & Backoff, 1988; Voorhees, 1986). It also means that in solving conflicts, managers are heaped up in resource distribution as opposed to finding common grounds for expanding the value of the resources (Bazerman & Moore, 1994; Huff, Milliken, Hodgkinson, Galavan, & Sund, 2016; Smith & Tushman, 2005).

To make balanced strategic decisions between the pursuits of exploration and exploitation, it is imperative for top management to establish and recognize and benefit from conflicts as opposed to attempting to solve them (Cameron & Quinn, 1988; Leana & Barry, 2000; Smith & Tushman, 2005). Structural, social psychological, physiological barriers that facilitate tardiness and inertia must be confronted and overcome; meaning the coincidence and coexistence of conflicting pursuits despite a natural tendency for consistency (Smith & Tushman, 2005).

3. Methodology

In further validating the framework proposed by Das et al. (2018) on internal barriers towards disruptive and radical innovation within the Dutch Financial Services and Banking sector, in-depth case studies of failed innovative projects were conducted at multiple firms within the Financial Services and Banking sector. The consequent subsistence of the internal barriers were then measured against three successful innovative projects to increase the validity of the frame work as per Das et al. (2018). Issues such as innovation within financial firms are of complex nature (Das et al., 2018), and as a result particularly suitable for case-study (Eisenhardt & Graebner, 2007; Riege, 2003). As this study involves multiple cases, the design followed a replication, meaning each case serves as a distinct analytical unit (Eisenhardt & Graebner, 2007; Yin, 1994).

3.1 Sample selection – companies

As Yin (1994) states, a multiple case design requires carefully selected cases. Multiple companies within the Financial Services and Banking sector were selected. Firstly, such companies must be firms classified under CBS K 64 (banking) (CBS statline bedrijven; bedrijfstak.2020). Secondly, such firms must face barriers to radical and disruptive innovation; it is assumed that market makers, option traders and other companies do not face such barriers and will therefore be exempt from this selection; for that reason it is hypothesized for firms facing barriers towards radical and disruptive innovation to pre/date existence of the internet boom of the late 1990s (Fink, Fink, Grullon, & Weston, 2010).

The firms operating under section K 64 were selected and agreed cooperation in this research under anonymity (the names are known to the reviewing professors): Bank A, Bank B, and Bank C.

3.2 Data collection method

Senior executives, either directly involved in the implementation of innovation or otherwise heavily involved, of the above mentioned firms within the Financial Services and Banking sector were invited for semi-structured interviews. To circumvent anticipated potential non-response, the networks of the NHL Stenden Hogeschool, lectorates (of the NHL Stenden Hogeschool) were deployed, as well as the authors personal network.

The data collection method of these semi-structured interviewing best suits these cases given the complexity and sometimes sensitivity of the cases and (as the author anticipated) there may only be one shot at conducting the interview (Barriball & While, 1994; Russel Bernard, 1988). In addition, the interviewees may bring complementary comprehensions and conceptions to the table (Cassell & Symon, 2004). To increase the validity of the data gathered from the interviews, the interview (semi)structure was tested/validated with colleague and former private banker Richard Kuper MSc MFP FFP allowing for clarification of relevant issues to be advanced (Hutchinson & Wilson, 1992), as well as exploring sensitive issues (Treece & Treece Jr, 1977). Prior to the interviews, an introduction email was emailed, explaining the aim and the topics that were going to be covered. It was suggested that just before the interview, say

a day prior to the interview or on the day itself, a short introduction conversation would be planned (if desired) to eradicate any unclear content of the introduction letter and, ultimately, to cater for and obtain a full mutual understanding of constructs, definitions, content and process. However, all interviewees indicated that no further clarifications were required. The location for the interviews to take place was planned at the firm's location, in order for the interviewees to feel entirely comfortable and for information not to get distorted by the external environment (Elwood & Martin, 2000). However, due to the COVID-19 outbreak, these interviews were necessarily conducted utilizing MS-Teams with the interviewees participating from their homes. It is the impression of the author that interviewees felt sufficiently comfortable during the interviews and that no information was significantly distorted as such.

The interview protocol consists of five topics: general information, barriers towards innovation, innovative projects that failed, the reason for failing, projects that succeeded and the reasons for that. The topics were addressed individually in order to make sure the interviewees perception of particular topics is that of the authors. Since the questions may be sensitive if not delicate, the sequence of the questions was from general, to specific, to sensitive, to successful projects. In order to speak freely and openly, the interviewees objected to the interviews being recorded. Therefore, a summary of the individual interview was sent to the respective interviewee; all interviewees concurred with the summaries whereas one interviewee responded with some additional feedback.

Respondent A was interviewed as a CEO of Bank A previously having occupied several positions within Bank A such as Senior Vice President of Loan Operations and Transition Manager Operations North America Wholesale, experiencing potential disruptive and radical innovative projects first hand for several years. The interview took place on 20 April 2020.

Respondent B was interviewed as Innovation Manager at Bank B previously having occupied several positions as Account Manager Large Corporates. In his/her current role participated in several experiments such as Market Place Lending (a service model for SME clients) and a Risk Lab (a more data driven credit risk model) and setting up educational programs for disruptive and radical innovative projects involving blockchain and artificial intelligence.

Respondent C, interviewed as Head of Innovations & Partnerships at Bank C previously having occupied several positions withing Bank C such as product owner Customer Journey Expert and Senior New Business Developer at Bank B being responsible for several disruptive and radical innovative projects within Bank C. The interview took place on 05 June 2020. After the interview took place, Respondent C moved on to work for Bank A as Manager Market Business Lending.

In order to further deepen the understanding of the cases mentioned by the interviewees, document and (social) media analyses were performed utilizing sources and platforms such as company websites, annual reports, YouTube, Facebook, Twitter as well as LinkedIn. This was done to make sure that the authors understanding was based on official company records, *unofficial* internal interview based knowledge as

well as external views and opinions. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an certain theme or topic. This may involve public records such as student transcripts, mission statements, annual reports, policy manuals, student handbooks, strategic plans, and syllabi, personal documents such as calendars, e-mails, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers and physical evidence such as flyers, posters, agendas, handbooks, and training materials (Bowen, 2009; O'Leary, 2014).

With a view to acquiring insights aiming at creating the previously stated analogy and not least antilogy, the validated framework by Das et al. (2018) with the subsistence of internal barriers was then measured against three successful innovative project forasmuch upholding, dropping or at least bringing nuances to the apparent barriers towards radical and disruptive innovation within the Dutch Financial Services and Banking sector. These particular data were, again, collected utilizing document and (social) media analyses rather than performing interviews.

3.3 Data Analysis

The coding procedure for analyzing the interviews utilized in this research was suggested by Corbin & Strauss (2014). The first phase is to transcribe the interviews. As mentioned due to COVID-19 restrictions in congregating physically, the interviews were conducted using Microsoft Teams. The summaries were subsequently sent to the respective interviewees for approval.

As postulated in the literature framework, internal barriers towards radical and disruptive innovation have been positioned and referred to in omnifarious ways shapes and forms by utilizing terms such as barriers, challenges, problems, difficulties, dangers, concerns, obstacles and bottlenecks. Though a too detailed coding in this stage is not recommendable, researchers ought to be aware of the different denominations and slang words, even, in practice for similar terms (Boeije, 2005). It is hypothesized that this is the case for both the term internal barrier as well as the different individual internal barriers.

The second phase was to assign open codes to the interviews by revising the recapitulations, exploring and organizing the data and deriving the meanings from their datasets; though in this phase it is imperative not to generalize too much as this may lead to certain specific information not being noted (Boeije, 2005) as the author is to further validate the framework proposed by Das et al. 2018).

The third phase was the axial coding procedure, codes from the interviews were subsequently analyzed on differences and similarities. The goal is to integrate the codes around the central categories reasoning from the codes towards the data, moving from more concrete data towards more abstract data (Boeije, 2005). Ultimately categories were integrated so that theory could be produced (Corbin & Strauss, 2014). In order to do so, the software package for qualitative data analysis called NVIVO has been utilized. The coding summary report can be found in appendix1.

As was delineated in outset of this research, the author was to further validate and clarify the internal barriers towards radical and disruptive innovation within the Dutch financial services and banking sector as postulated by Das et al. (2018). To increment the reliability of the findings, the outcome was discussed with Richard Kuper MSc MFP FFP and Dr. Jelle Dijkstra (Professor at the ‘Lectoraat Persoonlijk Leiderschap & Innovatiekracht at NHL Stenden).

4. Findings

Picture by: Getty Images/iStockphoto

In this chapter the author tenders the results of the data analysis. This study alludes to answer *how can the internal barriers towards disruptive and radical innovation within firms in the Dutch Financial Services and Banking sector, be further validated?* This chapter describes the outcome of the interviews held regarding the internal barriers towards radical and disruptive innovation and the veritable validation of the framework as proposed by Das et al. (2018). The first section will describe the projects that were discussed during the interviews supported by document and (social) media analysis whereas the second section will describe the apparent internal barriers that ensured their failures of success. The author will provide quotes and parts of the interviews to provide more insights into the respective internal barriers. The apparent barriers will be discussed in order of frequency of appearance. The interview summaries can be found in appendices 2 to 4. The third section will utilize the model by Das et al. (2018) to fathom the outcome of projects that were deemed successful.

4.1 Failed innovative projects

As was described in the methodology section, the author will describe the various innovative projects that were mentioned in the interviews supported by paper and (social) media analyses.

4.1.1 Project 1

Project 1 was an application supposed to be a virtual place that allowed a group of individuals to collect and gather funds for future expenses. The Bank A initiative, developed by their subsidiary, was to provide an overview on amounts due to be collected. E.g. if an upcoming event is organized, this application allows you to chip in through an iDeal connection allowing the organizer to withdraw the funds in order to disburse the sum. However, lead times for funds to arrive at the organizers' account are between one and three days allowing possible alternatives to appear more attractive such as individual remittances or applications that offer similar (but not exactly the same) functionality such as Knab Social, Bunq, or PayPal.me (Rabobank, 2016; Tuit, 2016; van Loon, 2016).

A number of advantages come with the application such as free usage, free of charge receptions or remittances of funds, relatively stand-alone functionality with built in chats and the protection of the deposit guarantee scheme. At the same time, there were a number of disadvantages. A quantity of data was required in order to either use the application or to increase the collectable amount which can even lead to an evaluation of ones' credit score. Users needed to be over 18 years of age, the group was required to connect to a Dutch (and one only) bank account which only allowed for €1,000 deposit and remittance per calendar year. In addition, there were compatibility issues with the application making it unavailable to Windows-smartphones (Rabobank, 2016; Tuit, 2016; van Loon, 2016).

4.1.2 Project 2

Purchasing digital currencies like the Bitcoin is relatively facile though administering those can be quite cumbersome. In order to accommodate the storage of digital currencies, so called wallets have been created though some types of wallets are more secure than others (AFM, 2018; Conway, 2018). Project 2 would be hosted by the Bank As secured digital environment allowing customers to access all their finances through a single entry account as well as through the Bank A apps (Prisco, 2018; Zmudzinski, 2019).

According to Respondent A: *"It was an innovative project in which a wallet was made to store digital currencies. Everything was ready for it to launch, everything from IT support to training of staff etc."*

4.1.3 Project 3

As was mentioned by Respondent B, Project 3 was an initiative by Bank B experimenting with a platform based on blockchain technology targeting the commercial real estate sector. A big platform with real estate financed by Bank B containing extensive data on all aspects of the procurement process. Project 3 would potentially diminish the collective administrative burden by warranting data integrity resulting in the simplification of the process of (customer) data verification. It would entail connecting even the AFM, the DNB as well as the Kadaster.

4.1.4 Project 4

Project 4 was supposed to be a new service which was able to perform credit score ratings per client on the premise of payment transactions data. Both consumers and SMEs were to be allowed to utilize these analyses in order to gather a complete view on their financial situations benefitting both themselves and their respective business partners (Bikker, 2016; Schellekens, 2017).

According to Respondent B, the idea was fruited from a hackathon following open banking principle by European Union legislation in that clients could view their data freely and openly and share that with others.

4.1.5 Project 5

According to Bank C (2020), approximately 90% of all occurrences related to cyber security risks are related to employees making an error e.g. clicking on a malignant link. So, according to Respondent C, employees are one of the first lines of defence against cyber-crime. Strengthening a firms' cyber-security merits involving staff.

Project 5 was a project by Bank C to increase awareness of employees on cyber security risks. It involved building a web application through a gaming approach. Throughout the approach employees are

incrementally targeted with cyber security information as well as questions and depending on the response different paths and outcomes are pursued and projected by the game.

4.1.6 Project 6

According to Respondent C, Project 6 was meant to be a business model through which Bank C was to offer regular banking services accompanied by adjacent products and services being offered by partnering firms utilizing a referral model. The conception is offering a more wholistic approach to clients such as leasing, legal advice and even timesheets. According to Berman (2016), referral depends on existing clients to be motivated to both act as ambassadors that can also increase the existing services and goods pallet.

4.2 Apparent internal barriers towards radical and disruptive innovation within the Financial Services sector

As mentioned, the order of the apparent internal barriers will be as according to the frequency of the indicated appearance. Therefore the order is as follows: an unsupportive organizational structure, overzealous risk management (i.e. too much focus on risk avoidance), the not invented here syndrome, a lack of exploiting new ideas and no fundamental internal R&D. Inertia caused by (local) systems architecture has not been evinced.

4.2.1 Unsupportive Organizational Structure

An unsupportive organizational structure appeared exaltingly through most discussed radical and disruptive innovative projects that failed. Five out of 6 discussed projects displayed clear signs of an unsupportive organizational structure. As mentioned, an unsupportive organizational structure is typified as an hierarchical setting of lines of authority, communications, rights and responsibilities (Sandberg & Aarikka-Stenroos, 2014).

E.g. Respondent A on the occurrence with Project 1:

> "*[…First of all, the project did not receive a good backing. A stronger organizational mandate would certainly be very helpful. People working on the innovative project were really thinking out of the box trying very hard to create a successful payment facility, but had to go through an organization of 30K people…]"*

A stronger organizational mandate also hindered the materialization of Project 6 within Bank C. As per Respondent C:

> "*[…The project team passed by several departments, echelons and individuals creating internal barriers if they couldn't find one as it were. The project (team) was lacking an organizational mandate which lead to seeking cooperation or even approval at more than one instance. . …]"*

Respondent C postulates for Project 5 that organizational change is required in order for such projects to be successful within Bank C to be successful:

> "*[…Everything starts with selecting the right people for the right jobs in the right phase of the project. In different phases of the project, different people are required to do the jobs. It may take, therefore, a very long time before the project has been incorporated within the organization. In addition, such projects become people's babies which means it becomes hard to part from. This requires organizational change. …]"*

Respondent B mentions put forward that for Project 3, the organization wasn't quite ready to put in more commitment as it would:

> "*[…it would take quite some more time and costs more money to get it ready for market... …]"*

For Project 4, Respondent B cites that the organizational structure in terms of support simply wasn't ready yet:

> "*[…Also, there were quite a few contributors to the project, but the organizational structure wasn't there; skills and knowledge that were required at certain times weren't available. For that reason, it's not necessarily a bad thing that the project was killed. The organization just wasn't ready for it…]"*

4.2.2 Overzealous risk management (i.e. too much focus on risk avoidance)

Overzealous risk management also featured frequently in most discussed radical and disruptive innovative projects that did not succeed. As with the internal barrier unsupportive organization, five out of 6 discussed projects displayed clear symptoms of too much focus on risk avoidance. As mentioned, signals that suggest this barrier is eminent are, amongst others, a restrictive mindset, inertia caused by a focus on compliance or plain risk avoidance.

E.g. as per Respondent B on Project 3 and Project 4:

> "*[the avoidance of risk like with Project 4 (but we'll come to that in a minute)..]"*

And:

> "*[Some of them did not seem to want to take on the risk and others were too focused on their own priorities or simply couldn't be bothered. It just wasn't their cup of tea in combination with a lot of risk avoidance.]"*

Respondent C establishes the focus on variance reduction as opposed to variance increase for Project 5 (please see paragraph 4.4 for further reading on this finding):

> "*[…Also what I can establish is that although the project is about avoiding risk by nature the organization has not been agile to really incorporate such projects. This has everything to do with different departments and individuals have a focus on variance reduction instead of variance increase. This too requires organizational change.. …]"*

Moreover, Respondent C states that the organization ought to be more bold, for instance on the project Project 6:

> "*[…it didn't lead to a coherent or a more holistic approach to offering services but a website that links to our partners which is what the project did not start out to be. Again, we need organizational mandate and a long term vision: which trends and developments are we going to choose? When we choose them, we should really choose them instead of semi-choose them... …]"*

Lastly, Respondent A states that Project 2 was terminated also because of fear:

> "*[…The project was cancelled because of fear of compliance issues. Banks as you know have to deal with the requirement called Know Your Customer which is tricky with digital currencies.…]"*

4.2.3 Not-invented-here-syndrome

The not-invented-here-syndrome emerged in 3 projects as an internal barrier. As mentioned, this barrier can be typified as the inclination to fence off products, research, standards or information from elsewhere and as a result even appraise exterior information as less valuable (Chen, 2020; Watts, 2020).

Respondent B deemed that Project 4 simply didn't land with individuals because of a mindset floorer:

> "*[… others were too focused on their own priorities or simply couldn't be bothered. ….]"*

Project 1 was, according to Respondent A, very much subject to the not invented here syndrome:

> "*[… people resent it, as it were, projects that are not their own because they have their own goals to worry about and wouldn't want outsiders to bring in new ways of working that would reduce their work. ….]"*

Respondent C bluntly and quite clearly on Project 6:

> "*[… and most definitely the already infamous not-invented-here syndrome...]"*

4.2.4 Lack of exploiting new ideas

The internal barrier lack of exploiting new ideas was mentioned by Respondent A. Call to mind that good novel ideas require exploiting (internal) value from commercialization in order for it to constitute

successful innovation which are designed for the realization of a novel idea (Bierly III & Daly, 2007; O'Reilly III & Tushman, 2013b; Trott, 2008).

Respondent A directly states that:

> "*[… Also, I feel that there is a general lack of new idea's being incorporated; they are not exploited.….]"*

The quandary between exploration and exploitation is further elucidated and elaborated in paragraph 4.4.

4.2.5 No fundamental internal R&D

This barrier came forth only once during the interviews. As mentioned earlier, fundamental internal R&D refers to the type of research which is predominantly aiming at the progression of the acquaintance and scholarship as opposed to solving a particular problem (Sandberg & Aarikka-Stenroos, 2014).

Respondent C directly states that:

> "*[… Having said that, to fundamentally reach ground breaking innovation, fundamental R&D is also lacking….]"*

4.3 Internal barriers towards radical and disruptive innovation within the Financial Services sector after testing for failed innovative projects

Table 5 shows an overview of the projects against the internal barriers towards radical and disruptive innovation within the financial services sector that were deemed insurmountable. Importantly, the sample consists of 3 large banks within the Dutch Financial Services sector whereas other types of firms nor smaller banks were included. The author ensued the operationalization of the literature to further validate the internal barriers as was determined by Das et al. (2018).

Barrier/project	**Project 1**	**Project 2**	**Project 3**	**Project 4**	**Project 5**	**Project 6**
Unsupportive Organizational Structure	x		x	x	x	x
Overzealous risk management		x	x	x	x	x
Not invented here syndrome	x			x		x
Lack of exploiting new ideas	x					
No fundamental internal R&D					x	
Inertia caused by (local) systems architecture						

Table 5: Key internal barriers displayed per innovative project.

As can be seen from the table, the author was able to affirm the validation of fife out of the six internal barriers. Both unsupportive organizational structure and overzealous risk management featured in five out of six projects whereas the not invented here syndrome characterized the demise in three projects. In addition, both internal barriers lack of exploiting new ideas and no fundamental internal R&D hampered the materialization of one single project. The author was unable to determine the internal barrier inertia caused by (local) systems architecture. As particularized in the methodology part, it is worth mentioning that this table was not procreated through statistical software, however, therefore the measurements are qualitative of nature and do not bear a quantitative value.

The findings outwardly signify the validation of the five out of six barriers towards radical and disruptive innovation as proposed by Das et al. (2018): Unsupportive organizational structure, Overzealous risk management, the Not invented here syndrome, lack of exploiting new ideas and no fundamental internal R&D. Though indulged by Sandberg & Aarikka-Stenroos (2014) as a traditional barrier towards radical and disruptive innovation, the author was unable to ascertain the subsistence of the barrier Inertia caused by (local) systems architecture. Table 6 displays the following ascertained subsistence of internal barriers.

No.	Description of barrier	Traditional barrier towards innovation	Subsistence after testing
1	Lack of exploiting new ideas		X
2	Inertia caused by local systems architecture	X	
3	Unsupportive organizational structure	X	X
4	Overzealous risk management (i.e. too much focus on risk avoidance)	X	X
5	Not-invented-here syndrome		X
6	No fundamental internal R&D		X

Table 6: Subsiding key internal barriers.

4.4 Successful innovative projects measured against the subsistence of barriers towards disruptive and radical innovation after testing for failed innovative projects

On balance, thus far this research demonstrates the subsistence of internal barriers towards radical and disruptive innovation there are, as one would expect, outward successful innovative projects. For ABN AMRO this was Tikkie (payment application) as this was not all that disruptive, according to Respondent B. For ING these were Yolt (budget management aid) and Cobase (facility to help multinational companies accessing their bank accounts at different banks and financial institutions). Again grounds for success were, according to the respondents, the out of the firm development. The above mentioned cases were analyzed utilizing document and (social) media analyses such as newspaper articles, presentations as well as YouTube, Instagram, Facebook, Twitter and LinkedIn posts. The below sections commences by describing the successful cases ensued by the measuring against table 6 in order to ascertain the

upholding, dropping or nuancing the subsistence of the internal barriers towards radical and disruptive innovation.

4.4.1 Tikkie

On 22 June 2016 ABN AMRO introduced Tikkie to the market; an easy tool to split restaurant bills fuelled by 2 tendencies: fewer and fewer people carry cash and ever since the introduction of IBAN fewer and fewer people can remember their bank account numbers (van Oerle, 2016). According to critics from users on the one hand to review websites on the other hand, this project is highly successful even though Tikkie wasn't the first attempt by banks (Bremmer, 2018). NRC even suggested a recording in the official Dutch dictionary (Hijink, 2019). More specifically, what was launched in the market was a minimal viable product, to be further developed henceforth. Although the project may appear as though years of developing preceded the launch, nothing could be further from the truth: Tikkie was created in less than four months. The development involved a small team comprising of different functions such as a product owner, a scrum master (master developer) and developers. More importantly, the team received support by the board of directors following a successful pitch (ABN AMRO, 2017). Nevertheless, the innovation was not all that disruptive as mentioned by Respondent B. Therefore it is hypothesized that the barriers as per table 6 apply to Tikkie to a lesser extent.

Firstly, an unsupportive organizational structure which is typified as a hierarchical setting of lines of authority, communications, rights and responsibilities (Sandberg & Aarikka-Stenroos, 2014) appears to be less of a hindrance since the board of directors supported the going to market of the minimal viable product.

Secondly, overzealous risk management, which may be apparent through, amongst others, a restrictive mindset, inertia caused by a focus on compliance or plain risk avoidance also appears to be a lesser issue given the limited disruptiveness (though the author applauds the quick launch).

Thirdly, through document and media analyses the author could not determine the barrier not-invented-here-syndrome to be determinatively present. It is hypothesized that since the project received backing from the board of directors combined with the limited disruptiveness that this barrier was overcome facilely.

Fourthly, the lack of exploiting new ideas. As mentioned, good novel ideas require exploiting (internal) value from commercialization in order for it to constitute successful innovation which are designed for the realization of a novel idea (Bierly III & Daly, 2007; O'Reilly III & Tushman, 2013b; Trott, 2008). Since the innovative project was deemed successful within such a short timeframe, the author establishes that this barrier was also overcome facilely.

Lastly, no fundamental internal R&D which refers to the type of research which is predominantly aiming at the progression of the acquaintance and scholarship as opposed to solving a particular problem

(Sandberg & Aarikka-Stenroos, 2014). The author hypothesizes this to be a lesser issue given the limited disruptiveness.

4.4.2 Cobase

Cobase is a multibank platform utilizing a single point of access to all bank accounts and other financial products and services from different banks and financial service providers. Large firms with accounts with different banks face many inefficiencies. Prior to Cobase these firms have had to use different bank portals to interact with their banks and other financial service providers, and in many occasions multiple ERP connections have to be upheld. The more different banks and accounts a company has, the more complex it got. Cobase is a trade name of Financial Transaction Services BV, a subsidiary of ING Bank NV operating independently under its own brand name and management (Cobase, 2017; Eurofinancechannel, 2019). Coincidentally, the author also introduced such a system at a previous employer. In 2019, Cobase acquired a PSD2 license effectively putting it under control of the Dutch Central Bank (Cobase, 2019). In June 2020, Cobase raised an additional EUR 10 million by adding north European bank Nordea and French bank Crédit Agricole CIB to its shareholders endorsing its success and potential (Finance Innovation, 2020; Large, 2020). As was also mentioned by Respondent C and confirmed by document and media analyses, Cobase was developed outside of ING which enhanced the success potential of this project. It is the authors opinion that this project, too, is not all that disruptive either. Therefore, too, it is hypothesized that the barriers as per table 6 apply to Cobase to a lesser extent.

Firstly, an unsupportive organizational structure appears to be less of a hindrance since the project was developed in a separate subsidiary outside of ING. This was also suggested by Respondent C.

Secondly, overzealous risk management, also appears to be a lesser issue given the out of the firm development combined with the limited disruptiveness.

Thirdly, for Cobase also, through document and media analyses the author could not determine the barrier not-invented-here-syndrome to be determinatively present. It is hypothesized that since the project was developed in a separate subsidiary combined with the limited disruptiveness that this barrier was overcome facilely. This was also postulated by Respondent C.

Fourthly, the lack of exploiting new ideas. Since the innovative project was deemed successful endorsed by both the Dutch Central Bank and other now shareholder banks combined with the out of the firm development, the author establishes that this barrier was also overcome facilely.

Lastly, no fundamental internal R&D. The author hypothesizes this to be a lesser issue given the limited disruptiveness and, paradoxically, the out of the firm development.

4.4.3 Yolt

Whereas Cobase is aimed at larger multinationals, Yolt is a budget management toolkit based on the *open banking principle* that allows individual clients to manage their finances at multiple banks and financial service providers in one place. It aims to extrapolate data and advise users on potential savings such as utility providers and it assists in determining their free disposable income for, for instance, the current month (Schiffers, 2017). The success of Yolt features more and more payment services eagerly connecting to this successful venture, such as large European banks and large credit card companies leading up to 95% coverage rate in the UK earning them the Open Banking Provider Of The Year at the AltFi Awards 2020 (Hinchliffe, 2020; ING, 2020; Ondernemersbelang.nl, 2020). In accordance with the postulation of Respondent C document and media analyses seems to confirm that the success of Yolt can partly be attributed to the fact that it was developed outside of ING.

Firstly, as was the case with Cobase, an unsupportive organizational structure appears to be less of a hindrance since the project was developed in a separate subsidiary outside of ING.

Secondly, overzealous risk management, also appears to be a lesser. In fact, it is the authors opinion that enough risk is involved in this venture and by subsidiarizing this, the internal barrier appears to be overcome.

Thirdly, for Cobase also, through document and media analyses the author could not determine the barrier not-invented-here-syndrome to be determinatively present. It is hypothesized that since the project was developed in a separate subsidiary that this barrier was either overcome facilely. This was also postulated by Respondent C.

Fourthly, the lack of exploiting new ideas. Since the innovative project was deemed successful endorsed by large banks and financial service providers connecting to the award winning concept, the author establishes that this barrier was also overcome facilely.

Lastly, no fundamental internal R&D. The author hypothesizes this to be a lesser issue given the out of the firm development.

4.5 In conclusion: internal barriers towards radical and disruptive innovation within the Financial Services sector after evaluating successful projects

As mentioned, the above three successful endeavours within the Dutch Financial Services sector were performed using document and (social) media analysis. This section will conclude this chapter by either upholding, dropping or at least bringing nuance to the evinced internal barriers towards radical and disruptive innovation and will be illuminated in the consistent order of this chapter.

An unsupportive organization was comprehensibly circumvented by constructing a joint in the corporate structure in terms of subsidiarizing the development of projects Cobase and Yolt. However, in the case of Tikkie, though successful in terms of organization, the project itself was not all that disruptive (as with Cobase). Therefore the author is of the opinion that subsistence of this barrier as per table 6 has not sufficiently been contradicted and therefore the barrier remains upheld though nuanced.

Overzealous risk management seems overcome either when the innovation isn't all that disruptive, as was the case with Tikkie, or when the projects were developed out of the firm. Though the measure seems adequate, it is the author's opinion that, similar to an unsupportive organization, the barrier remains upheld.

As is the case for the not invented here syndrome. Since the successful cases merely indicate a limited disruptiveness or (combined with) an out of the firm development, this barrier remains upheld.

The barrier lack of exploiting new idea's is nuanced as the successful cases indicate that circumvention of the barriers by subsidiarizing innovative ideas, stimulates the exploitation into a successful venture.

Lastly, it is the authors opinion that the successful projects produced insufficient evidence to contradict the subsistence of the internal barrier no fundamental internal R&D. Therefore this barrier remains upheld.

The internal barriers towards radical and disruptive innovation within the Dutch financial services and banking sector were tested on failed innovative project and subsequently measured against successful innovative projects ultimately producing table 7:

No.	Description of barrier	Traditional barrier	Subsistence after testing	Upheld after reviewing successes
1	Lack of exploiting new ideas		X	Nuanced
2	Inertia caused by local systems architecture	X		
3	Unsupportive organizational structure	X	X	Nuanced
4	Overzealous risk management (i.e. too much focus on risk avoidance)	X	X	X
5	Not-invented-here syndrome		X	X
6	No fundamental internal R&D		X	X

Table 7: Upheld key internal barriers.

5. Discussion and conclusion

No attribution required

This chapter will present a synopsis of the research design, an appraisal of the findings and tribute them to practical and theoretical implications. Furthermore, the limitations of this research will be addressed and suggestions for further research will be presented in order to surmount these limitations. In addition suggestions will be provided in order to enhance replications and to cater for a research agenda for the future of this emerging topic.

5.1 The research and its outcomes

The main research question is how the internal barriers towards radical and disruptive innovation can be further validated for firms operating in the Dutch Financial Services and Banking sector. The necessity and imperativeness on the one hand stems from the ever increasing need for these firms to innovate – which they recognize- as well as the internal barriers they face in order to do so. On the other hand, Das et al. (2018) introduced a framework of key internal barriers to radical and disruptive innovation which were identified after examining projects at one single bank. At the moments of conducting this research, to the authors' best knowledge, there has neither been any additional research conflicting this model nor supplement elements contributing to the perspectives of this model. The theoretical foundation was sought in reviewing literature regarding barriers to radical and disruptive innovation in general as was done by Sandberg & Aarikka-Stenroos (2014), followed by those a review of the framework as proposed by Das et al. (2018). As mentioned in the problem statement, the case study by Das et al. (2018) was carried out at a single organization within the Dutch financial services sector examining merely a limited number of projects therefore confining the scope of the research. In order to further validating this framework, senior executives from the authors own network, either directly involved in the implementation of innovative projects or otherwise heavily involved of three major Dutch banks were invited for semi-structured interviews. After analyzing the outcome resulting from the interviews, the framework with internal barriers was, then, measured against three innovative projects that were deemed successful.

The findings outwardly signify the validation of three out of six barriers towards radical and disruptive innovation as proposed by Das et al. (2018): Overzealous risk management, the Not invented here syndrome and No fundamental internal R&D. On the other hand, the measuring of the framework against three successful innovative projects resulting in the nuancing of two out of six barriers: Unsupportive organizational structure and the lack of exploiting new ideas. Though indulged by Sandberg & Aarikka-Stenroos (2014) as a traditional barrier towards radical and disruptive innovation, the author was unable to ascertain the subsistence of the barrier Inertia caused by (local) systems architecture. Table 7 above displays the upheld and ascertained subsistence of internal barriers towards radial and disruptive innovation.

On balance, the outcome after measuring against successful innovative projects not only signifies the upholding three internal barriers towards radical and disruptive innovation, it also goes to show that these

barriers merit a closer perspective as the successful innovative projects tell us that there is a possible (partial) workaround by subsidiarizing the innovative activities. The unsupportive organizational structure, a hierarchical setting of lines of authority, communications, rights and responsibilities (Sandberg & Aarikka-Stenroos, 2014) could be circumvented by simply not making it part of the existing organizational structure allowing innovative being exploited successfully. Though it must be stated that this does not signify the elimination or even absence of those barriers, it merely indicates a possible workaround. Although the author is aware that the measuring against successful projects was not tested as such, the work around may, in fact, as opposed to dropping the barrier even strengthen the evidence of the not-invented-here syndrome as it may, to some extent, be a boundary condition. Importantly, subsidiarizing may not be suitable for all innovative projects nor many innovative projects simultaneously (Thakor, 2020) nor does it warrant success as per Project 1. In addition, the outcome signifies that different projects with different degrees of innovativeness i.e. different degrees of disruptiveness and radicalness are confronted with different degrees of resistance of those barriers as was the case with Tikkie. The author postulates that there may very well be a threshold degree of innovativeness for the (Dutch) Financial Services and Banking sector for innovative projects to be subsidiarized in order to be successful!

The above findings are well-grounded in ambidexterity, as per the literary review as well as ensuing the interviews, particularly that of Respondent C, dissimilar and often seemingly ambivalent objectives: exploration and exploitation (Dorn et al., 2016; Luo & Rui, 2009; Tang et al., 2020). Exploration and exploitation both are affiliated with diverse, inconsistent, competing and even conflicting organizational structures and processes (Smith & Tushman, 2005; Venugopal et al., 2018; Zhang et al., 2020). Strategic management which is able to effectively counterweight amongst the two ambivalent strategic agendas, may momentously increase a firms performance albeit in effectuating that the authors' internal barriers towards radical and disruptive innovation will be dealt with (Bazerman & Watkins, 2004; Das et al., 2018; Sandberg & Aarikka-Stenroos, 2014; Van de Ven, Andrew H et al., 1999; Virany et al., 1992).

What presently remains at large is how to proceed from here. Some studies on (structural) ambidexterity acknowledge that a few people at the top need to act ambidextrously by integrating exploitative and explorative activities (Smith & Tushman, 2005). Siggelkow & Levinthal (2003) even suggest a temporary decentralization, in which firms use differentiated units for exploitation and then reintegrate them. Understanding an ambidextrous organization is one thing, making it a reality is another (Nieto-Rodriguez, 2014). Though the author remains critical to some extent of innovativeness the deemed successful projects have shown us that successful innovation is possible. Whether it is the organizational workaround limiting -not eliminating- the effects of the internal barriers or whether banks in the Dutch Financial Services and Banking sector succeed in their quest for both pursuing explorative and exploitative agenda's. The failed innovative projects have illuminated that, given organizational backing in terms of funding, time and not least courage these could have been successful as was postulated by all interviewees. In light of both the

affirmed workarounds and ambidextrous organizations, the author proposes more of so called *Corporate Venturing*. Corporate Venturing is a trend in which an established firm partners with and/or participates in an innovative and specialized start-up (van Roey, 2018). Corporate venturing is a strategic vehicle that can accelerate the pace of business innovation, open a window on emerging technologies, and provide an opportunity for strategic partnerships; it caters for the ambidextrous firm goals and builds on, as it were, on the workarounds shown in two of the successful innovative projects. Despite all those internal (and external) barriers towards radical and disruptive innovation, this is a time of opportunity: in the current turbulent economic conditions, with an ever increasing need for firms in the Dutch Financial Services and Banking sector to keep innovation, the role of corporate venturing is increasingly important (though not solely sufficient as per Project 1). Remarkable opportunities lie ahead for those ready to grasp the challenge (Blume, 2020; Hadjielias et al., 2021; Marchisio, Mazzola, Sciascia, Miles, & Astrachan, 2010; Titus Jr, House, & Covin, 2017)!

5.2 Theoretical & practical contributions

This research contributes to the hitherto subpar and underexplored field of innovations within or related to the Financial Services and Banking sector as they remained abundantly underexplored both externally and internally. As mentioned, prior to the case study conducted by Das et al. (2018), much research was aimed at barriers towards disruptive and radical innovation within more traditional technological companies and the case study performed by Das et al. (2018) was carried out at a single firm which merited the further validation of the framework. Elaborating the conducted interviews, measuring the framework against successful projects elucidated that the subsistence of two barriers could be nuanced. It provided insights as to cope with barriers in the light of and solidly grounded in the phenomena of ambidexterity.

In practice this research prompts implications for innovation managers and strategic management in the financial services and banking sector as well. The further validation and nuancing of the barriers can help innovation managers and strategic management identify the crucial perils and determine the workarounds to strive and surmount those barriers. On top of that, it is to induce innovation managers and strategic management to further research mechanisms for surmounting these barriers as well as the workarounds and/or strategic partnerships. The elucidation yielded following the interviews may help innovation managers and strategic management comprehend the root causes to those barriers and possible ways forwards. As per Das et al. (2018), innovation managers and strategic management within the financial services and banking sector, ought to prioritize identified and validated key internal barriers towards radical and disruptive innovation over traditional barriers when organizing for disruptive and radical innovation. The suggestion of the author is for innovation managers and strategic management in the financial services and banking industry to be bold and courageous, frankly, to give innovative projects backing in terms of time, funding as well as the ambidextrous vehicle!

5.3 Limitations

Despite the added value to theory and practice, the author acknowledges some limitations to this research. Firstly, though the research was conducted deploying interviews with relevant innovation individuals at banks, other large types of companies such as insurance firms, pension firms etc. did not partake. External barriers were not taken into account however merely internal barriers towards radical and disruptive innovation on which firms have a say and are able to manipulate. Also, neither the interdependence between these internal barriers nor the influence of exterior factors thereon were within the authors scope. Furthermore the different severities of the individual barriers were also not part of this research.

Secondly, it might also have been useful to include good novel ideas that never even made the project stage are inherently underexposed due to the nature of the research (settings). The author acknowledges that because the interviews were held with relevant innovation individuals at three different large banks, there was no control for aspects like firm dynamics.

Thirdly, though a short introduction conversation was proposed by the author however kindly declined, the author savored some definition discrepancies with the respective interviewees. For instance on the premise of an internal barrier being disguised as an external barrier. E.g. according to Bank A, the legislative conditions at present are neither convenient nor suitable for Project 2 to proceed. Many regulatory questions remain unanswered at present. “Even if nations all over the world are starting to regulate digital assets, we don’t yet have a unified and global legislative approach to cryptocurrencies” (The Next Web, 2019). As shown by the three successful cases, the workarounds do not make the internal barriers towards radical and disruptive innovation vanish all of a sudden, they prolong in the mother firm and the further integration of successful projects has not been researched. Lastly, even the workaround subsidiaries may, if operative long enough, eventually create barriers towards radical and disruptive innovation themselves!

5.4 Future research

This research aimed to serve the hitherto subpar literature regarding internal barriers towards disruptive and radical innovation within large firms in the Dutch Financial Sector. Yet, the author recommends a further broadening of the scope of this topic inclusive of other firms in the financial sector, being Dutch or situated or originated elsewhere, prone to these internal barriers. This broadening of the scope could very well be in terms of a longitudinal study which compares specific barriers over time. It is also recommended to (separately) explore the interdependency, inter relations and severities within the framework of internal barriers and may comprehend a threshold before causing an effect. E.g. the lack of exploiting new ideas could possibly be a result of other constructs also within this framework such as a strong sense of the not-invented-here-syndrome and a successful innovative project may have on the latter as well. Also, though it is recommended that managers within the financial services sector prioritize the

barriers within the framework proposed by Das et al. (2018) over more traditional barriers as per Sandberg & Aarikka-Stenroos (2014) the author recommends that further research is done into the (perceived) definitions of those barriers within this context along with strategies to influence them, interestingly in comparison with the successful (out of the firm) innovative projects.

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Appendices

Appendix 1: Coding Summary By File

Interviews Master Thesis

27-11-2020 14:39

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Document

Files\\Notes interview Respondent A

Node

Nodes\\Failed projects

	No	0,0081	1			
				1	CSK	1-11-2020 12:46

Answer: Project 1 and Project 2.

Nodes\\Failed projects\Project 1, application

	No	0,1144	1			
				1	CSK	1-11-2020 12:50

Answer: Project 1 was an application that can be used as a digital cash depot for group activities. Bank A initiated the project but it was further developed and brought to the market by our subsidiary MyOrder. It was meant to facilitate group paid excursions or gifts by allowing individuals to contribute through Ideal. It was brought to market even before 'Tikkie'.

Nodes\\Failed projects\Project 2, application

	No	0,0734	1			
				1	CSK	1-11-2020 13:09

Answer: Before this interview, we briefly discussed this. It was an innovative project in which a wallet was made to store digital currencies. Everything was ready for it to launch, everything from IT support to training of staff etc.

Nodes\\IB Lack of exploiting new ideas

	No	0,0403	2			
				1	CSK	1-11-2020 13:07

Also, I feel that there is a general lack of new idea's being incorporated; they are not exploited

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
				2	CSK	1-11-2020 15:35

a lack of exploiting new ideas

Nodes\\IB Not invented here syndrome

	No	0,0781	2

1	CSK	1-11-2020 13:06

By all means people resent as it were projects that are not their own because they have their own goals to worry about and wouldn't want outsiders to bring in new ways of working that would reduce their work.

2	CSK	1-11-2020 15:35

as well as the not-invented-here syndrome.

Nodes\\IB Not invented here syndrome\Rigid mindset\Modern mindset

	No	0,0146	1

1	CSK	1-11-2020 13:42

It had all the right people in the right place,

Nodes\\IB Not invented here syndrome\Rigid mindset\Oldfashioned mindset

	No	0,0597	1

1	CSK	1-11-2020 13:04

go through an organization of 30K people with a more old fashioned mindset. To be honest, it was also politics because lots of people saw bits of their work vanish because of this innovation.

Nodes\\IB Overzealous risk management

	No	0,0175	1

1	CSK	1-11-2020 13:11

In this case most certainly overzealous Risk Management.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB Overzealous risk management\Risk avoidance\Fear of compliance issues

No	0,0597	1	

1	CSK	1-11-2020 13:10

Answer: The project was cancelled because of fear of compliance issues. Banks as you know have to deal with the requirement called Know Your Customer which is tricky with digital currencies.

Nodes\\IB Unsupportive organizational structure

No	0,0106	1	

1	CSK	1-11-2020 13:37

a lack of organizational structure

Nodes\\IB Unsupportive organizational structure\Organizational capacity

No	0,0162	1	

1	CSK	1-11-2020 13:08

a lack of organizational mandate as mentioned before

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Insufficient support

No	0,0390	1	

1	CSK	1-11-2020 13:03

First of all, the project did not receive a good backing. A stronger organizational mandate would certainly be very helpful.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Outside

	No	0,0331	2

1	CSK	1-11-2020 14:06

The reason it was successful is that it was developed outside Bank A

2	CSK	1-11-2020 14:07

and virtually no integration within.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Supportive organizational structure

	No	0,0215	2

1	CSK	1-11-2020 14:00

it had the infrastructure correct

2	CSK	1-11-2020 14:01

as well as the external integration.

Nodes\\Succesful projects

	No	0,0303	1

1	CSK	1-11-2020 13:41

Answer: I can give you Ayden.

Ayden is a Bank 2 startup which produces payments for web shops.

Files\\Notes interview Respondent C

Node

Nodes\\Failed projects

	No	0,0047	1

1	CSK	1-11-2020 14:12

Answer: Project 5 and Project 6.

Nodes\\Failed projects\Project 6, application

	No	0,0616	1

1	CSK	1-11-2020 15:02

Answer: Project 6 is supposed to be a business model in which Bank C offers banking services accompanied by adjacent services offered by partner companies using a so called referral model. The idea is to offer clients a more holistic approach in offering different selectable (therefore more custom made) services such as leasing, invoicing, legal advice and even timesheets.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\Failed projects\Project 6, application\Less functionality

	No	0,0658	1

1	CSK	1-11-2020 15:13

Projects as such are often moved from the lab and turned over to the business subsequently choosing a reduction in costs and the easy road rather than embracing the project and incorporating it into their practices. In this case, it didn't lead to a coherent or a more holistic approach to offering services but a website that links to our partners which is what the project did not start out to be.

Nodes\\Failed projects\Project 5, application\Cyber security

	No	0,0691	1

1	CSK	1-11-2020 14:34

Project 5 was a startup of ING in order to enhance awareness (and ability) of employees of banks and other firms in the area of cyber security. Employees are one of the first lines of defense against cyber-crime. Approximately 90 % of all cyber security incidents involve employees clicking on a malicious link or otherwise making decisions in error. Therefore strengthening a company cyber-security merits involving staff.

Nodes\\Failed projects\Project 5, application\On hold

	No	0,0191	1

1 CSK 1-11-2020 14:17

Technically speaking the project has not been cancelled, but it has been put on hold; put in the fridge as it were.

Nodes\\Failed projects\Project 5, application\Training through gaming

	No	0,1129	1

1 CSK 1-11-2020 14:35

Project 5 involved building a web application through a gaming approach, similar to Duolingo which is a website that provides online language training. Employees using the Project 5 app would incrementally get information regarding cyber security. It is built around episodes in which the employee is asked a few questions in virtual chat conversation. Depending on the answers given, different paths and outcomes can be pursued. New episodes and topics are made available to the employee in steps and the employee is notified when news ones have been made available to them. The web application was to give clear overviews of topics, episodes and not least the progress the employee is making

Nodes\\Failed projects\Project 5, application\Virtually on hold

	No	0,0133	1

1 CSK 1-11-2020 15:07

The project has not stopped yet but it is taking so long that I presume it will.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB No fundamental internal R&D

	No	0,0166	1

1 CSK 1-11-2020 15:00

Having said that, to fundamentally reach ground breaking innovation, fundamental R&D is also lacking.

Nodes\\IB Not invented here syndrome

	No	0,0112	1

				1	CSK	1-11-2020 15:16

and most definitely the already infamous not-invented-here syndrome.

Nodes\\IB Not invented here syndrome\Rigid mindset

	No	0,0150	1			
				1	CSK	1-11-2020 14:41

In addition, such projects become people's babies which means it becomes hard to part from

Nodes\\IB Overzealous risk management

	No	0,0126	2			
				1	CSK	1-11-2020 14:59

at the same time I see too much focus on risk avoidance

				2	CSK	1-11-2020 15:15

the avoidance of risk

Nodes\\IB Overzealous risk management\Risk avoidance

	No	0,0484	1			
				1	CSK	1-11-2020 14:48

Also what I can establish is that although the project is about avoiding risk by nature the organization has not been agile to really incorporate such projects. This has everything to do with different departments and individuals have a focus on variance reduction instead of variance increase.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB Unsupportive organizational structure

	No	0,0206	2			
				1	CSK	1-11-2020 14:59

I would say that the structure of ING has insufficiently been supportive

2 CSK 1-11-2020 15:15

again a not so supportive organizational structure,

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Duration incorporation

No 0,0625 2

1 CSK 1-11-2020 14:41

It may take, therefore, a very long time before the project has been incorporated within the organization.

2 CSK 1-11-2020 15:12

The project team passed by several departments, echelons and individuals creating internal barriers if they couldn't find one as it were. The project (team) was lacking an organizational mandate which lead to seeking cooperation or even approval at more than one instance.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Horizons of innovation

No 0,0400 1

1 CSK 1-11-2020 14:52

There are three horizons of organizational innovation, incremental innovation, new innovation and disruptive innovation. Sometimes innovation is low hanging fruit as it were, sometimes it is right at your doorstep. Sometimes it takes patience.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Lack of organizational mandate

No 0,0062 1

1 CSK 1-11-2020 15:14

Again, we need organizational mandate

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Lack of vision

No 0,0705 2

1 CSK 1-11-2020 14:53

What is required here is a vision on innovation for the short term, but most certainly for the long term. For disruptive innovation, we require core grassroots research but most certainly development because sometimes I wonder if topics have been sufficiently elaborated.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
				2	CSK	1-11-2020 15:14

and a long term vision: which trends and developments are we going to choose? When we choose them, we should really choose them instead of semi-choose them.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Organizational change required

	No	0,0126	2			
				1	CSK	1-11-2020 14:41

This requires organizational change.

				2	CSK	1-11-2020 14:48

This too requires organizational change.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Outside

	No	0,0159	1			
				1	CSK	1-11-2020 15:21

The reason that these 2 projects were successful is that they were manifested outside of the ING.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Outside working on the same goal

	No	0,0344	1			
				1	CSK	1-11-2020 15:23

Instead of individuals working internally on islands, they were cooperatively working on the same goal albeit external. Tikkie, an ABN AMRO produce, is also a good example of the same successful constellation.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Right people for the right jobs

	No	0,0400	3			
				1	CSK	1-11-2020 14:36

Everything starts with selecting the right people for the right jobs in the right phase of the project.

				2	CSK	1-11-2020 14:37

different phases of the project, different people are required to do the jobs.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
				3	CSK	1-11-2020 15:21

The right parties, individuals and so on were brought together

Nodes\\Succesful projects

	No	0,0037	1

1	CSK	1-11-2020 15:16

Sure. Yolt and Cobase.

Nodes\\Succesful projects\Overcoming barriers

	No	0,0126	1

1	CSK	1-11-2020 15:22

overcoming the barriers of risk avoidance or the not-invented-here-syndrome.

Files\\Notes interview Respondent B

Node

Nodes\\Failed projects

	No	0,0054	1

1	CSK	1-11-2020 15:39

Project 3 and Project 4

Nodes\\Failed projects\Project 4, application

	No	0,1640	1

				1	CSK	1-11-2020 16:05

Project 4 was one of the ideas following a hackathon that we organized after the EU legislation regarding the open banking principle in that clients could view their data freely and openly and share that with others. I was a very interesting idea brought to us by external individuals brainstorming and developing ideas in that hackathon. The initiative was launched about 4 or 5 years ago.

In terms of credit ratings, the US is completely the opposite in that credit scores of (potential) customers are open for access whereas in Europe this is all done behind the scenes as it were. Clients would have a credit score and could make that data available. On top of that there was a payment function embedded. So, if clients wished to open these data to potential service or goods providers, they could easily do that. Ultimately clients could pay without acting as all (new) purchase info was incorporated into the new credit score.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\Failed projects\Project 4, application\Project terminated

	No	0,0035	1			
				1	CSK	1-11-2020 16:09

the project was killed

Nodes\\Failed projects\Project 3, application

	No	0,1817	1			
				1	CSK	1-11-2020 15:49

Project 3 was really an experiment in 2017 and started as a platform with blockchain technology directed at and hopefully useful for the commercial real estate sector. It involved a big database of real estate that we financed in which we stored all kinds of information about those properties. Other banks but also other elements in the chain such as appraisers, property managers and even investors were doing the same. With Project 3, we were striving for a platform that connected all those players and even the AFM (Dutch Competition Authority), the DNB (Dutch Central Bank) and the Kadaster (Dutch land registry) were connected. The goal was to diminish the collective administrative burden of collecting and verifying of customer and property data. The project was to ensure that blockchain ensured the integrity of the data exchanged and that only certain qualified parties were able to access the data. This also meant for instance that the DNB could perform an audit without prior notice.

Nodes\\Failed projects\Project 3, application\Time saved spend on clients

	No	0,0207	1			
				1	CSK	1-11-2020 15:59

The time saved here was to be dedicated to serve clients better (local bank managers used to know their clients well in the past).

Nodes\\IB Not invented here syndrome

No	0,0043	1	

1	CSK	1-11-2020 16:26	

not-invented-here-syndrome

Nodes\\IB Not invented here syndrome\Rigid mindset\People lose work through efficiency

No	0,0293	1	

1	CSK	1-11-2020 15:58

Bear in mind also that collectively the process would be a lot more efficient and this project was to disrupt several existing processes and people would simply lose some of their work

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB Overzealous risk management

No	0,0167	2	

1	CSK	1-11-2020 16:00

the avoidance of risk like with Project 4 (but we'll come to that in a minute).

2	CSK	1-11-2020 16:26

overzealous risk management

Nodes\\IB Overzealous risk management\Risk avoidance\Not bother to take the risks

No	0,0341	1	

1	CSK	1-11-2020 16:21

Some of them did not seem to want to take on the risk and others were too focused on their own priorities or simply couldn't be bothered. It just wasn't their cup of tea in combination with a lot of risk avoidance.

Nodes\\IB Overzealous risk management\Risk avoidance\Not too disruptive

No	0,0094	1	

1	CSK	1-11-2020 16:36

The reason it succeeded that it was not all that disruptive

Nodes\\IB Overzealous risk management\Risk avoidance\Not too risky therefore succesful

	No	0,0049	1

1	CSK	1-11-2020 16:37

not a lot of risk was involved.

Nodes\\IB Unsupportive organizational structure

	No	0,0146	2

1	CSK	1-11-2020 15:59

In my view the unsupportive organizational structure

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
				2	CSK	1-11-2020 16:26

an unsupportive organizational structure

Nodes\\IB Unsupportive organizational structure\Organizational capacity

	No	0,0415	1

1	CSK	1-11-2020 16:24

Also, there were quite a few contributors to the project, but the organizational structure wasn't there; skills and knowledge that were required at certain times weren't available. For that reason, it's not necessarily a bad thing that the project was killed.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Go to market not thought trough enough

	No	0,0087	1

1	CSK	1-11-2020 16:08

The go-to-market strategy wasn't thought through enough

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Insufficient transparency in information exchange

	No	0,0105	1

1	CSK	1-11-2020 15:54

. The exchange of information wasn't transparent enough I remember

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Insufficiently answered questions

	No	0,0241	1

1	CSK	1-11-2020 16:06

Lots of questions were raised that remained unanswered or insufficiently answered such as: how are we going to launch it, or will everyone get a score?

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\IB Unsupportive organizational structure\Organizational capacity\More investment required to get ready for market

	No	0,0140	1

1	CSK	1-11-2020 15:54

and it would take quite some more time and costs more money to get it ready for market.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Solution did not fit the problem

	No	0,0158	1

				1	CSK	1-11-2020 15:52

On top of that, it was perceived that the problem just wasn't big enough for the offered solution.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Too early for the market

	No	0,0214	1			
				1	CSK	1-11-2020 15:51

In my opinion, for Bank B the timing just wasn't right. The momentum wasn't there. The technology just was too early for the market.

Nodes\\IB Unsupportive organizational structure\Organizational capacity\Unclear responsibilities

	No	0,0169	1			
				1	CSK	1-11-2020 16:17

Although the intensions were good, there were several managers who felt responsible whereas others didn't.

Nodes\\Succesful projects

	No	0,0049	1			
				1	CSK	1-11-2020 16:31

Tikkie would be a good example.

Classification	Aggregate	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On

Nodes\\Succesful projects\Costs, no profit!

	No	0,0391	1			
				1	CSK	1-11-2020 16:38

However, ABN AMRO isn't profiting from it. In fact, we are paying an X amount per transaction and therefore it could theoretically still be killed were it not for the fact that ABN AMRO's name is forever attached to it. So quite a burden really.

Nodes\\Succesful projects\Overcoming barriers

	No	0,1459	1

1 CSK 1-11-2020 16:31

I mean now it's changed; Bank B started the business unit called Group Innovation. Externally it's called dareinnovation.com. It's got vision, capacity and potential. Vision in terms of what belongs here and what belongs at primary business units. Disruptive and/or business transcending innovation is now centralized here. The focus of Group Innovation is on sustainability, platform business models and digital assets. There is a lumpsum of money available for such projects. The philosophy here is de-risking your innovation, lean thinking as it were; there 3 types of people involved in this unit: bankers, innovation managers and developers involving Artificial Intelligence, Blockchain Technology and so on. Own innovations are still with respective parts of Bank B but when it comes to disruptive and business transcending

Appendix 2: Notes interview Respondent A, CEO at a major Dutch Bank.

Date and time: 20 April 2020 1100-1200

Confidentiality discussed and agreed

Setting: friendly, calm (no hurries), transparent and honest. Camera off, no recordings.

- Question: can you name 2 innovative projects within Rabobank that never materialized?

  Answer: Project 1 and Project 2.

- Question: can you tell me more about Project 1? What kind of a project was/is that?

  Answer: Project 1was an application that can be used as a digital cash depot for group activities. Rabobank initiated the project but it was further developed and brought to the market by our subsidiary MyOrder. It was meant to facilitate group paid excursions or gifts by allowing individuals to contribute through Ideal. It was brought to market even before 'Tikkie'.

- Question: why didn't Project 1make it?

  Answer: I would say a variety of reasons. First of all, the project did not receive a good backing. A stronger organizational mandate would certainly be very helpful. People working on the innovative project were really thinking out of the box trying very hard to create a successful payment facility, but had to go through an organization of 30K people with a more old fashioned mindset. To be honest, it was also politics because lots of people saw bits of their work vanish because of this innovation.

- Question: so in terms of internal barriers, which ones mostly hindered the materialization of Project 1?

  Answer: By all means, people resent it ,as it were, projects that are not their own because they have their own goals to worry about and wouldn't want *outsiders* to bring in new ways of working that would reduce their work. Also, I feel that there is a general lack of new idea's being incorporated; they are not exploited also because of a lack of organizational mandate as mentioned before. So definitely a lack of organizational structure and a lack of exploiting new ideas as well as the not-invented-here syndrome.

- Question: can you tell me more about Project 2? What kind of a project was/is that?

  Answer: Before this interview, we briefly discussed this. It was an innovative project in which a wallet was made to store digital currencies. Everything was ready for it to launch, everything from IT support to training of staff etc.

- Question: so what happened?

  Answer: The project was cancelled because of fear of compliance issues. Banks as you know have to deal with the requirement called *Know Your Customer* which is tricky with digital currencies.

- Question: so in terms of internal barriers, which ones mostly hindered the materialization of Market Place?

Answer: In this case most certainly overzealous Risk Management.

- Question: can you mention 2 projects that were successful and what made them successful?

  Answer: I can give you Ayden.

  Ayden is a Rabobank startup which produces payments for web shops. It had all the right people in the right place, it had the infrastructure correct as well as the external integration. It was successful enough for Rabobank to IPO it! The reason it was successful is that it was developed outside Rabobank and virtually no integration within.

Appendix 3: Notes interview Respondent 3, Head Innovation & Partnerships at major Dutch Bank.

Date and time: 05 June 1100-1200

Confidentiality discussed and agreed

Setting: friendly, calm (no hurries), transparent and honest. Camera off, no recordings.

- Question: can you name 2 innovative projects within Bank C that never materialized?

  Answer: Project 5 and Project 6.

- Question: can you tell me more about Project 5? What kind of a project was/is that?

  Answer: Project 5 was a startup of Bank C in order to enhance awareness (and ability) of employees of banks and other firms in the area of cyber security. Employees are one of the first lines of defense against cyber-crime. Approximately 90 % of all cyber security incidents involve employees clicking on a malicious link or otherwise making decisions in error. Therefore strengthening a company cyber-security merits involving staff.

  Project 5 involved building a web application through a gaming approach, similar to Duolingo which is a website that provides online language training. Employees using the Project 5 app would incrementally get information regarding cyber security. It is built around episodes in which the employee is asked a few questions in virtual chat conversation. Depending on the answers given, different paths and outcomes can be pursued. New episodes and topics are made available to the employee in steps and the employee is notified when news ones have been made available to them. The web application was to give clear overviews of topics, episodes and not least the progress the employee is making.

- Question: why didn't Project 5 make it?

  Answer: Technically speaking the project has not been cancelled, but it has been put on hold; put in the fridge as it were.

  Everything starts with selecting the right people for the right jobs in the right phase of the project. In different phases of the project, different people are required to do the jobs. It may take, therefore, a very long time before the project has been incorporated within the organization. In addition, such projects become people's babies which means it becomes hard to part from. This requires organizational change.

  Also what I can establish is that although the project is about avoiding risk by nature the organization has not been agile to really incorporate such projects. This has everything to do with different departments and individuals have a focus on variance reduction instead of variance increase. This too requires organizational change.

  There are three horizons of organizational innovation, incremental innovation, new innovation and disruptive innovation. Sometimes innovation is low hanging fruit as it were, sometimes it is right at your doorstep. Sometimes it takes patience. What is required here is a vision on innovation for the short term, but most certainly for the long term. For disruptive innovation, we require core grassroots

research but most certainly development because sometimes I wonder if topics have been sufficiently elaborated.

- Question: so in terms of internal barriers, which ones mostly hindered the materialization of Project 5?
  Answer: I would say that the structure of Bank C has insufficiently been supportive and at the same time I see too much focus on risk avoidance. Having said that, to fundamentally reach ground breaking innovation, fundamental R&D is also lacking.

- Question: can you tell me more about Project 6? What kind of a project was/is that?

  Answer: Project 6 is supposed to be a business model in which Bank C offers banking services accompanied by adjacent services offered by partner companies using a so called referral model. The idea is to offer clients a more holistic approach in offering different selectable (therefore more custom made) services such as leasing, invoicing, legal advice and even timesheets.

- Question: so what happened?

  Answer: The project has not stopped yet but it is taking so long that I presume it will.

  The project team passed by several departments, echelons and individuals creating internal barriers if they couldn't find one as it were. The project (team) was lacking an organizational mandate which lead to seeking cooperation or even approval at more than one instance.

  Projects as such are often moved from the lab and turned over to the business subsequently choosing a reduction in costs and the easy road rather than embracing the project and incorporating it into their practices. In this case, it didn't lead to a coherent or a more holistic approach to offering services but a website that links to our partners which is what the project did not start out to be.

  Again, we need organizational mandate and a long term vision: which trends and developments are we going to choose? When we choose them, we should really choose them instead of semi-choose them.

- Question: so in terms of internal barriers, which ones mostly hindered the materialization of Market Place?

  Answer: again a not so supportive organizational structure, the avoidance of risk and most definitely the already infamous not-invented-here syndrome.

- Question: can you mention 2 projects that were successful and what made them successful?

  Answer: Sure. Yolt and Cobase.

  Yolt is a budget management aid that allows clients to manage their finances at multiple banks in one place. It helps in determining the free disposable for the current month for instance. Cobase on the other hand helps multinational companies accessing their bank accounts at different banks and financial institutions. It also offers a single point of access to all bank accounts and other financial products and services.

The reason that these 2 projects were successful is that they were manifested outside of the ING. The right parties, individuals and so on were brought together overcoming the barriers of risk avoidance or the not-invented-here-syndrome. Instead of individuals working internally on islands, they were cooperatively working on the same goal albeit external. Tikkie, an ABN AMRO produce, is also a good example of the same successful constellation.

Appendix 4: Notes interview Respondent B, Innovation Manager Learning at Bank B.

Date and time: 21 Juli 2020 1300-1345

Confidentiality discussed and agreed

Setting: friendly, calm (no hurries), transparent and honest. Camera on, no recordings.

- Question: can you name 2 innovative projects within Bank B that never materialized?

Project 3 and Project 4 (not …)

- Question: can you tell me more about Project 3? What kind of a project was/is that?

Project 3 was really an experiment in 2017 and started as a platform with blockchain technology directed at and hopefully useful for the commercial real estate sector. It involved a big database of real estate that we financed in which we stored all kinds of information about those properties. Other banks but also other elements in the chain such as appraisers, property managers and even investors were doing the same. With Project 3, we were striving for a platform that connected all those players and even the AFM (Dutch Competition Authority), the DNB (Dutch Central Bank) and the Kadaster (Dutch land registry) were connected. The goal was to diminish the collective administrative burden of collecting and verifying of customer and property data. The project was to ensure that blockchain ensured the integrity of the data exchanged and that only certain qualified parties were able to access the data. This also meant for instance that the DNB could perform an audit without prior notice.

There was even a test version in which customers could upload their rental contracts which could be shared with the account managers of Bank B.

- Question: so why didn't Project 3 make it?

In my opinion, for Bank B the timing just wasn't right. The momentum wasn't there. The technology just was too early for the market. On top of that, it was perceived that the problem just wasn't big enough for the offered solution. The exchange of information wasn't transparent enough I remember, and it would take quite some more time and costs more money to get it ready for market. Bear in mind also that collectively the process would be a lot more efficient and this project was to disrupt several existing processes and people would simply lose some of their work. The time saved here was to be dedicated to serve clients better (local bank managers used to know their clients well in the past).

- Question: so, in terms of internal barriers, which ones mostly hindered the materialization of Project 3?

In my view the unsupportive organizational structure and the avoidance of risk like with Project 4 (but we'll come to that in a minute).

- Question: can you tell me more about Project 4? What kind of a project was/is that?

Project 4 was one of the ideas following a hackathon that we organized after the EU legislation regarding the open banking principle in that clients could view their data freely and openly and share that with others. I was a very interesting idea brought to us by external individuals brainstorming and developing ideas in that hackathon. The initiative was launched about 4 or 5 years ago.

In terms of credit ratings, the US is completely the opposite in that credit scores of (potential) customers are open for access whereas in Europe this is all done behind the scenes as it were. Clients would have a credit score and could make that data available. On top of that there was a payment function embedded. So, if clients wished to open these data to potential service or goods providers, they could easily do that. Ultimately clients could pay without acting as all (new) purchase info was incorporated into the new credit score.

On balance it was to calculate, openly, the probability of default of (potential) customers.

- Question: so, what happened to Project 4?

Lots of questions were raised that remained unanswered or insufficiently answered such as: how are we going to launch it, or will everyone get a score?

The go-to-market strategy wasn't thought through enough and since we kept having lots of unanswered questions, the project was killed.

- Question: so, in terms of internal barriers, which ones mostly hindered the materialization of Project 4?

Although the intensions were good, there were several managers who felt responsible whereas others didn't. Some of them did not seem to want to take on the risk and others were too focused on their own priorities or simply couldn't be bothered. It just wasn't their cup of tea in combination with a lot of risk avoidance. Also, there were quite a few contributors to the project, but the organizational structure wasn't there; skills and knowledge that were required at certain times weren't available. For that reason, it's not necessarily a bad thing that the project was killed.

The organization just wasn't ready for it. I mean now it's changed; Bank B started the business unit called Group Innovation. Externally it's called dareinnovation.com. It's got vision, capacity and potential. Vision in terms of what belongs here and what belongs at primary business units. Disruptive and/or business transcending innovation is now centralized here. The focus of Group Innovation is on sustainability, platform business models and digital assets. There is a lumpsum of money available for such projects. The philosophy here is de-risking your innovation, lean thinking as it were; there 3 types of people involved in this unit: bankers, innovation managers and developers involving Artificial Intelligence, Blockchain Technology and so on. Own innovations are still with respective parts of Bank B but when it comes to disruptive and business transcending innovation, there's now a policy in place from the board and sufficient support.

- So, 3 internal barriers you would say: not-invented-here-syndrome, overzealous risk management and an unsupportive organizational structure?

Yes.

- So, do you have examples of projects that succeeded?

Tikkie would be a good example. The reason it succeeded that it was not all that disruptive and not a lot of risk was involved. However, ABN AMRO isn't profiting from it. In fact, ABN AMRO are paying an X amount per transaction and therefore it could theoretically still be killed were it not for the fact that ABN AMRO's name is forever attached to it. So quite a burden really.