Institute of Insurance Economics

University of St.Gallen

The Current InsurTech Landscape:

Business Models and Disruptive Potential

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In cooperation with

Swiss Re Institute

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Preface

After having revolutionized several industries such as music, tourism, and media, digitization has now finally and firmly reached the insurance industry. InsurTech startups, i.e. young companies that pursue technology-driven business models, are mushrooming. Within less than five years, their number has increased from just a handful to several hundred globally. At the same time, the focus of these new market entrants has shifted from mere software solutions to activities that clearly compete with those of insurance companies and brokers. Against this background, many observers are tirelessly summoning disruptive consequences for the insurance industry. Although the advent of InsurTech is clearly associated with great challenges for incumbents, the term disruption is currently being used in an inflationary manner. To some extent, this seems to be attributable to different perceptions of key concepts such as "business model" and "disruptive innovation". Since the management literature can provide fundamental guidance in this regard, we felt the need to contribute an academically-grounded study in which we take an explicit look at the pressing questions in this relatively new area of research: Which aspects constitute a business model innovation? What is the meaning of disruption? How can we distinguish between technology-oriented competitors, enablers that promote the digitization of the insurance industry, and genuine disrupters that may fundamentally change the traditional insurance ecosystem? And finally, what are suitable reactions of incumbents? Most of these issues were left unanswered by extant publications on the subject. Hence, we are hopeful that our work will help navigating this new market environment and add significant value to the ongoing discussion about InsurTech.

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St. Gallen, May 2017

Contents

List of Figures

List of Tables

Management Summary

We take a detailed look at the current InsurTech landscape from the angle of the academic management literature. Our main goals are to establish a common understanding of key concepts, to facilitate the navigation of this rapidly evolving sector, and to provide an intuitive toolkit for an assessment of the entrants' disruptive potential as well as the selection of adequate response strategies by incumbents. Based on a three-dimensional taxonomy, we screen the existing InsurTech startup range. Two aspects stand out in this regard. First, although the vast majority of activities still focuses on the distribution part of the industry ecosystem, full-stack InsurTech risk carriers are starting to become more commonplace. Second, we hardly observe any real game-changing business model innovations yet, as many existing startups are essentially pepping up classical industry approaches with the patterns "e-commerce" or "digitization". Consistent with this observation, most entrants are not on a disruptive trajectory. Instead, they can be assigned to the category "enablers", suggesting "cooperation" as the incumbents' reaction of choice for the majority of currently prevailing scenarios. These findings are confirmed by a comprehensive survey among startups and incumbents.

Several directions for the future evolution of the sector are plausible. We identify a number of powerful business model recombinations that are either already launching or clearly visible on the horizon. The largest threats are likely to arise from out-of-the box approaches. One example are digital insurers that add significant value for the customer through personalized coverage based on a comprehensive individual risk assessment. Similarly, genuine peer-to-peer concepts, which enable risk transfer directly to the capital markets, could call the primordial relevance of insurance companies into question and therefore lead to outright disintermediation. Consequently, the still relatively comfortable situation for incumbents that currently prevails may not last for long.

1 Introduction

The insurance sector is currently facing pressures from several sides. Among the latest challenges are new regulatory frameworks, the inflow of alternative capital, and the ongoing low interest rate environment. An even more groundbreaking transformation, however, will be brought about by the successively advancing digitization of the industry. In combination with substantial changes in customer needs and demands, new technologies are beginning to intensify competition to erode margins. Faster offers, a higher transparency and comparability, more personalized services, and a simplified claims process are swiftly becoming essential success factors. Similarly, customers expect digital experiences across all touch points in the customer journey. Reacting to these developments, the industry has now begun to digitize its value chain. Yet, in a fast-moving and technology-driven market environment, agility is of the essence. This turns out to be a problem for many insurance companies and brokers that have traditionally been rather slow innovators.

As if this weren't enough strain for the time being, new competitors called InsurTechs are entering the insurance ecosystem in rapidly growing numbers to take advantage of the changing rules of the game. True to the proverbial wisdom *"one man's sorrow is another man's joy"*, these technology startups accelerate the transformation of the industry and drive innovation with fresh ideas, intuitive concepts, and fast reaction times. Many of them are already planning to go beyond a simple digitization of the existing value chain. Instead, they aim to prematurely anticipate key trends and future customer needs to position themselves accordingly, providing smart services and solutions rather than mere products. Due to the innovative business models of most InsurTech startups, industry professionals and investors have raised increasing concerns that the new entrants could sooner or later jeopardize the plain existence of incumbents through a disruption of insurance markets as we know them.

Against this background, it is not astonishing that the growing InsurTech landscape is currently a hot topic. Initially, the startup scene in the financial services sector was dominated by FinTech firms, which apply modern technologies in banking and finance. The InsurTech wave, in contrast, emerged with a certain delay but has now picked up substantial pace. This is mirrored by a downright explosion of the global funding volume from a mere USD 140 million in 2011 to approximately USD 1.7 billion in 2016. Similarly, the number of startups is growing by the day, making it difficult to keep track of the market. Having started with a focus on the client interface, InsurTech activities are now increasingly spreading along the entire insurance industry value chain. At the same time, pressure on incumbents is mounting. They need to find answers and adapt to the latest technological innovations in order to keep a competitive edge and reduce the distance to the customer. To hold their ground, many have begun to consider partnerships with InsurTech firms as an integral part of their digitization strategy.

These developments set the stage for the study at hand, in which we take a detailed look at the current InsurTech landscape from the angle of the academic management literature. Our main goals are to establish a common understanding of key concepts, to facilitate the navigation of this rapidly evolving sector, and to provide an intuitive toolkit for the assessment of the entrants' disruptive potential as well as the selection of adequate response strategies by incumbents. We begin with a brief review of recent publications on the topic in Chapter 2 and a snapshot of the current market in Chapter 3. In Chapter 4, we then introduce a three-dimensional InsurTech taxonomy, based on which we evaluate possible directions for the future evolution of the InsurTech space. The disruptive potential of current challengers, major success factors, and incumbent reactions are discussed in Chapter 5. Chapter 6 contains a comprehensive empirical study that complements the preceding theoretical considerations. Finally, Chapter 7 concludes the study.

2 InsurTech: What Do We Know?

2.1 The Digitization of the Insurance Industry

In this section, we present the current state of knowledge on the digitization of the insurance industry. Several extant studies exhibit a strategic focus. According to Bain & Company (2013), insurance companies require an integrated digitization strategy to react to changing customer behavior. Based on a survey, their study identifies seven factors that are essential for a successful digital transformation. Subsequently, it provides a step by step plan for the formulation of a digitization strategy. A similar assessment is provided by I.VW (2015), whose study highlights that innovation cycles are accelerating, market entry barriers are dropping, and new business models are emerging in the insurance industry. To tackle all challenges that come along with the new digital business world, insurance companies should concentrate on five central drivers, one of which is a clear digitization vision.

Morgan Stanley (2015) discuss the role of new digital ecosystems in insurance and highlight the development of three different types: segment of one distribution, one-stop-shop, and connected object. Among the catalysts that are driving the ecosystem growth are consumer expectations, technology adoption, and regulation. In a further step, the possible threats for insurers in the fields of distribution, underwriting, and claims management are identified. Resulting from the study are five strategic action points. Insurers need to evaluate chances and risks, offer products and services based on their strengths, adopt an innovation-friendly operating model, establish strategic partnerships, and test innovative ideas on a small scale before expanding quickly.

Furthermore, Boston Consulting Group (2016b) argue that most insurance managers have no uniform understanding of the term “digitization” and its impact on their businesses. They describe how insurers

can harness digitization for the automation of their business processes, the transformation of their customer interaction, as well as generate and use data for artificial intelligence systems. McKinsey (2016b) state that digitization has the potential to reshape products, marketing, pricing, distribution, service and claims of established insurers. To stay ahead of the curve, a successful digital transformation strategy combined with a road map is needed. In line with this view, Willis Towers Watson (2017) see digitization as a source of disruption across the value chain and highlight that companies neglecting digital challenges risk to be left behind. Insurers are in need of a digital strategy and have to visualize the future of their business to define internal and external investment projects. In addition, they should progress towards a culture of digital thinking.

The cultural aspect of digitization is also taken up by Naylor (2016). He explains that in an uncertain environment of digital disruption, insurers need to be prepared for change by transforming their culture into a culture of creative failure. A role model is given by Google-X's mantra of *"fail fast, fail often, fail forward"*. However, several key issues seem to be holding insurers back. These comprise a clear preference for stepwise instead of revolutionary innovation, cumbersome legacy systems, permanently shifting performance goals, a lack of experience with Big Data, and an overly strong focus on sales-based measures of business success. Q-PERIOR (2016) emphasize that a professional change management is of crucial importance to link up digital strategies with cultural aspects and to successfully complete the digital transformation of insurance companies. According to their study, digitization leads the transition to digital, data-based business models, the most promising of which are digital insurance companies, comparison portals, and monitoring-as-a-service providers. Apart from that, digitization gives rise to essential technology issues such as IT security, agile project management, and predictive analytics in the context of Big Data.

The impact of technology on the insurance sector is also considered by Deloitte (2013) who highlight ten trends separated into the two categories disrupters and enablers. Whereas the former are defined as *"opportunities that can create sustainable positive disruption in IT capabilities, business operations, and sometimes even business models"*, the latter exhibit evolutionary characteristics. Building on their earlier study, Deloitte (2015) discuss eight current technology trends that will impact the insurance industry in the near future. Those include the CIO as a chief "integration" officer, application programming interfaces (API), ambient computing, dimensional marketing, software-defined everything, core renaissance, amplified intelligence, and the IT worker of the future. Further insights on the importance of technology for the digital transformation of the insurance industry are provided by Feilmeier (2016) who identifies five digital drivers for the change of business models: cloud computing, Big Data, mobile devices, social interaction, and Internet of Things (IoT). The advent of these factors will be associated with whole new requirements for data security and employee qualifications in the insurance industry.

Moreover, a study by the World Economic Forum (2016) focuses on Smart Contracts as well as the associated Blockchain technology and highlights three potential applications in the insurance industry. First, Smart Contracts can speed up claims management by means of third-party data and computer-coded rules of execution. Second, the digitization of business processes leads to reductions in operating costs. Third, Blockchain technology could help to identify suspicious behavior and improve risk assessments by storing historical claims information. Apart from that, the study also describes three critical conditions for the usage of Smart Contracts in the insurance industry. In a similar vein, the London Market Group (2017) focuses on the Blockchain technology and concludes that it could lead to a substantial rise in efficiency. On the one hand, new digital products could be developed and processes would

become faster and leaner. On the other hand, insurers would benefit from additional data security. Hence, Smart Contracts should remain on the strategic agenda of the insurance industry.

In contrast to the aforementioned publications, which focus on digitization strategies and the role of technology, McKinsey (2013, 2016a) evaluate the disruptive challenges posed by the digitization of the insurance sector. According to their line of reasoning, insurance distribution and process automation are two key areas in this regard. Owing to new digital distribution channels, the traditional agent model could be disrupted within the next five to ten years. Once carriers are generally interacting more directly with customers, agents will have to reposition themselves. Carriers are going to exclusively promote profitable agents who deliver unique value to the customer and the firm. Interaction will take place across multiple channels: in-person, mobile, phone, internet and video conference. At the same time, automation will exert substantial effects on the insurance industry over the next ten years. Up to 25 percent of full-time positions may be consolidated or replaced. Roles within administrative support and operations will be most heavily affected. However, new job profiles with very specific qualification requirements will emerge, too. These relate to digital experts, marketing and sales support for digital channels, and for analytics teams. Consequently, capabilities in employee sourcing and development will be key elements for the success of insurance companies.

Figure 1: Extant Studies on Digitization and InsurTech

2.2 InsurTech and the Insurance Industry

We continue with a review of studies on the relationship of InsurTech startups and the insurance industry. As already mentioned in the previous section, many of the upcoming changes due to digitization will be expedited by new challengers that rely on tech-enabled products and business models. An increasing number of industry observers is now conjecturing that some of these startups may have the potential to eventually disrupt the insurance market. However, according to GDV (2017), a study by the German Insurance Association, there are no signs yet for a crowding out of incumbents by the rapid evolution of the InsurTech sector. Nevertheless, due to the accelerated innovation dynamics and intensified competition only those companies (startups and incumbents) that successfully adapt to the new circumstances will succeed. Furthermore, the study highlights the importance of a regulatory framework for both groups to guarantee a level playing field in the industry.

As a reaction to the expected pressure on firm performance, many incumbents are currently screening the InsurTech landscape for technology that may help them achieve a competitive edge. However, this is not the only strategy being used to address the potential threat. KPMG (2015b), for instance, identify partnership building, in-house development, and incubation as further sensible reactions of established insurance companies. Depending on the specific setting, even a multi-strategy approach may be necessary. The study of Versicherungswirtschaft (2016) emphasizes the potential for partnerships between most InsurTech startups and insurers. The reason is that most InsurTech activities are currently focusing on distribution rather than risk carrying and thus pose a threat to agents and brokers rather than insurance companies. Incumbents may benefit by learning digital customer centricity from the “pacemakers of digitization”, while offering the startups secure revenues through the sale of their insurance products. A similar stance is adopted by Oliver Wyman (2016) who highlight that InsurTech has a high potential to disrupt in-

surance distribution, whereas traditional risk carriers could benefit from low-cost access to clients. As a result, there is a great potential for partnerships between incumbent insurers and rising InsurTech startups focusing on the client interface.

Studies that aim at quantifying the consequences of rising competition by InsurTech startups are currently quite rare. According to PWC (2016), 90 percent of insurers share the fear of losing part of their business to InsurTechs. The main reasons are pressure on margins and the emergence of innovation drivers such as new customer needs and deeper risk insights. Indeed, 74 percent of incumbents acknowledge this issue and try to close existing gaps around customer centricity and digital channels. Finally, Morgan Stanley (2016) examine the USD 100 billion North American small business insurance (SBI) sector and identify four major trends. These are the demographics that favor digital insurance solutions, the unmet insurance needs of small businesses, the fact that InsurTech startups are gravitating towards emerging opportunities, and the stance of traditional carriers which are positioning for digital disruption. Based on these aspects, they estimate that the new digital challengers may be able to capture no less than one fourth or USD 25 billion of the SBI market.

Our study addresses several gaps left uncovered by the aforementioned work. First, we provide an up-to-date InsurTech market overview. Second, we introduce a three-dimensional approach to screen the fast-growing InsurTech landscape with a high degree of precision. The respective insights allow us to infer possible directions for the future evolution of the sector. Third, we assess the disruptive potential of several startups based on disruption theory, point out critical success factors, and recommend suitable reaction strategies for incumbents. Fourth, we mirror our theoretical considerations with empirical findings from a rigorous survey among insurance industry executives and InsurTech founders.

No.	Study	Topic	Main Findings
1	Bain & Company (2013) – Versicherungen: Die digitale Herausforderung	Digitization of the insurance industry	Digital transformation requires customer centricity, omni-channel presence, use of current distribution network, adjustments of operational core activities, development of IT, organizational adjustments to new surrounding conditions, and continuous market research.
2	Boston Consulting Group (2016b) – Digitalisierung: Der Schweizer Versicherungssektor im Umbruch	Digitization of the insurance industry	Digitization definition includes industrialization & automation of business processes, transformation of interaction between customer & insurer and the generation and use of data for AI. Insurer roadmap: "BCG Digital Health Check".
3	Feilmeier (2016) – Zukunftsthemen Digitalisierung und Big Data	Digitization of the insurance industry	Cloud, Big Data, Mobile, Social and IoT are driving the transition to digital, data-based business models.
4	Deloitte (2013) – Insurance Tech Trends 2013: Elements of Postdigital	Ten digital trends that are likely to impact the insurance business within the next 18 to 24 months	Sustainable positive disruption in IT capabilities, business operations and business models can be created by *Disrupters*. *Enablers* are more evolutionary: even if one has already invested, new opportunities and developments warrant another look.
5	Deloitte (2015) – Tech Trends 2015: An Insurance Industry Perspective	Eight technological trends that are likely to impact the insurance industry	The trends are: CIO as chief integration officer, API economy, ambient computing, dimensional marketing, software-defined everything, core renaissance, amplified intelligence and the IT worker of the future.

Table 1: Extant Studies on Digitization and InsurTech (I)

No.	Study	Topic	Main Findings
6	GDV (2017) – InsurTech(s): Zwischen Konkurrenz und Partnerschaft	Impact of the InsurTech movement on the German insurance industry	InsurTech is differentiating the insurance supplier landscape but not replacing established firms. Innovation dynamics and competition will lead to disruption. To guarantee fair competition a level playing field is needed.
7	Institute of Insurance Economics (I.VW-HSG) (2015) – Industrialisierung der Assekuranz in einer digitalen Welt	Impact of digitization on the strategic transformation of the insurance industry	The successful future insurer is characterized by five central aspects: digitization strategy, multi offering approach, customer centricity, industrialization and emotionalization, open architecture of added value.
8	KPMG (2015a) – FinTech 100: Leading Global FinTech Innovators Report 2015	Overview of the 100 most promising FinTech companies	The FinTech 100 Report includes: 25 payments & transaction companies, 22 lending companies, 14 wealth companies, 7 insurance companies.
9	KPMG (2015b) – Tapping into Insurance FinTech	Challenges that the InsurTech movement poses for incumbent insurers.	Multi-strategy approaches are being used to maximize investments and reduce risk. The multi-strategy consists of partnership building, in-house development, venturing, and M&A activities.
10	London Market Group (2017) – From Slips to Smart Contracts	Smart Contracts	They discuss a large number of use cases for Smart Contracts in the London Market. Core recommendation: Smart Contracts remain on the strategic agenda for firms and will gain further importance in the market architecture.

Table 1: Extant Studies on Digitization and InsurTech (II)

No.	Study	Topic	Main Findings
11	McKinsey (2013) – Agents of the Future: The Evolution of Property and Casualty Insurance Distribution	Role of local agents in the insurance distribution of the future	Relationship between customer, agent and carrier will change. Interaction will take place across multiple channels, carriers will increase direct interaction, agents will receive compensation only for unique value.
12	McKinsey (2016a) – Automating the Insurance Industry	Impact of automation on the insurance industry	"Over the next ten years up to 25 percent of full time positions in the insurance industry may be consolidated or replaced".
13	McKinsey (2016b) – Making Digital Strategy a Reality in Insurance	Impact of digital transformation on the insurance industry	Digitization will reshape the following business elements: products, marketing, pricing, distribution, service and claims.
14	Morgan Stanley (2015) – The Emerging Role of Ecosystems in Insurance	Digital ecosystems in insurance	The study discusses three types of ecosystems: segment of one distribution system, one-stop-shop, connected object.
15	Morgan Stanley (2016) – North America Insight Digital Disruption in Small Business Insurance	Impact of the digitization of the small business insurance sector in the U.S.	The USD 100 billion small business insurance market is facing digital disruption with a USD 25 billion opportunity to be captured. Disruption will likely be driven by InsurTech entrants.

Table 1: Extant Studies on Digitization and InsurTech (III)

No.	Study	Topic	Main Findings
16	Naylor (2016) – A Perfect Storm in Insurance	Key disrupters and their impact on the insurance industry	Insurers need to create a culture of creative failure and understand that competition is global, social engagement is vital, and creativity is essential.
17	Oliver Wyman (2016) – Zukunft von InsurTech in Deutschland: InsurTech Radar	Impact of the InsurTech movement on the German insurance industry	InsurTech is becoming a threat for insurance distribution. High potential for partnerships. Incumbents will profit in the low-cost segment and technology can be used to secure digital risks.
18	PWC (2016) – How InsurTech is Reshaping Insurance	Impact of the InsurTech movement on the insurance industry	Insurers fear losing part of their business to InsurTech startups due to margin pressure, new customer needs and deeper risk insights. Cooperation is the key.
19	Q-PERIOR (2016) – Digitale Transformation in der Versicherungsbranche	Digital transformation in the insurance industry	Promising business models are: direct insurance, comparison portals, and monitoring as a service. Important topics: service quality, distribution, channel management. Important technologies: IT security, agile project management, Big Data and predictive analytics.
20	Versicherungswirtschaft (2016) – Unbequeme Newcomer: InsurTech's mischen den Vertrieb auf	Impact of the InsurTech sector on the German insurance industry	InsurTech startups are a threat to insurance brokers. Established insurers may benefit from partnerships with InsurTech startups.

Table 1: Extant Studies on Digitization and InsurTech (IV)

No.	Study	Topic	Main Findings
21	Willis Towers Watson (2017) – How Diverse Growth Strategies Can Advance Digitization in the Insurance Industry	Impact of digitization on the insurance industry	Insurers need to have a digital strategy, visualize the future of their businesses, promote internal innovation, employ M&A to acquire technologies, monetize their data, improve margins, and adopt a digital culture.
22	World Economic Forum (2016) – The Future of Financial Infrastructure	Impact of Blockchain technology on the insurance industry	Blockchain technology could automate processing through Smart Contracts, reduce potential for fraudulent claims and improve risk assessment through historical claims information.

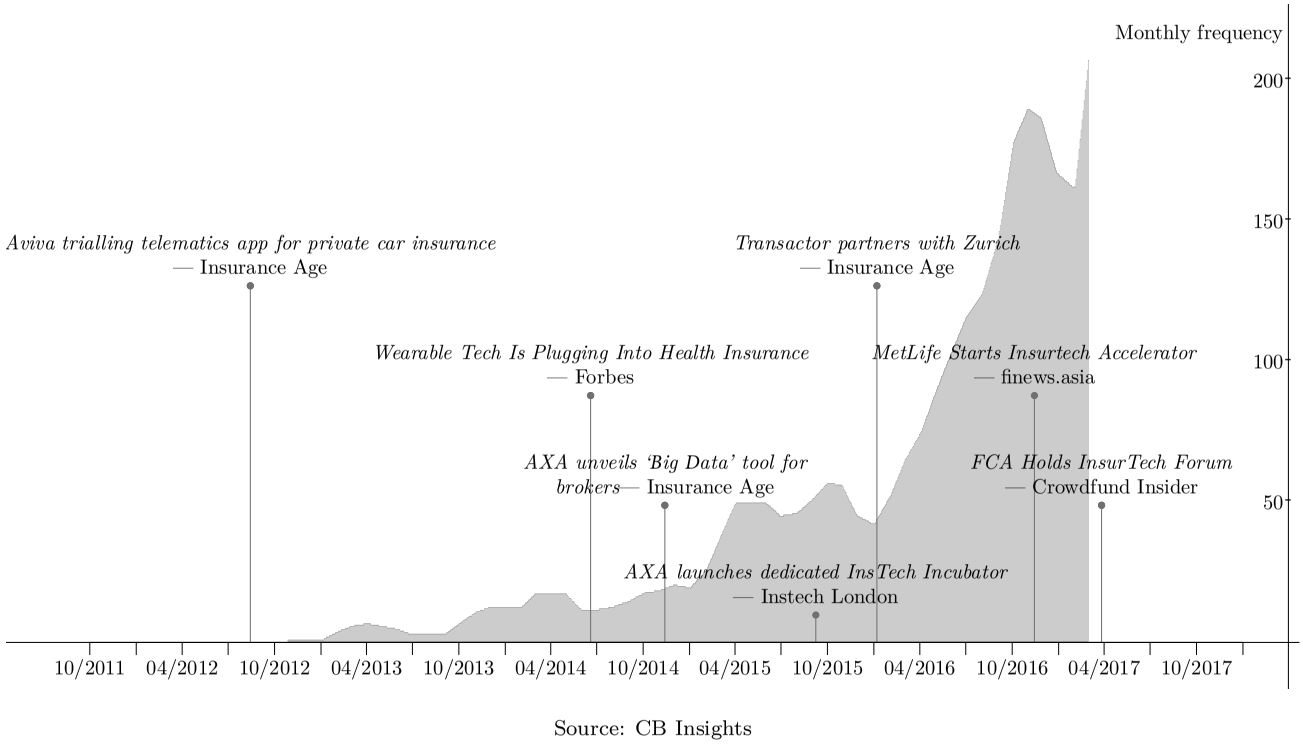
Table 1: Extant Studies on Digitization and InsurTech (V)

3 The Current InsurTech Landscape

3.1 Origin, Geographical Breakdown, and Funding

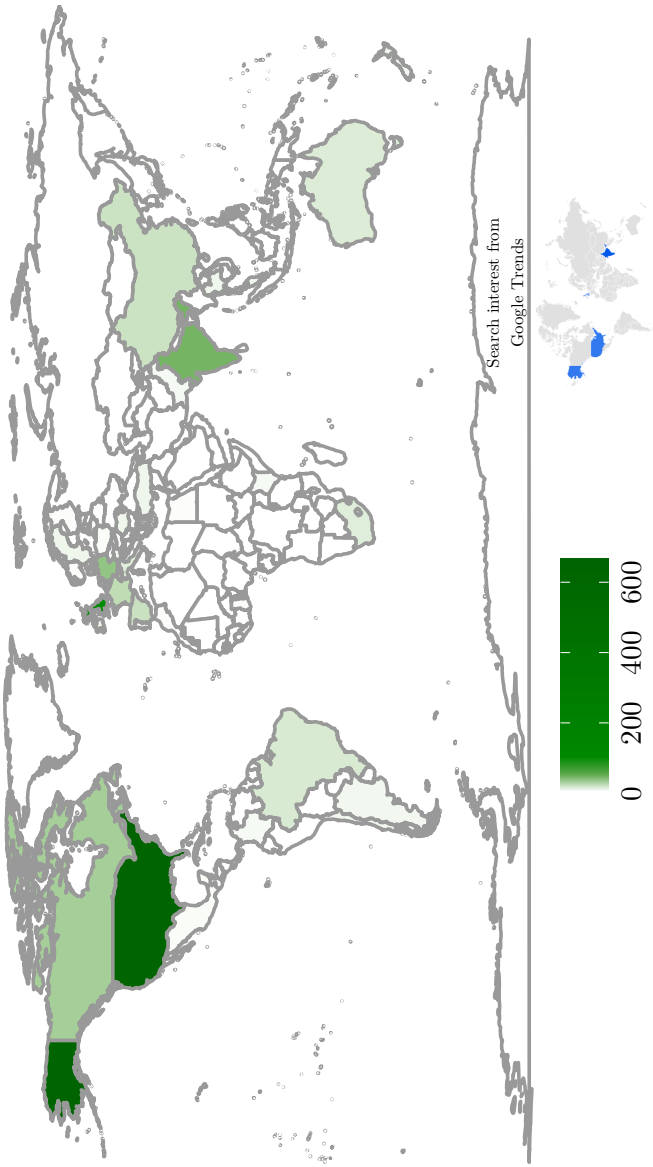
While "technology" in general has been employed in the insurance industry for decades, the term "InsurTech" did not come into use until 2011, and it truly became a buzzword only in late 2015. This can be seen in Figure 2 which illustrates the increasing coverage on InsurTech in various media channels over the past few years. Towards the end of 2015, the first global InsurTech accelerator *Startupbootcamp* was initiated in London, providing startups with funding and mentoring (Insurance Times, 2015). Throughout 2016, interest then irrevocably surged in the sector and attracted worldwide attention of insurance professionals, consultants, and private equity investors. Particularly the latter now seem to have InsurTech firmly on their radar, as a growing number of startups was able to close vital deals beyond early-stage funding. Without a doubt, InsurTech will remain a hot topic in the near future.

The following overview of the current InsurTech landscape is based on two major sources: the leading industry blog *CB Insights* and the database of *Venture Scanner*, a tech research firm in San Francisco. All information was last updated on April 10, 2017. Our sample contains 824 funding events and profiles of 1,180 InsurTech companies from 60 countries, the majority of which are startups according to size (no. of employees below 50) and age (established after 2010). As illustrated by Figure 3, the U.S. quickly established itself as the industry hotspot, accounting for the lion's share of the global InsurTech landscape (658 firms), followed by the United Kingdom (83 firms), India (43 firms), and Germany (34 firms). According to Figure 4, InsurTech activity within the U.S. is concentrated in California (165 firms), New York (78 firms), Illinois (43 firms), and Texas (41 firms). Unsurprisingly, Google Trends shows a high search interest for the key words "insurance technology" and "InsurTech" in these countries and states over the past five years.



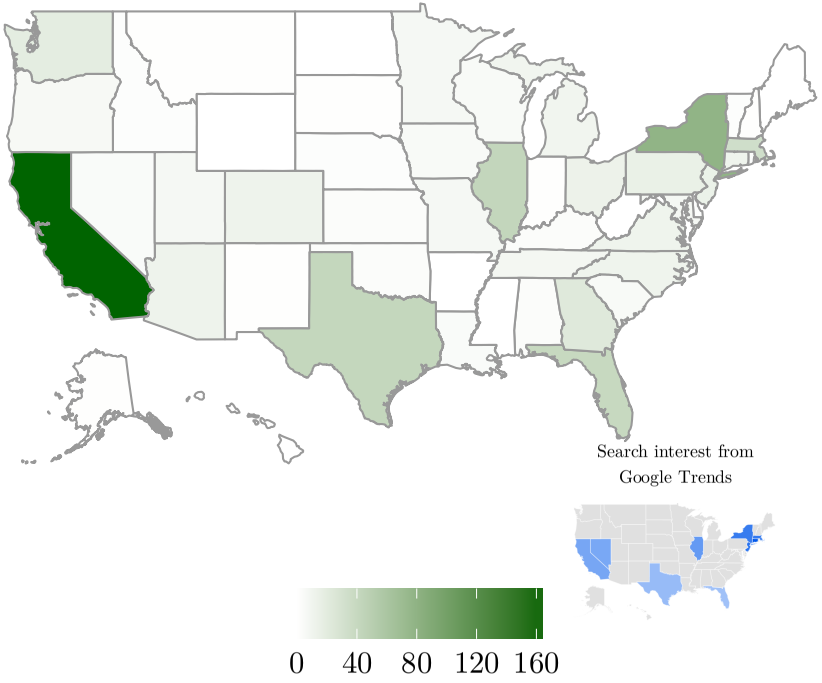
Source: CB Insights

Figure 2: InsurTech in the Media



Source of Data: *Venture Scanner* (extracted on April 10, 2017)

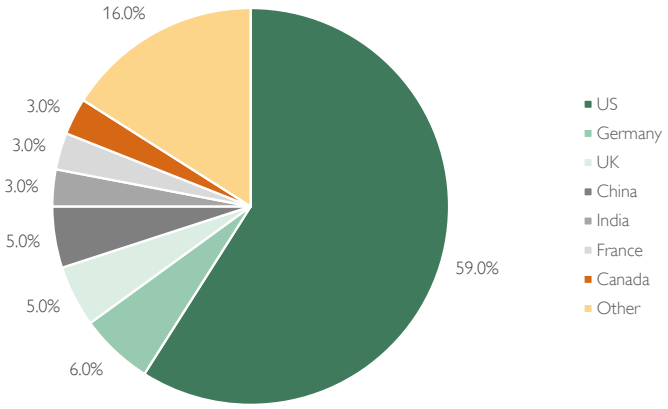
Figure 3: Distribution of InsurTech Firms Worldwide



Source of Data: *Venture Scanner* (extracted on April 10, 2017)

Figure 4: Distribution of InsurTech Firms in the United States

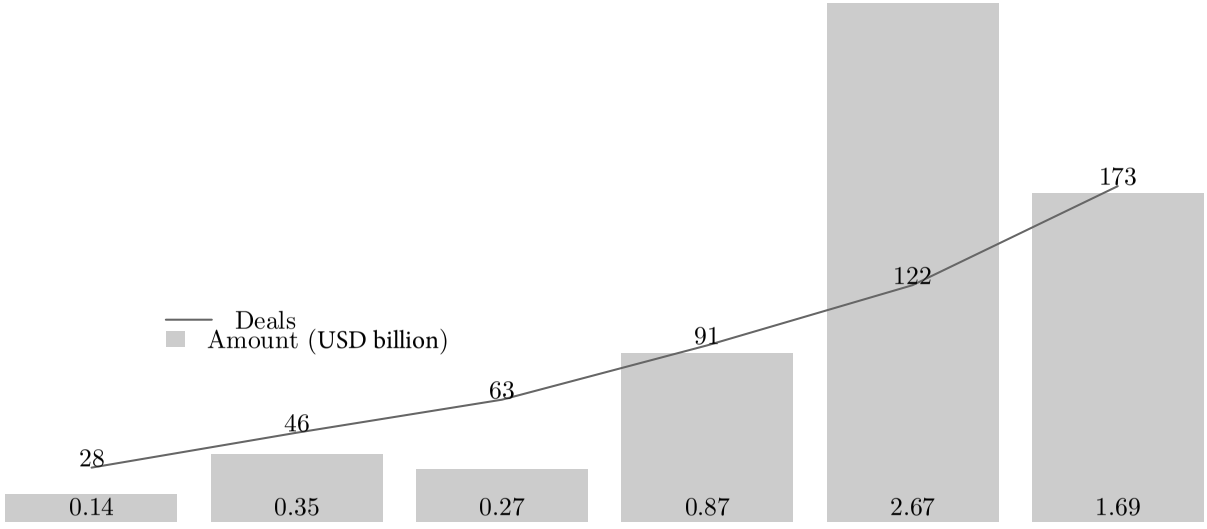
InsurTech funding activity adheres to a similar geographical pattern. In 2016, the majority of deals (59 percent) occurred in the U.S. (see Figure 5). Germany (6 percent) came in second, just slightly ahead of the United Kingdom and China (both 5 percent). The total annual volume has continued its positive trend since 2011, reaching USD 1.69 billion in 2016 and thus exceeding the USD 1 billion mark for the second year in a row (see Figure 6).[1] Moreover, the number of deals peaked at 173, which constitutes a 42 percent rise relative to 2015. Two thirds of them took place at the early stage, comprising seed capital and Series A. In terms of volume, early-stage funding increased by 47 percent year over year to hit USD 508 million. Despite this clear early-stage focus, activity in later rounds is beginning to pick up, too (see Figure 8). Lists of the largest InsurTech financing deals in 2016 and the top investors since 2011 can be found in Tables 2 and 3.



Source: CB Insights (2017a)

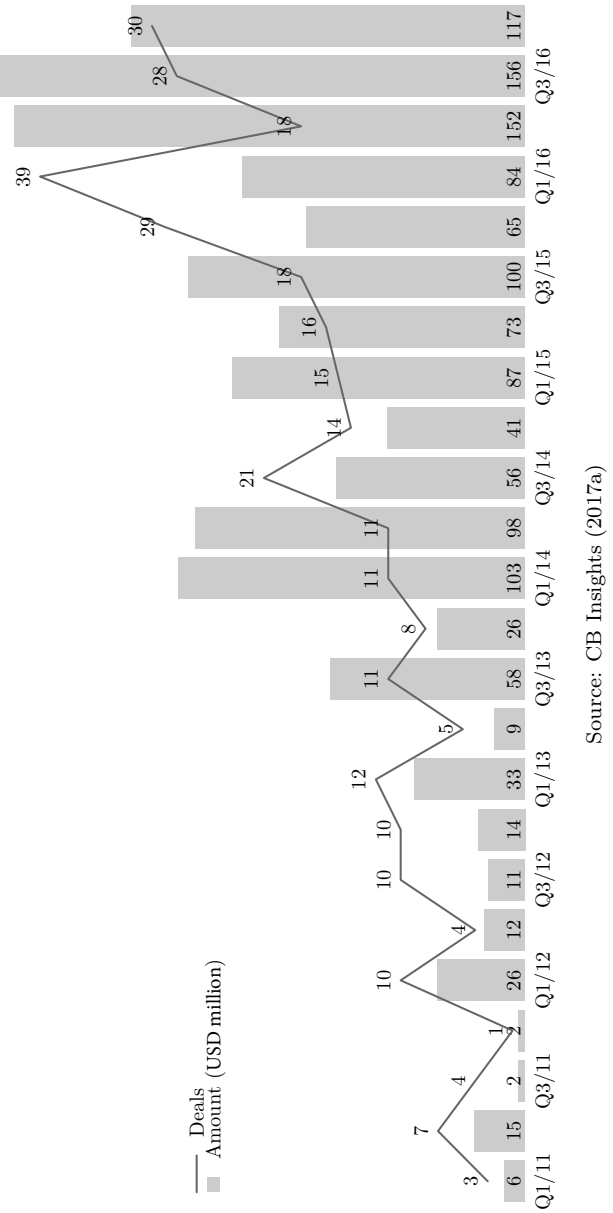
Figure 5: Geographical Breakdown of InsurTech Deals in 2016

[1]Note that the 2015 volume is inflated by USD 1.43 billion from two extremely large deals involving *Zenefits*, an HR software firm from the U.S., and *Zhong An*, a digital insurer from China backed by the internet giants *Tencent* and *Alibaba*.



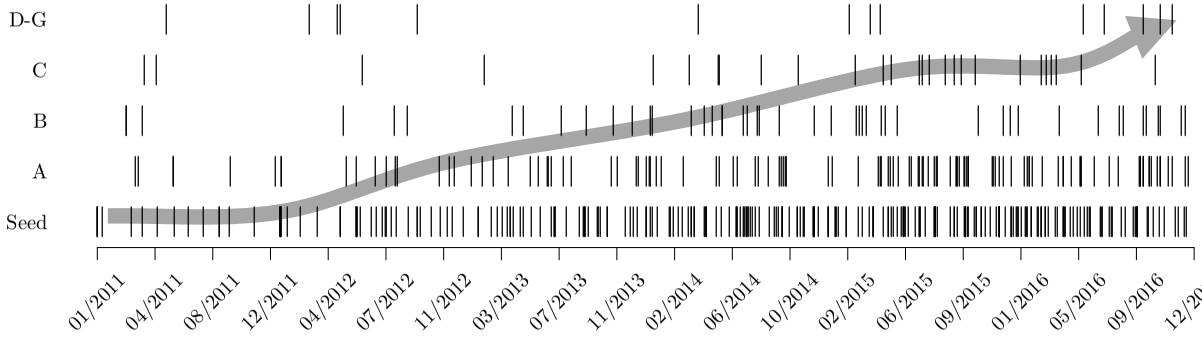
Source: CB Insights (2017a)

Figure 6: InsurTech Financing Statistics 2011–2016



Source: CB Insights (2017a)

Figure 7: Early-Stage InsurTech Financing Statistics 2011–2016



Source of Data: *Venture Scanner* (extracted on April 10, 2017)

Figure 8: Overview of InsurTech Funding Rounds 2011–2016

Startup	Description	Select Round Investors	Amount ($M)	Date
Oscar Health	Tech-enabled health insurance carrier	Fidelity Investments; Founders Fund; General Catalyst Partners; Goldman Sachs; Google Capital; Horizons Ventures; Wellington Management; Khosla Ventures	400	06/2016
Clover Health	Data-driven health insurance startup	Greenoaks Capital Management; First Round Capital; Wildcat Venture Partners; Sequoia Capital; Soical Capital; AME Cloud Ventures	160	05/2016
Metromile	Per-mile car insurance	NEA; Index Ventures; Intact; Mitsui & Co.; SV Angel; First Round Capital David Friedberg	103	02/2016
Bright Health	Data-driven health insurance startup	New Enterprise Associates; Flare Capital Partners; Bessemer Venture Partners	80	04/2016
Decisely	Small business HR and benefits platform	Two Sigma Private Investments; EPIC Insurance Brokers	60	03/2016
Namely	HR and benefits platform	Altimeter Capital; Four Rivers Group; Greenspring Associates	50	01/2017
Metromile	Per mile car insurance	China Pacific Insurance	50	09/2016
Cyence	Economic cyber risk modeling	NEA; IVP; Dowling Capital Partners	40	09/2016
Lemonade	Online insurance carrier offering homeowners and renters insurance	General Catalyst; Thrive Capital; GV; Sequoia Capital Israel; XL Innovate; Aleph	34	12/2016
Justworks	Payroll, benefits, and compliance services	Bain Capital Ventures; Index Ventures; Redpoint Ventures; Thrive Capital	33	03/2016

Source: CB Insights (2017b)

Table 2: Top Ten InsurTech Financing Deals Q1/2016–Q1/2017

Investor	# Investments	Invested Companies
500 Startups	19	Allay; BenRevo; BetterView; Claim Di; Cybewrite; Embroker; Givesurance; iMoney Group; Indio; INZMO; IsItUp Dotcom; kin.; PolicyPal; Snapsheet; TaCerto.com; Traity; UpGuard; VisionX; WorldCover
Y Combinator	10	Airware; Cover; HealthSherpa; HoneyInsured; Leaky; Ledger Investing; SimplyInsured; WorldCover; Zen99; Zenefits
Startupbootcamp	9	Bike-ID; ClaimSync; CoVi Analytics; FitSense; Insly; massUp; Quantifyle; RightIndem; SPIXII
Global Insurance Accelerator	7	ClinicNote; Drive Spotter; MotionsCloud; Pablow; Serious Social Media; Tyche; WeSavvy
New Enterprise Associates	7	Bright Health; Collective Health; Cyence; Indio; Metromile; Stride; The Climate Corporation
First Round	6	Airware; Clover Health; Metromile; Sherpaa; The Climate Corporation; Zendrive
GV	6	Airware; Collective Health; Lemonade; Oration; SecurityScorecard; The Climate Corporation
Horizons Ventures	6	Friendsurance; Hippo Insurance; Oscar; Slice Labs; Traity; wefox (formerly FinanceFox)
MassMutual Ventures	6	Apliant; Insurify; Ledger Investing; Limelight Health; One; PolicyGenius
Rock Health	6	Beam Dental; Benefitter; Cake Health; Collective Health; Lumity; Stride
StartUp Health	6	BioClaim; Cake Health; Hindsait; Inbox Health; Maxwell Health; Wellthie
SV Angel	6	Jetty; Metromile; Sherpaa; The Climate Corporation; Zen99; Zenefits
Bain Capital Ventures	5	Apixio; Enservio; Justworks; Liazon; TrueMotion
Blueprint Health	5	CredSimple; GroupHub; Healthy Bytes; iMedicare; RxData
Route 66 Ventures	5	Bunker; CoverHound; Knip; QuanTemplate; Simplesurance GmbH
Sequoia Capital	5	BankBazaar.com; Clover Health; joyowo.com; Lemonade; SecurityScorecard

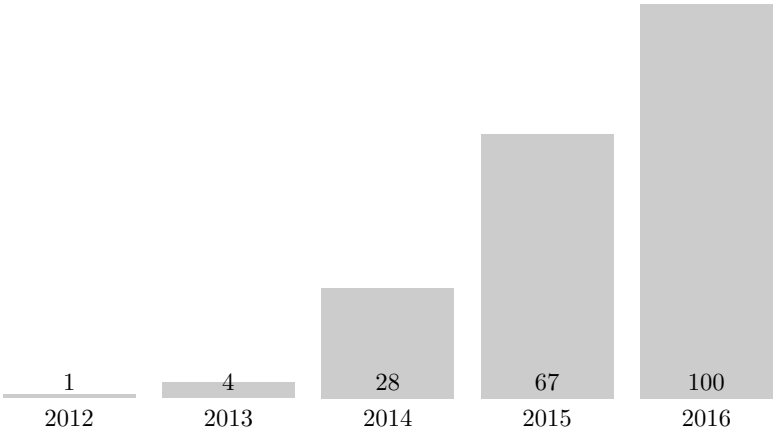
Source of Data: *Venture Scanner* (extracted on April 10, 2017)

Table 3: Top InsurTech Investors by Number of Investments

3.2 Activities by Traditional (Re)Insurance Companies

Apart from generalist private equity firms, an increasing number of traditional insurance and reinsurance companies has begun to strategically invest in InsurTech startups in the last two years. For this purpose, most of them have founded their own corporate venture capital arms. Figure 9 illustrates that the number of private tech deals by insurers and reinsurers rose to 100 in 2016, which implies a growth rate of 49 percent year over year and more than 250 percent compared to 2014. In line with this increase, the range of countries in which investments are conducted broadened substantially between 2013–2014 and 2015–2016 (see Figure 10). Although 64 percent of the deals still go to U.S. startups, France (11 percent), China (10 percent), and the United Kingdom (6 percent) are now notable target countries as well. In contrast to the numbers for the overall market shown in Figure 7, Seed Capital and Series A account for slightly less than half of the 2016 activity by insurers and reinsurers. Although the set of startups considered for investment has been quite broad, digital distribution channels such as *Embroker* and *Cover Hound* as well as IoT firms such as *Notion* or *Helium Systems* are clear focus areas (see Figure 11).

Apart from outright investments in startups, insurers and reinsurers, ranging from *AXA* and *Allianz* to *Munich Re* and *Swiss Re*, have attempted to keep pace by setting up accelerators and incubators (see Table 4) or entering partnerships with InsurTech startups (see Table 5). *Munich Re*, for instance, has established a "Digital Partners Program" through which it provides underwriting capacity to the on-demand insurance platforms *trōv* and *Slice*. At the same time, it supports the digital property-casualty insurer *Lemonade* with reinsurance coverage (see Figure 12). Similarly, *Swiss Re* is involved in the London-based accelerator *Startupbootcamp InsurTech*. Such strategic initiatives highlight the fact that incumbents have begun to consider tech startups as an integral part of their own digitization strategies.



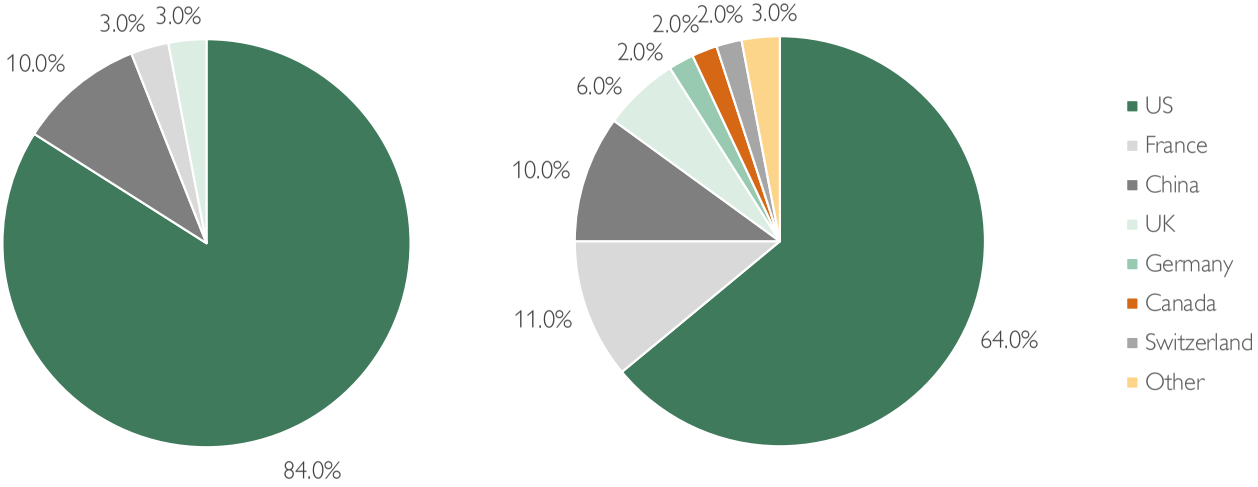
Source: CB Insights (2017c)

Figure 9: Number of Tech Investments by (Re)Insurers

Company Name	City	Year Est.
Allianz Digital Accelerator	Munich	2013
Aviva Digital Garage	London and Singapore	2015
Global Insurance Accelerator	Des Moines	2014
AXA Kamet	Paris	2016
Open Innovation Lab	Paris	2015
Plug and Play	Silicon Valley	2016
Startupbootcamp InsurTech	London	2015
Swiss Re InsurTech Accelerator	Bangalore	2016
Y Combinator	Mountain View	2013

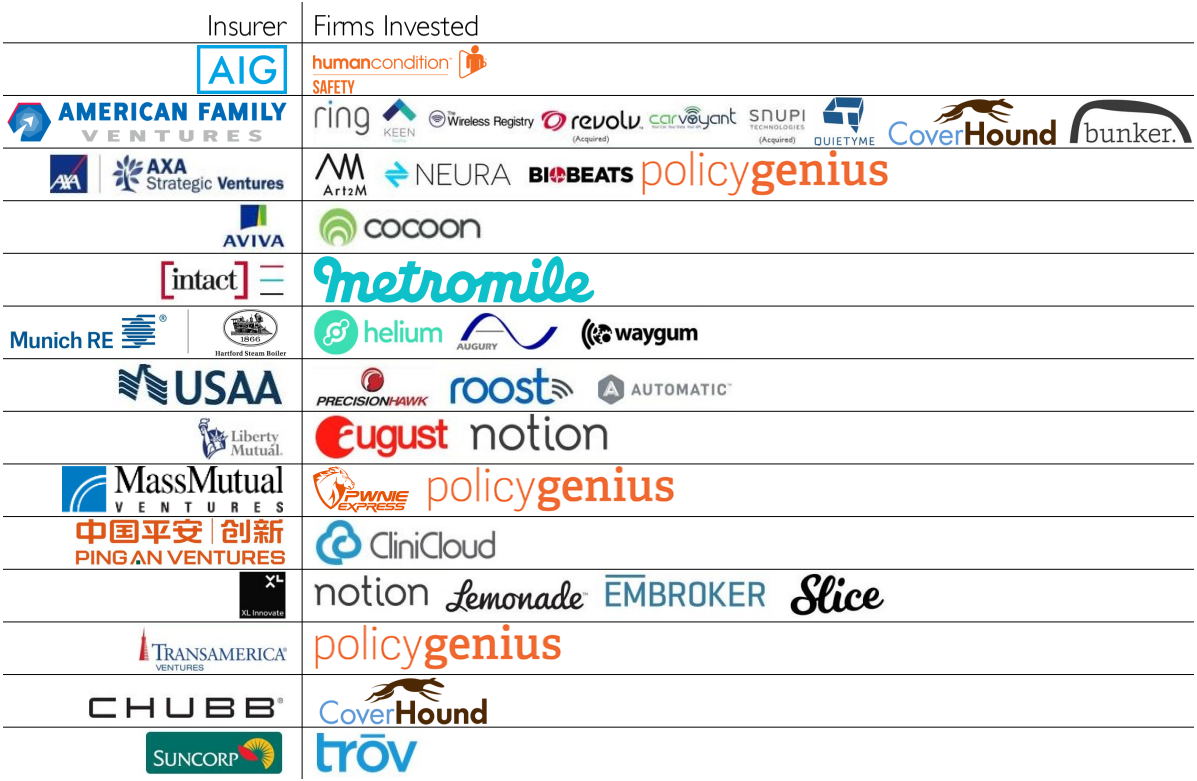
Source: Cambosu (2016)

Table 4: Major InsurTech Incubators and Accelerators



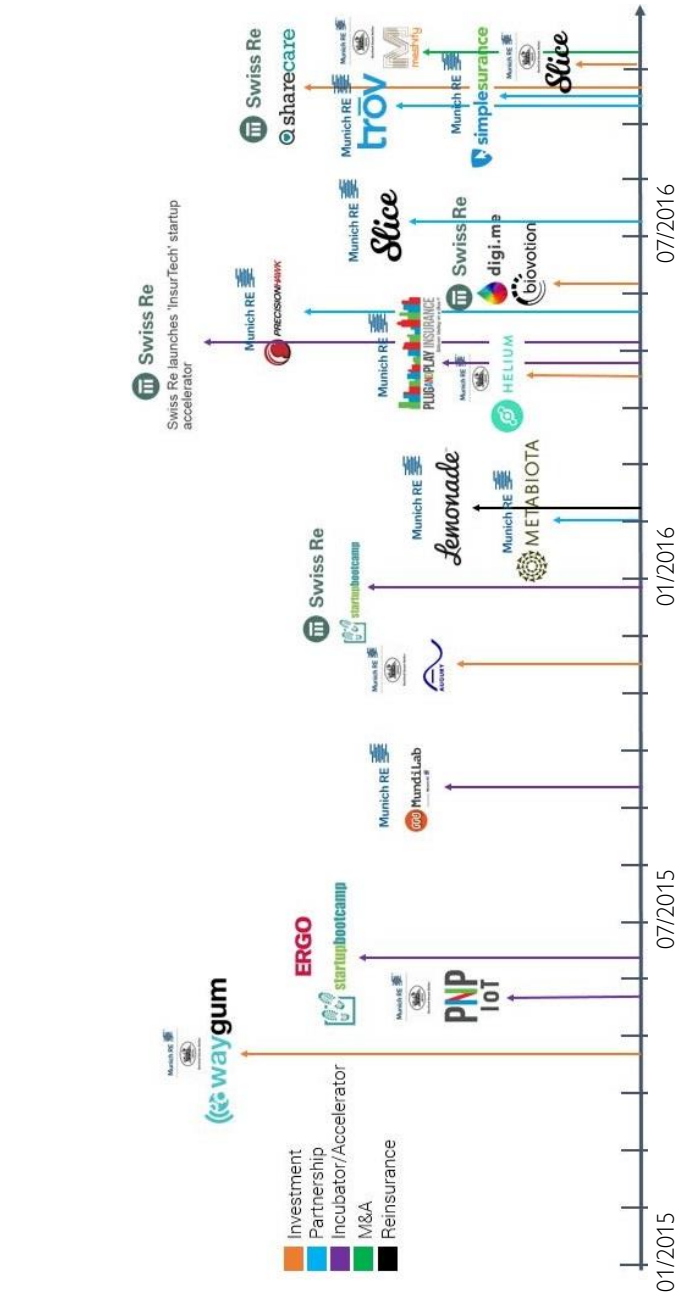
Source: CB Insights (2017c)

Figure 10: Tech Investments of (Re)Insurers by Geography



Source: CB Insights (2017a)

Figure 11: Exemplary Insurer Investments in InsurTech Startups



Source: CB Insights (2016)

Figure 12: Startup and Accelerator Moves by Munich Re and Swiss Re

Date	Startup	Partner Insurer
03/2017	Modiface	Dai-chi Life
03/2017	Roost	Desjardins
03/2017	Openbay	State Farm
03/2017	Human Longevity	MassMutual
03/2017	Hibob	Aviva
02/2017	Lyft	CSAA
02/2017	TrueMotion	American Family
02/2017	Bought By Many	Munich Re
02/2017	Automatic	American Family
02/2017	Drone Racing League	Allianz
02/2017	Qualia Labs	Stewart
01/2017	Sure	Nationwide
01/2017	Next Insurance	Markel
01/2017	Fabric	Vantis, RGA
12/2016	Next Insurance	Munich Re
11/2016	Nuzzle	Embrace Pet Insurance
11/2016	Wrisk	Munich Re
11/2016	Blink Innovations	Munich Re
11/2016	SoFi	Protective Life
10/2016	N26	Allianz
10/2016	Ladder	Hannover Re
10/2016	Bitsight	AXIS Capital
10/2016	So-sure	Munich Re
10/2016	League	RBC Insurance
09/2016	Simplesurance	Munich Re
09/2016	trōv	Munich Re
08/2016	Indico Data Solutions	John Hancock
08/2016	Cocoon	Zurich
07/2016	Ant Financial	AXA
07/2016	Gravie	Securian
07/2016	Slice Labs	Munich Re
04/2016	trōv	Suncorp, AXA
05/2016	Grab	AXA
07/2016	Canary	Liberty Mutual
06/2016	Openbay	Allstate
05/2016	August Home	Liberty Mutual
05/2016	PrecisionHawk	Munich Re
03/2016	Airware	State Farm
03/2016	Student Loan Genius	Prudential
03/2016	Ola	Bajaj Allianz
03/2016	Roostify	Genworth
03/2016	Carma	Assurant
03/2016	Understory	Amica Mutual Insurance

Source: CB Insights (2017b)

Table 5: Recent InsurTech Partnerships of (Re)Insurers

3.3 Existing InsurTech Taxonomies and Their Shortcomings

Due to its rapid development and global reach, the current InsurTech landscape has become vast, heterogeneous, and opaque. As illustrated above, the number of startups still continues to grow and, depending on the source of the estimate, is about to exceed the magical mark of 1000 worldwide. Moreover, InsurTech activity does by no means exclusively concentrate on an isolated part of the insurance value chain. Instead, almost all stages of the incumbents' ecosystem are being targeted. For these reasons, several attempts to facilitate the navigation of the space have been made. Most available concepts are unidimensional in the sense that they assign the startups to more or less meaningful classes. A key problem in this regard is the discriminatory power of the taxonomy. Unfortunately, many practical examples show that the boundaries between many existing categories are not clear cut. This complicates the screening of the InsurTech landscape considerably.

One of the first classifications has been provided by *Startupbootcamp InsurTech (2015)*. They argue that technology is likely to have the most significant impact on the following seven categories (see Figure 13): (i) customer engagement, (ii) regulation & the law, (iii) wealth management, (iv) data & analytics, (v) information security, (vi) health, and (vii) IoT. Despite its appeal at first glance, this classification is fuzzy, since many firms operate in two or more of the suggested segments. A startup that offers software for health insurance, for instance, could either be assigned to category (iv) or (vi) while wearables belong to category (vii) but are mainly used by risk carriers in category (vi).

The so-called InsurTech map of *Venture Scanner (2016)*, on the other hand, comprises 14 different startup groups that range from automotive to reinsurance (see Figure 14). Yet, similar to *Startupbootcamp InsurTech (2015)*, this classification lacks discriminatory power and might be even misleading for some companies. The U.S. startup *Metromile*, a

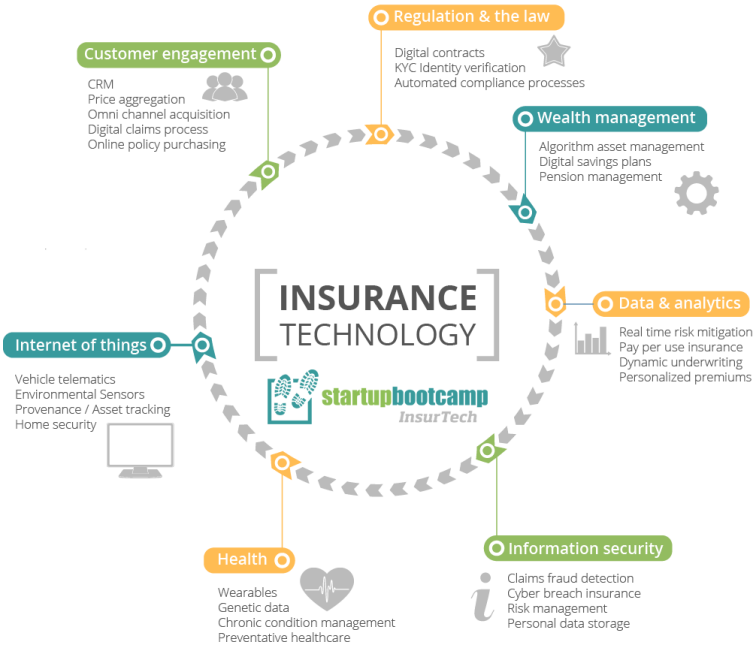


Figure 13: The InsurTech Classification Scheme by *Startupbootcamp*

pay-per-use car insurance provider, for instance, is allocated to the automotive category while the on-demand product insurance mobile app of *trōv* is grouped into the product insurance category. To begin with, such a categorization seems intuitive and can be easily justified. Upon a closer look, however, it is apparent that the business model of both providers is based on the same idea. That is, offering insurance coverage for the desired period of time or a selected number of miles that stands in clear contrast to traditional flat rate insurance contracts.

Finally, *CB Insights (2015)* constructed a periodic table of InsurTech firms with a total of eight categories (see Figure 15): (i) healthcare, (ii) automobile/P&C insurance, (iii) life insurance, (iv) peer-to-peer insurance, (v) small business, (vi) insurance software, (vii) product insurance as well as (viii) mobile insurance. Again, several startups fit into more than one category and thus the classification remains arbitrary. One such example is the healthcare bracket that comprises both *Oscar* and *Zenefits*. While the former is indeed a digital health insurance company, the latter provides a free-to-use software platform for human resources management. It also happens to include functionalities related to group health insurance. Hence, there exist significant differences between these two firms. The business model of *Oscar* exhibits much more similarity to the one of *Haven Life*, a fully digital insurer focusing on term life insurance. *Zenefits*, on the other hand, would better match a category for insurance software providers.

To sum up, although several classification schemes for InsurTech startups already exist, none of them is precise enough for a reliable differentiation of the extensive, confusing, and fast-moving InsurTech landscape. Ultimately, an exclusive focus on products, insurance lines, or technologies rarely captures the core characteristics of a business. In order to address this issue, we aim to introduce a clear-cut taxonomy of InsurTech startups that gives full consideration to their business models.

Figure 14: The InsurTech Classification Scheme by *Venture Scanner*

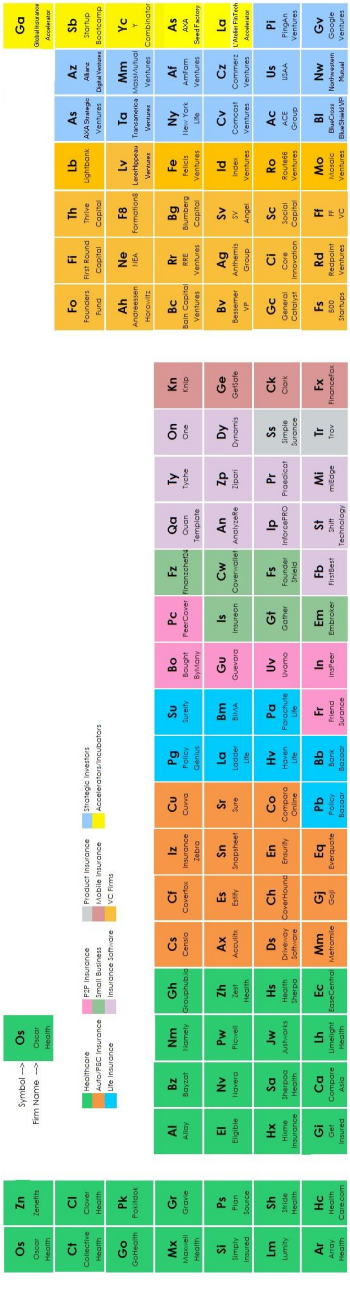


Figure 15: The InsurTech Classification Scheme by *CB Insights*

4 Navigating the InsurTech Landscape

In this chapter, we will present an InsurTech taxonomy, which captures all relevant characteristics of the current startup landscape based on the three dimensions "InsurTech categories", "business model patterns", and "roles in the insurance ecosystem". Before introducing our new classification scheme, however, we provide a brief introduction to the "St. Gallen Business Model Navigator (BMN)", an academically-grounded methodology that allows us to identify business models based on their key dimensions (Section 4.1). We then move on to distinguish between a total of nine InsurTech categories (Section 4.2). The latter have been chosen so as to adequately reflect the purpose of the company, while, at the same time, naturally linking up with the other two dimensions of our taxonomy. In the next step, we assign the business model patterns from the BMN to the nine InsurTech categories (Section 4.3). Each of the former will be introduced by means of a one pager, containing a brief description as well as examples of general innovators and InsurTech adopters. Finally, we locate the startups in the broader insurance industry ecosystem (Section 4.4) and identify directions for the future evolution of the sector (Section 4.5).[2]

4.1 An Introduction to the Business Model Navigator

Why Draw on the Business Model Navigator?

The BMN will serve as the theoretical foundation for the analysis in this chapter. According to its authors, "*the BMN is an action-oriented methodology that permits any company to break with its dominant industry logic and innovate its business model.*" (see Gassmann et al., 2014). The BMN relies on the dimensions **who-what-how-why** (see next subsection) and identifies a total of 55 business model patterns, which can be observed in successful companies across all countries and industries. Based on their research, the authors of the BMN gained the fundamental

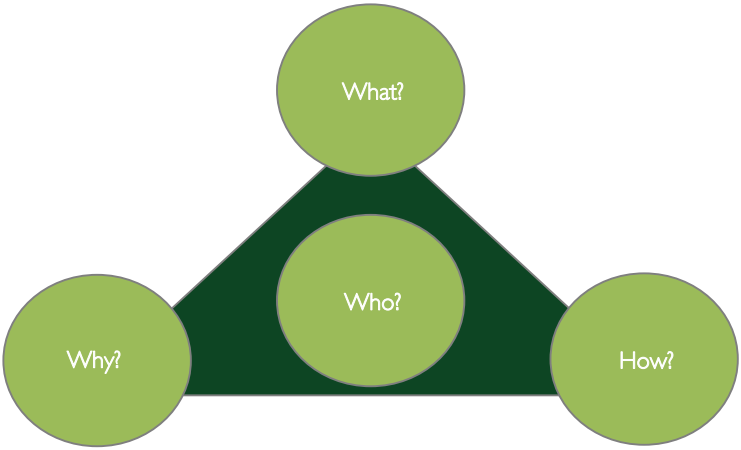
[2] "Industry value chain" and "insurance ecosystem" will be used interchangeably.

insight that success is, to a large extent, driven by innovative recombinations of business model patterns. Put differently, taking advantage of the paths already explored by other firms in other industries is likely to be more fruitful than starting all over again and investing a substantially higher amount of time and many more resources. Combinations of the 55 patterns are able to explain approximately 90 percent of the business models of successful companies today. Thus, the BMN forms an optimal vantage point to screen the current InsurTech landscape and to assess whether and how the business models of startups differ from those of incumbents.

The Four Dimensions of a Business Model

Although executives use the term "business model" on a regular basis, several different interpretations of its actual meaning exist. This often results in discussions that are hardly expedient. To avoid this problem, we now introduce a common definition based on the four dimensions that characterize a business model according to the BMN. Since each dimension can be easily determined by answering a simple question, this overall characterization is applicable to every company independent of its country of origin and industry. Together, the four dimensions form the so-called "magic triangle of a business model" that is shown in Figure 16 (see Gassmann et al., 2014).

The first dimension answers the question: **who** are the company's target **customers**? As shown in Figure 16, the latter can be found at the core of the business model triangle, since they are of utmost importance for every firm. Managers need a clear understanding of which customer segments they want to address with their products and services and which ones are of lesser importance. The products and services themselves are covered by the second dimension that represents the **value proposition**: **what** does the company offer to its customers? Needs and demands of the target customers should be served in a way that



Source: Gassmann et al. (2014)

Figure 16: The Four Business Model Dimensions

generates a high degree of satisfaction among them. A well-targeted product range strengthens customer retention that, in turn, is a central precondition of future success. Furthermore, the third dimension relates to the **value chain**: **how** does the company produce its offerings? It determines the way the company's products and services are put into effect and thus comprises all processes and activities in combination with the associated resources and capabilities. Finally, the fourth dimension is represented by the **profit mechanism**. It answers the central question: **why** does the business model allow the company to make money. Consequently, it comprises cost structure, revenue streams, and all related aspects. Representing all four dimensions in a triangle visualizes that an adjustment in one corner inevitably affects the other dimensions as well. The **who-what** questions generally deal with external facets, while **how** and **why** address internal elements.

According to Gassmann et al. (2014), at least two dimensions need to be changed in order to achieve an actual "business model innovation".

An exclusive improvement of the value proposition or the value chain, in contrast, merely leads to a "product innovation" or a "process innovation". In addition, it should be taken into account that, for ultimate success, a business model innovation must increase the value for both the customers and the company itself. A negative example is the video platform *YouTube* that creates a huge value for its website visitors by offering clips free of charge. The latter are financed by small advertising blocks of approximately 15 seconds as well as by commercial banners. However, an answer to the question how more of the substantial customer value can be captured by the company itself, is still missing to date. Clearly, InsurTech startups may be affected by the same curse. Apart from improving policyholder experience, they also need to exhibit a sound profit-generating mechanism.

Why Business Models Drive Future Success

Across almost all industries, successful and strong companies are characterized by popular products and services, which usually have a high degree of sophistication and meet consumers' actual needs very well. However, new production technologies, the ongoing digitization, the commoditization of offerings, more stringent regulations, and the emergence of new competitors increase the margin pressure substantially and heavily impact the existing balance of power. These effects are further amplified by the "Millennials" (also known as Generation Y), who were born between the early 1980's and the late 1990's. Their preferences regarding customer journey involve completely new challenges for all market players. As a consequence, the familiar business environment of most firms is changing rapidly. This trend has also reached the insurance industry by now, and is characterized by infrequent customer relationships that are of a transactional rather than of an emotional nature.

Gassmann et al. (2014) discuss several examples of firms that played a leading role in their market over some time but then face a quick

demise. Among the most prominent examples are *Kodak*, *Nokia*, and *Blockbuster*.[3] What caused these and many other previously successful companies to fail? The intuitive answer is that they rested on the merits of the past. More specifically, instead of adapting to the new market conditions, they concentrated on their products and processes and did not want to put their "cash cows" at risk. It is indeed hard to challenge a business model despite its present success, thereby examining whether it still fits the prevailing market environment and, more importantly, future consumers' demands. Yet, numerous recent success stories can be traced back to creative business model innovations. *Apple*, for instance, did never distribute CDs, but is now the largest retailer in the music industry. *Uber*, on the other hand, does not own any vehicle, but is the largest taxi company in the world. Similarly, *Airbnb* is the world's largest accommodation provider without owning any real estate.

Challenges Involved in Business Model Innovation

There are three major challenges that companies face when striving to innovate their business models (see Gassmann et al., 2014). First, they must learn to think outside their well-established industry logic. The best managers look beyond their competitors and gather ideas from totally different industries and markets. Second, they need to realize that product and process innovations alone might no longer be sufficient for business success. Pioneering technologies, such as Internet of Things, Big Data, and Smart Contracts, are merely enabling factors that can be accessed by all firms. The central point is how their economic value is unlocked by building a sound business model around them. Third, there is a lack of tools that guides managers in their creative thinking.

[3] *Kodak*, for instance, was the dominant player in the photographic market for several decades. In 1975, the company developed the world's first digital camera. However, its management was afraid that the new product would cannibalize their offerings in the analogue photography segment, particularly the business of selling and developing films. When digital photography finally took off in the 2000's, *Kodak* went from being the global market leader to insolvency within roughly 10 years.

With regard to all three challenges, incumbents in the insurance industry are currently trailing most InsurTech startups. To break the dominant logic is particularly difficult here, since most insurance products and services have been sold in a virtually unchanged manner over decades. At the same time, it is tempting to assume that technologically-improved products will prolong the success of the past while, in reality, evolving customer behavior is quickly changing the rules of the game. Finally, we are unaware of specific management tools for the InsurTech landscape that could guide incumbents through the new market environment. We want to tackle all three issues throughout the remainder of this chapter.

Business Model Innovation in Insurance: An Example

The "pay-as-you-drive" concept for car insurance is well-suited to illustrate that competitive advantage and success of tomorrow are largely based on an innovative business model instead of a superior product or technology. Telematics devices record the driving behavior of the policyholder and submit the data to the car insurance company. By analyzing acceleration patterns, braking manoeuvres, time of day, geographic location of the route, distance traveled, etc., the insurer can calculate the premium more accurately than for traditional policies. The policyholders, in turn, are rewarded with lower premiums for safe driving behaviors. Despite the appeal of technology, the pioneering insurers in this product line struggled. Reasons brought forward include too complex programs, insufficient revenue models, and unattractive overall conditions for the customers. Today, insurance firms are offering telematics services with varying degrees of success. *UNIQA* in Austria or *Allianz Suisse*, for instance, tried to avoid the issues of some of their competitors by starting with simpler solutions that primarily focus on providing help in case of an accident. For this purpose, they installed crash sensors, help buttons, and GPS devices to locate the damaged car, all of which also have a dampening effect on the insurance premium. Customers exhibit a higher

acceptance for such telematics products, since they are transparent and do not transmit data in everyday situations.

However, the most successful telematics player so far is the UK-based InsurTech firm *insurethebox*. Founded in 2010, it integrated the available technology into an innovative business model that combines a car insurance policy with several attractive features such as a bonus program for safe driving behavior. At the beginning of the policy, each customer gets a telematics box installed into his car. The box collects information of the customer's driving style and passes it on to a personalized online account. In this portal, the customer has to state how many miles he expects to drive in the upcoming year. On that basis, the insurer then determines the required flat rate premium for the year. Given that excessive miles are not reimbursed, the customer has an incentive to report this information as precisely as possible. In the same manner, underreporting is also unattractive, since additional miles beyond the limit are more expensive than the initially requested ones. Safe driving throughout the year results in a maximum of 100 bonus miles per calendar month that are credited to the policyholder's account. These can then either be used in the same way as the prepaid ones or might allow the policyholder to get a lower premium in the following year. Thus, there is no financial reimbursement from the insurer. Instead, the bonus system is very similar to the well-known "Miles & More" program of the *Star Alliance* airlines. Furthermore, within a partner program, customers can earn additional miles if they shop items via their online platform. This business model generates a sustainable profitability for *insurethebox* while having reduced the probability of car accidents by 40 percent.

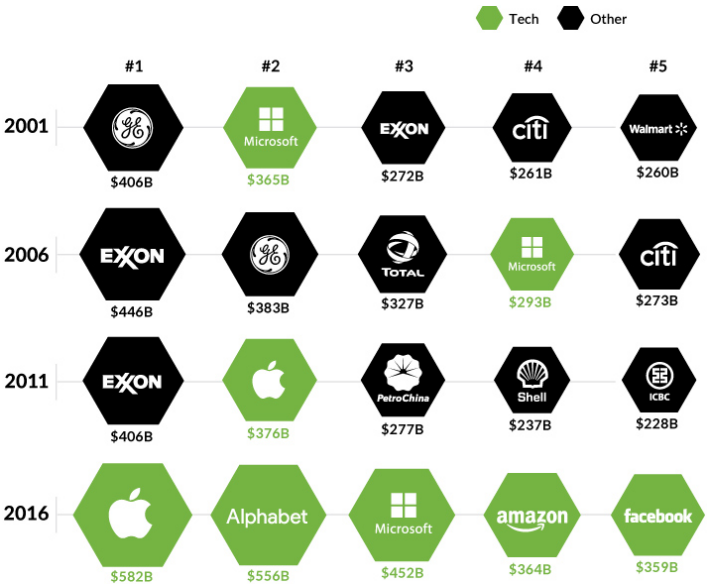
Seven Business Model Innovation Myths Revisited

Gassmann et al. (2014) discuss seven myths that tend to discourage firms from business model innovations. We briefly revisit these myths,

since they may also distract incumbents in the insurance industry from adequately reacting to the advent of the InsurTech sector. The "Initial Ascent Myth" relates to the misjudgement that every success requires a completely novel idea. In reality, however, adopting business model patterns from other industries turned out to be a viable strategy. As we will see below, this is exactly what many InsurTech startups are doing. The "Think Big Myth", on the other hand, indicates that proper innovations need to be fundamental advances. The truth is, in many cases minor adjustments open up attractive future opportunities as well. Moreover, the "Technology Myth" is centered around the illusion that every innovation needs a cutting-edge technology, allowing to construct fancy new products. However, our *insurethebox* example demonstrates that the business model and not the technological solution is what ultimately counts. The "Luck Myth" postulates that business model innovation is more down to luck than to a thoughtful approach combined with hard work. However, the exact opposite is true. A systematic approach is much more likely to be successful in the long run. The "Einstein Myth", in turn, says that only brilliant minds are able to develop innovative concepts and adjustments. Instead, by working in flexible and interdisciplinary teams, the likelihood of being successful increases dramatically. The "R&D Myth" states that innovation is impossible without a strong research and development department. However, in any modern organization of today's world, all people and divisions should have the possibility to contribute to an innovative culture.

Finally, there is the widely held misconception that significant innovations require a lot of resources (the "Size Myth"). In sharp contrast to this notion, there is no such relationship. An excellent example is the technology sector, which comprises today's five most successful and valuable firms (see Figure 17). All of the latter started with an innovative idea but very limited capital. 2001 only *Microsoft* was among the firms with the world's highest market capitalization. Today *Apple* and

Alphabet alone exhibit a combined market capitalization of USD 1.14 trillion, which equals the total value of all 30 companies that constitute the German stock market index DAX.



Source: visualcapitalist.com

Figure 17: Top Five Publicly Traded Companies by Market Cap

The Size Myth is particularly relevant for the digitization of the insurance industry and the challenges posed by InsurTech entrants. Despite being excessively well funded, the innovation capacity of many incumbents is restricted by bureaucratic organizations, stringent regulations, and legacy IT systems. InsurTech startups, on the other hand, are free of such burdens. They may well be able to compensate their capital shortages with an innovative spirit and agile culture that allow them to break the traditional industry logic and grow to fearsome competitors over time. Hence, incumbents should not make the mistake of underestimating their new neighbors because they presently exhibit the size of a speedboat instead of an aircraft carrier.

4.2 InsurTech Categories

In this section, we introduce our nine InsurTech categories, each of which is associated with at least two business model patterns and belongs to one of three higher-level groups (distribution, risk carrier, technology). The latter represent its role in the insurance ecosystem. An overview of the categories is shown in Table 6.

No.	Description	What They Offer
1	Comparison Portals	Enable online comparisons between various (insurance) product and provider types
2	Digital Brokers	Brokerage of insurance policies through web-based portals or mobile apps
3	Insurance Cross Sellers	Offer insurance as complements to products (typically at the point of sale or in an own app)
4	Peer-to-Peer Insurance	Bring together private parties for mutual insurance coverage
5	On-Demand Insurance	Offer coverage for selected periods of time
6	Digital Insurers	Offer fully digital insurance solutions that are only accessible via online channels
7	Big Data Analytics & Insurance Software	Provide software solutions
8	Internet of Things	Enable data collection via smart devices
9	Blockchain & Smart Contracts	Create solutions for a tamper-proof distributed database system for transactions

Table 6: Overview of InsurTech Categories

Category 1: Comparison Portals

The first category covers web-based *comparison portals* (or aggregators) that allow consumers to make well-informed decisions between several products and providers. Regarding insurance, motor vehicle insurance is considered to be the cash cow product for two reasons. First, the pricing depends exclusively on car characteristics and the experience of the driver, which makes it well-suited for simple online comparisons. Second, traditional contracts typically run for one year and thus are of

recurring nature with comparison frequencies reaching their peak in early November. Prominent members of this InsurTech category are shown in Figure 18, further subdivided into health, car, business, and travel insurance comparison sites as well as multi-product platforms.

In Germany and Switzerland, for instance, the most successful *comparison portals* are the respective market leaders *Check24* and *Comparis*. Besides insurance, they also allow to compare several other products such as telecommunication and mobile services, power supply, etc., which significantly increases their brand strength and business volume. Other portals focusing exclusively on insurance such as *passt24* in Germany and *Anivo* in Switzerland, on the other hand, face difficulties in reaching customers since they clearly suffer from the brand strength of the corresponding top dogs. In India, however, online *comparison portals* specializing in insurance are more successful. Both *Policybazaar* and *Coverfox* offer a full product range to their customers, comprising life, health, motor vehicle, and other insurance coverage. In contrast, several aggregators from different countries still concentrate on individual insurance lines. Examples are, among others, *SimplyInsured* and *HealthSherpa* (health insurance), *Goji* and *CoverHound* (motor vehicle insurance), *Finanzchef24* and *Insureon* (business insurance), as well as *Covomo* and *reiseversicherung.com* (travel insurance).

Category 2: Digital Brokers

Digital brokers offer insurance brokerage services by means of modern technological solutions such as online portals or mobile apps. These startups are considered to be the backbone of the first InsurTech generation and have gained a lot of attention both from the media and public. Prominent representatives are *Knip* and *Wefox* (Switzerland), *Clark* and *GetSafe* (Germany), *Worry+Peace* and *Simply Business* (UK), as well as *Coverwallet* and *Embroker* (U.S.) (see Figure 19). In addition to acting as an intermediary between customers and insurers, most providers

also offer digital insurance folders. That is, customers get a transparent overview of all insurance-related information with their mobile app. Moreover, they can get in touch with their intermediary who provides traditional insurance consulting through the digital channel. The mobile apps themselves and all services are usually free of charge for the customer. Just as traditional brokers, these startups generate their revenues from commissions paid by the insurance companies.

Category 3: Insurance Cross Sellers

Another category of InsurTech startups focuses on (product) *insurance cross-selling*. Examples can be found in Figure 19. *Simplesurance* aims to enable online shopping providers, such as *Amazon*, to sell their primary products with the appropriate insurance coverage. By using a technology-driven cross-selling platform, shop owners can increase their revenues and profits through the sale of insurance policies. Customers also benefit from this service since they can instantly buy inexpensive coverage at the point of sale without any paperwork. Another representative of this InsurTech category is *Snapsure*, which provides insurers with cross-selling opportunities. To be more specific, customers can use the mobile app in combination with their smartphone camera in order to take pictures of protectable items. Subsequently, they receive corresponding insurance quotes within seconds. In case of a bicycle, for instance, the customer gets offered a product insurance as well as an appropriate accident insurance. *massUp*, on the other hand, is active in the B2B-market for special and supplementary insurance policies. Partner companies have the flexibility to decide between white-label or shop-plugin solutions as well as a mobile app. Other *insurance cross-selling* startup firms are *Kasko*, *Virado* (Germany), and *Pablow* (U.S.).

Category 4: Peer-to-Peer Insurance

The fourth category is referred to as *peer-to-peer insurance*. There are different varieties of this startup type. In Figure 19, we have listed sev-

eral examples such as the German company *Friendsurance*. The idea of its founders was to construct private insurance pools on the basis of social networks. More specifically, friends can, for example, establish a group for their motor vehicle insurance policies. While a part of their premium payments is paid into a cash-back pool, the other part is used to buy traditional insurance coverage. If all pool members remain claimless throughout the year, everyone will receive a cash-back bonus (EUR 98.67 on average) amounting to a maximum of 40 percent of the initial premium payment. Small damages of the pool members successively reduce these bonus payments for everyone, whereas more expensive damages beyond the money in the cash-back pool are covered by an external insurance contract with a traditional risk carrier. Such an approach does not only increase customer satisfaction and loyalty through the bonus payments, it also significantly lowers the risk of moral hazard and fraudulent behavior.

Arguably the U.S. startup *Lemonade* also exhibits a peer-to-peer aspect. In contrast to *Friendsurance*, *Lemonade* does not repay the insured but donates any residual money to charity projects chosen by the customers (policyholder pools are formed accordingly). Moreover, *Lemonade* operates as a full-stack risk carrier instead of a mere distributor and is thus essentially a "digital insurer". However, through the charity donations and a fee-based revenue mechanism, it differentiates itself from the pack of startups in that category. Another peer-to-peer model is realized by the UK-based startup *Bought by Many*, which forms groups with niche interests that are currently not served by large insurance companies. If such a group reaches a critical size, the latter will become interested to offer insurance coverage (potentially even at a discount). Today, *Bought by Many* has a customer base of approximately 250,000 people and 300 groups. Additionally, it has received a funding of GBP 7.5 million from the world's largest reinsurance company *Munich Re* with the aim to offer own insurance policies in the future.

Category 5: On-Demand Insurance

On-demand insurance providers offer risk coverage for selected periods of time. That is, instead of protecting everything at any time, on-demand insurance policies allow customers to cover specific risks at particular moments. For example, travel insurance could be activated when flight tickets are bought or holidays are booked while motor vehicle insurance could be in-force when the car is used. Compared to traditional coverage, on-demand insurance is more flexible, transparent, and less costly for the policyholder. Today, several companies successfully operate in this segment by providing their services through mobile apps, with which customers can switch their coverages on and off (see Figure 19).

trōv, for instance, offers micro-duration coverage for more than 20,000 protectable items such as cameras, tablets, watches, music instruments, etc. Their app is currently available in the UK and Australia, while their US-launch is planned to be in 2017 with *Munich Re* underwriting the risk. *Sure*, on the other hand, started with on-demand coverage for air traveling. In the meantime, customers can get everyday insurance policies for their selected time horizons, which are backed by renowned insurance companies. Another example is *Slice*, which focuses on on-demand homeshare insurance products. More specifically, customers who decide to share their homes on platforms such as *Airbnb* can buy appropriate policies for their desired durations, whether it is days, hours, or even minutes. Further companies offering on-demand insurance services are *AppSichern* (Germany), *Cuvva* (UK), and *Metromile* (US).

Category 6: Digital Insurers

Digital insurers resort to latest technologies in order to digitize the whole value chain of a risk carrier, i.e. sales, underwriting, CRM, claims management, etc. In light of the digital experience customers have made in other industries, this will clearly be a mandatory step for all insurers in the long run. Compared to incumbents, however, the startups be-

longing to this category do not struggle with legacy IT systems, steep hierarchies, or conservative cultures. In contrast, they have been organized such that all requirements of the digital world with online-affine customers can be served. Again, a number of specimen of this InsurTech category are displayed in Figure 19.

One of the pioneers in this field is the U.S.-based health insurer *Oscar*, which aims to provide simple health insurance coverage to everyone. This concept has been adopted by *Ottonova* in Germany, a startup that plans to offer an improved private health insurance experience to be launched in mid 2017. Another example is *Clover* in the U.S. It delivers medical insurance for people above the age of 65. Its complex software algorithms detect patients at risk and organize the necessary medical treatment in order to avoid hospitalization. *InShared*, on the other hand, operates in the Netherlands and offers fully digital property-liability insurance policies. Its Chinese counterpart is *ZhongAn Insurance*. It was launched in 2013 and signed approximately 630 million insurance policies in the first year of operation. Further startups, characterized as *digital insurers*, are *Parachute* (U.S.), *BIMA* (Emerging Markets), and *SwissCaution* (Switzerland).

Category 7: Big Data Analytics & Insurance Software

The next category is denoted *Big Data analytics and insurance software*. Given their business model, insurers typically command comprehensive databases that can be applied to identify target customers, derive premiums, reduce claims costs, detect fraudulent behaviors, and continuously assess the company's risk situation. However, due to the sector's legacy IT systems, data is often stored in a decentralized manner. Therefore, it is difficult to easily access all relevant information and to run meaningful analyses within a very short time. InsurTech startups in this category provide solutions allowing insurers to better manage and leverage internal and external data.

Figure 18: Comparison Portals

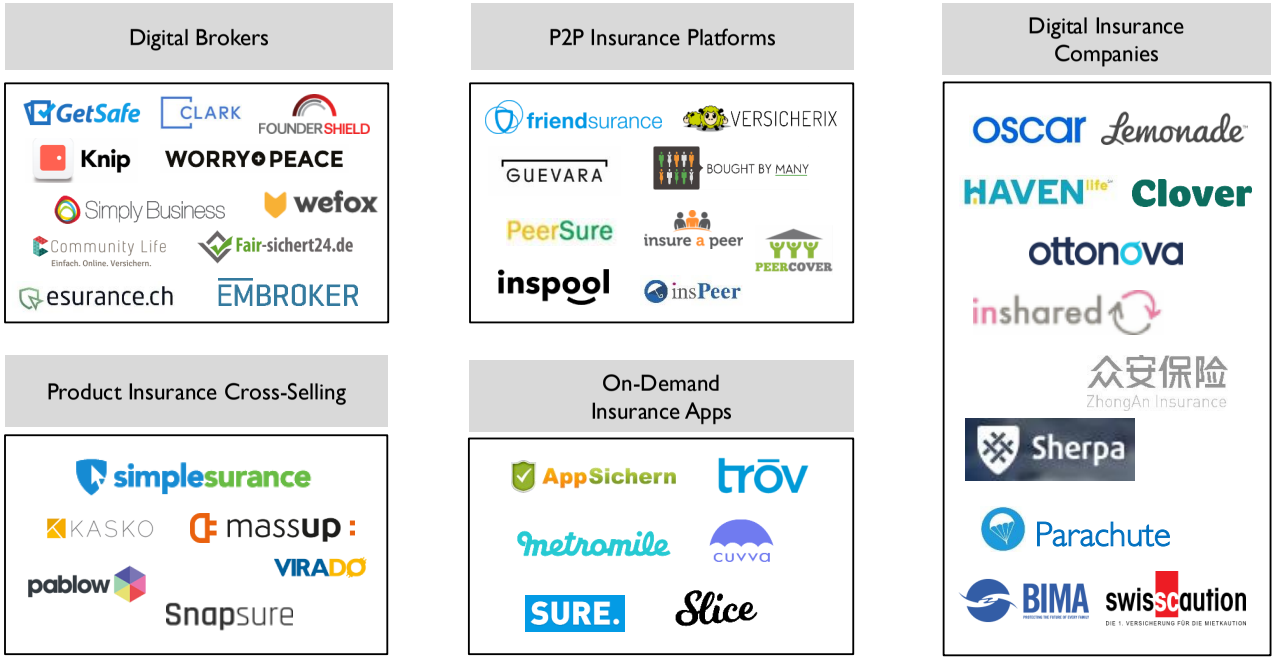


Figure 19: Digital Brokers, Cross Sellers, Peer-to-Peer Insurance, On-Demand Insurance, Digital Insurers

getmeIns, for instance, operates an analytics technology platform that facilitates personalized insurance solutions and helps to prevent insurance fraud at the point of sale but not during the claims handling. *Zenefits*, on the other hand, provides a free-to-use automated software for smaller and medium-sized firms to manage all processes related to Human Resources such as onboarding and dismissing employees, running the payroll, and administering absences due to vacations and illnesses. Moreover, its software also allows clients to purchase employee insurance that, in turn, renders traditional brokers unnecessary. Several other startups concentrate on *Big Data and predictive analytics* (see Figure 20). Among them are *Analyze Re* (Canada), *Earnix* (Israel), *FRISS* and *AdviceRobo* (Netherlands), *Logical Glue* (UK), as well as *Praedicat*, *bigML*, and *Tyche* (U.S.). Finally, startups providing *insurance software solutions* can be divided into insurance business systems (*IBA*, *Roundcube*, *Outshared*), customer experience (*Backbase*, *Insurgram*, *Picwell*), claims reporting and handling (*Snapsheet*, *Claim Di*, *RightIndem*), customer relationship management (*Finantix*, *Vlocity*, *Flexperto*), and employer benefit apps (*Gravie*, *Limelight Health*, *Easecentral*).

Category 8: Internet of Things (IoT)

Internet of Things (IoT) stands for a network of connected devices, sensors, and other objects that are able to communicate with each other via the internet. Although the companies in this category are no pure InsurTech startups in the narrow sense, their products and services are frequently discussed in the context of insurance. Four specific areas bear a great potential for insurance companies: wearables, telematics, smart home devices, and drone technology. The wristbands of *Fitbit* and *Withings*, for instance, monitor central physical functions such as heart rate and blood pressure while they are also counting the steps walked per day. Based on this information, health insurers can conduct a more accurate pricing and risk assessment for their policyholders. *Octo Telematics* is one of several startups that specializes on telematics sensors. Similar to

wearables, these sensors track the driving styles of the policyholders, i.e. distance traveled, speed, acceleration, etc. and are therefore an interesting tool for motor vehicle insurance providers. *Aerobotics* generate data for agricultural, logistical, and mining industries by means of drone technology. The pictures taken by their drones support farmers in reducing costs and increasing yields while insurers can assess the extent and costs of potential damages more effectively. Finally, smart home and household devices help users to benefit from an increased security with respect to intruders and pipe ruptures. At the same time insurers gain information on potential dangers. One of the first firms in this area is *Nest*. It produces smart thermostats and smart smoke detectors. Customers can link them via the internet to their insurer and receive a discount on their monthly premium. Further *IoT* startups are *Cocoon*, *Domotz*, and *Octo* (UK), as well as *Driveway*, *Sureify*, *TrueMotion*, and *Waygum* (U.S.) (see Figure 20).

Category 9: Blockchain & Smart Contracts

The final category covers startups offering solutions in the context of *Blockchain and Smart Contracts*. Essentially, the Blockchain is a tamper-proof distributed database system that works "trustless", i.e. without the need for a reliable central authority. As such, it enables all participants to conduct verifiable, immutable, and traceable transactions. Due to the decentralized character and the computing-intensive nature of entries into the Blockchain, manipulations are virtually impossible. *Everledger* started by offering distributed ledger technology for diamond ownership. It is now aiming to provide assistance for insurance companies with respect to reducing risk and fraudulent activities. *Sparkl* facilitates security and agility by managing the intelligent interplay among machines, applications, and other smart things. *Helperbit* is a disaster management platform. It enables commercial and private donors to decide how their donations are used. Lastly, the U.S. startup *Monax* offers a Smart Contract-enabled Blockchain node (see Figure 20).

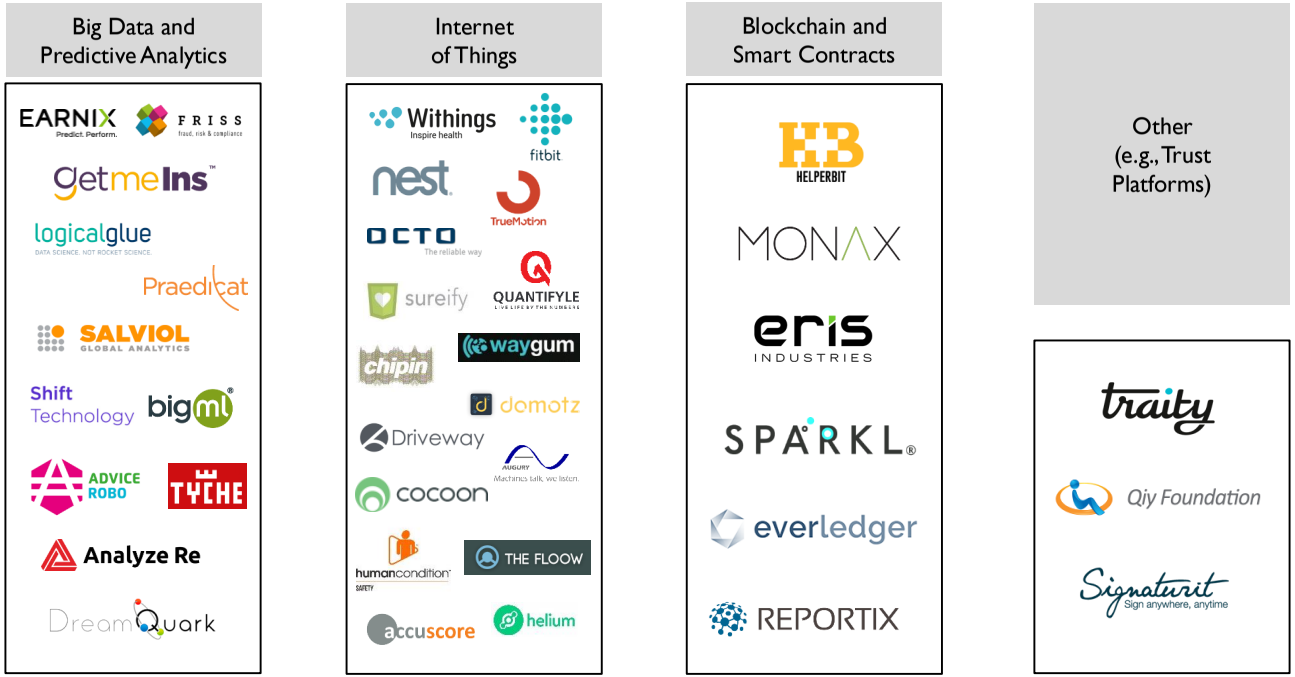


Figure 20: Big Data Analytics, Internet of Things (IoT), Blockchain & Smart Contracts

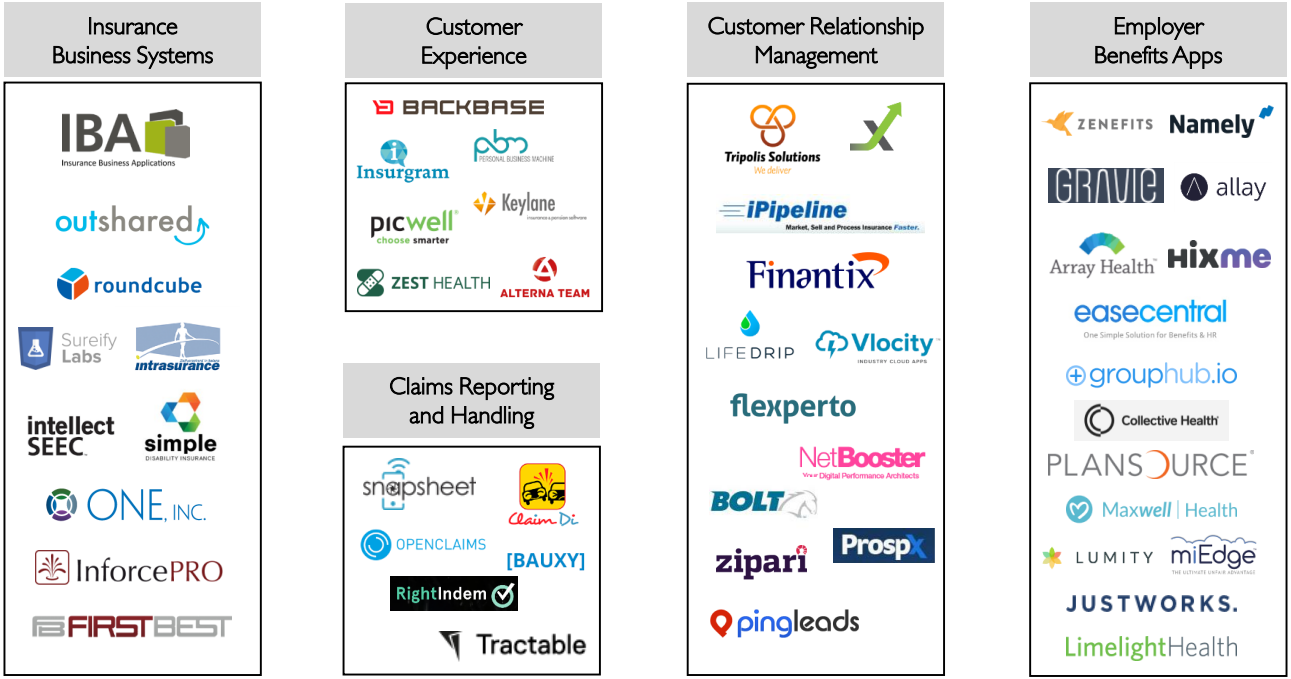


Figure 21: Insurance Software Solution Providers (1/2)

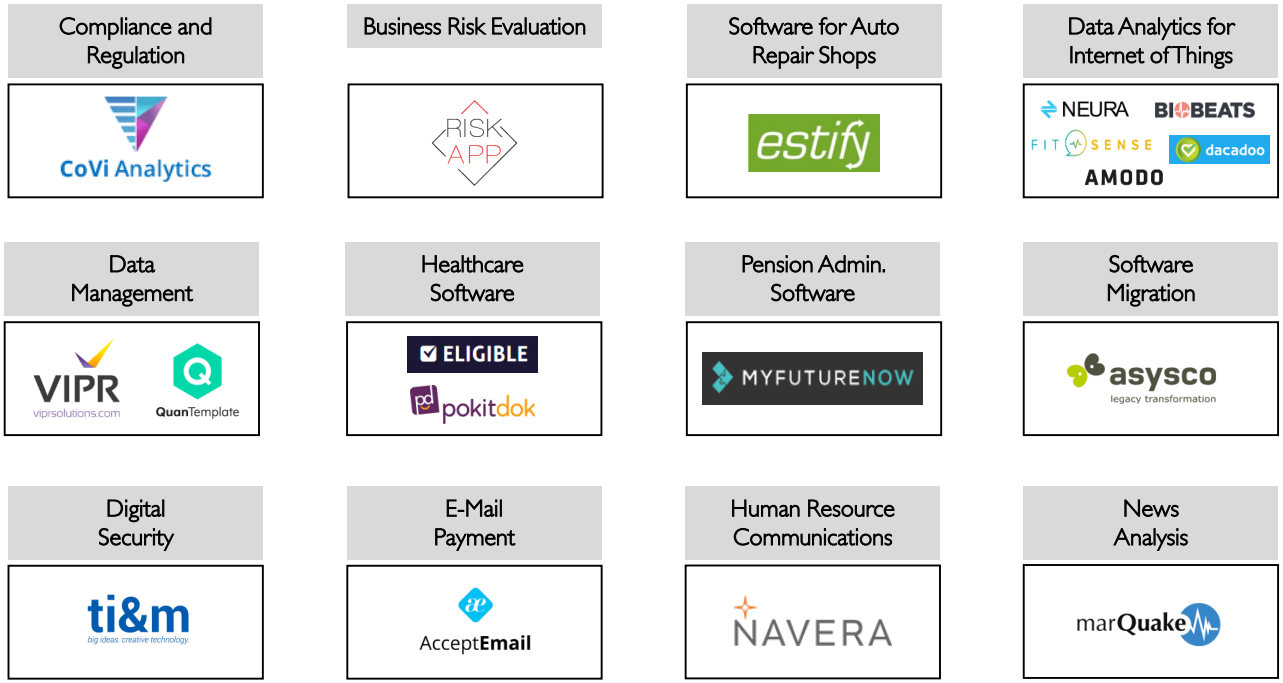


Figure 22: Insurance Software Solution Providers (2/2)

4.3 Business Model Patterns

In Figure 23, the nine InsurTech categories have been color coded according to the higher-level groups "distribution", "risk carrier", and "technology" and matched with corresponding business model patterns from the BMN as listed in the green boxes. Furthermore, each pair of InsurTech category and business model pattern is complemented with two well-known startup examples. Upon closer inspection we see that, although *comparison portals*, *digital brokers*, *insurance cross sellers*, as well as *peer-to-peer insurance* providers are all centered around the distribution of insurance products, they aim to achieve their goals by means of different business model patterns. In addition, it should be emphasized that firms in both the *peer-to-peer insurance* and the *on-demand insurance* category can either be distribution-oriented or full risk carriers. In the latter case, they may well be considered a special form of *digital insurer*, whose business model innovation goes further than simply adding "Digitization" and "E-Commerce" to the patterns "Cash Machine" and "Direct Selling" employed by traditional insurance companies. Finally, among the technology categories *Big Data analytics and insurance software*, *IoT*, as well as *Blockchain and Smart Contracts*, the most promising innovation seems to be the possibility to "Leverage Customer Data". In other words, not the software to handle the data but the data itself is likely to be a game changer.

In the following, we provide the essential background information on each business model pattern in the form of a one-pager. It comprises a short description of the BMN and an example for a general innovator as well as an adopter of the InsurTech landscape. Through our pairs of InsurTech categories and business model patterns, we generate a relatively clear-cut picture of the link between the phenotypical appearance of InsurTech startups and their actual inner workings.

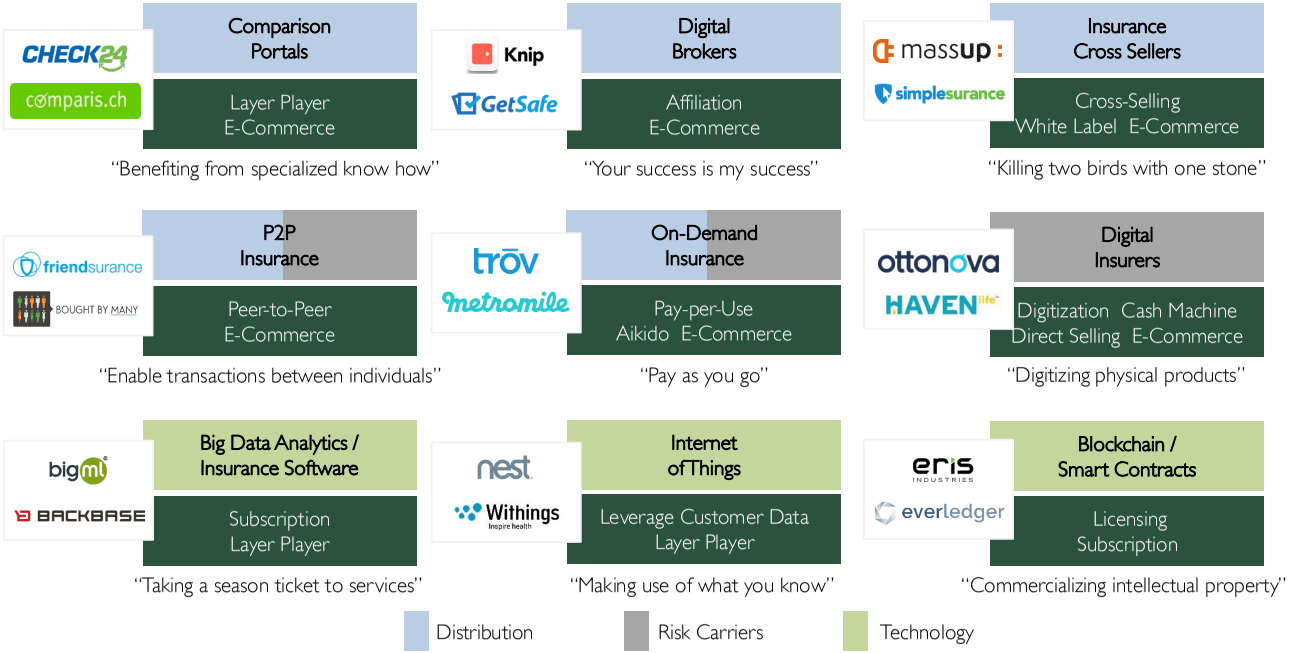


Figure 23: Business Model Patterns and InsurTech Categories

Affiliation – "*Your Success is My Success*"

1. Description and Four Business Model Dimensions

Affiliation pursues the objective to support third parties in distributing their products and benefiting from completed transactions (**what?**). The advantage for the selling company is that the affiliate helps in taking care of sales and marketing. The latter is paid a commission per sale or per transaction. Although this pattern nowadays typically appears in an online-context, its offline version essentially describes the business model of classical insurance brokers. In the online case, affiliates may also host banners on their websites in order to redirect customers to the original vendor (**how?**).

2. General Innovators

Amazon invented its "Buy from Amazon.com" button, which typically appears on websites with music or movie reviews, product test, etc. For publishing this link, the affiliate is paid a commission amounting to 4 to 10 percent of the corresponding sales turnover.

3. InsurTech Adopters

Digital Brokers

Knip and *GetSafe* are two prominent examples that adopted the "Affiliation" pattern of classical brokers and extended it with "E-Commerce".

Aikido – "*Convert Competitor's Strengths to Weaknesses*"

1. Description and Four Business Model Dimensions

Firms drawing on this business model pattern offer products and services that are completely different from the typical product standards in the market (**what?**). Such a strategy prevents a direct confrontation with competitors (**why?**). The competitors, in turn, are often surprised by the otherness of the new product since they are too focused on their own offerings. Hence, this pattern might be considered as a provocative form of product differentiation that can neither be compensated with a higher quality nor with a lower price.

2. General Innovators

Although *Cirque du Soleil* is a circus enterprise, it is radically different from its competitors. More specifically, its entertainment programs do not comprise star artists and animal acts. Instead, they follow a theatrical approach, which is more in line with traditional opera entertainment combined with classic circus art. Besides lower costs, the concept of *Cirque du Soleil* attracts a large number of different people such as kids, adults, and corporate clients.

3. InsurTech Adopters

On-Demand Insurance

The two on-demand insurance startups *trōv* and *Metromile* rely on the "Aikido" pattern, since their flexible products are radically different from the classical flat premium insurance policy. Traditional household insurance, for instance, covers a whole bundle of risks over a predetermined time horizon. In contrast to on-demand insurance, the key parameters are static and can thus not be changed during the term of the contract.

Cash Machine – "*Coining Money with Negative Working Capital*"

1. Description and Four Business Model Dimensions

The main idea behind this business model pattern is to have a negative cash conversion cycle (**what?**), with the latter being defined as the period of time between the receipt of payment and the outgoing payment. In other words, cash machine companies take advantage of cash inflows that occur quite some time before cash outflows are due (**how?**). The excess liquidity generated by applying this pattern can be used to pay off debts or make new investments. This results in lower interest payments or helps to realize a faster growth (**why?**). Cash machine is the main pattern of classical insurance companies. They typically receive premium payments quite some time before policyholders file their claims.

2. General Innovators

In the 1980's, the computer manufacturer *Dell* was the first to follow a pure "build-to-order" strategy in the field of information technology. Given that its customers had to pay their orders within 30 days, *Dell* paid its suppliers after 71 days on average. This negative cash flow helped the company to grow very fast, which has been an important competitive advantage.

3. InsurTech Adopters

Digital Insurers

The InsurTech startups *Oscar* and *InShared* adopted the "Cash Machine" pattern of classical insurers and extended it with "Digitization", "E-Commerce", and "Direct Selling".

Cross-Selling – "*Killing Two Birds with One Stone*"

1. Description and Four Business Model Dimensions

In addition to their central offerings, cross-selling firms also provide their customers with complimentary products and services. Doing so is associated with several advantages such as improving customer relationships, securing and increasing overall revenues, allocating resources more efficiently, and utilizing mutual advertising effects (**how? why?**). Customers, in turn, can buy more than one of their desirable products from a single provider, which results in lower search costs. Similarly, satisfied customers with positive shopping experiences are more likely to stay with their provider, whereas negative experiences or an inadequate product range might cause them to switch to competitors' offerings (**what?**).

2. General Innovators

Numerous furniture retailers such as *IKEA* (Sweden) or *Pfister* (Switzerland) successfully apply the cross-selling business model. In addition to classic furniture, appliances and home accessories, they also operate in-store restaurants. Moreover, customers can rent trucks and trailers in order to take their purchases home.

3. InsurTech Adopters

Insurance Cross Sellers

massup and *Simplesurance* are examples for an adoption of the "Cross-Selling" pattern in the InsurTech space.

Digitization – "*Digitizing Physical Products*"

1. Description and Four Business Model Dimensions

Firms drawing on digitization provide their services and products online (**how?**). That is, they utilize the technological development of the last decades and either transform former physical offerings to the digital world or develop completely new digital offerings (**what?**). The latter are characterized by the fact that they could have not been successfully produced and offered without the increasing commercial use of the internet. Consumers benefit from digitization since they do no longer face purchase limitations such as opening hours and local availability. Instead, products can be bought at any time from almost any place in the world. Providers, on the other hand, have lower overhead costs and leaner intermediation structures, which both contribute to an increased profitability (**why?**).

2. General Innovators

Besides e-learning systems, music and film streaming services, as well as email providers, the financial services industry has also discovered the potential of digitization. Several direct banks such as *Deutsche Kreditbank Berlin (DKB)* or *Bank of Internet USA (BofI)* refrain from operating branch networks but offer full banking services online or via telephone. These online-only services are associated with approximately half the costs of their traditional competitors.

3. InsurTech Adopters

Digital Insurers

By selling digitized insurance products via online channels, *Oscar*, *Inshared*, and other digital insurers combine the "Digitization" pattern with "Cash Machine", "E-Commerce", and "Direct Selling".

Direct Selling – "*Skipping the Middleman*"

1. Description and Four Business Model Dimensions

Direct sellers do not use intermediary networks but provide customers directly with their offerings (**how?**). This helps them to reduce their costs significantly, which, to a certain extent, can be passed over to the customers through lower prices (**why?**). Moreover, operating directly at the customer interface gives them a more detailed overview of their customers' preferences. Hence, future offerings can be more explicitly tailored to demands and needs of the latter, which is likely to result in a higher sales volume and profitability (**what? why?**).

2. General Innovators

One of the most successful direct sellers is the German family enterprise *Vorwerk*. It offers household appliances such as the "Vorwerk Kobold", a high-performance electric upright vacuum cleaner, and the "Thermomix food processor". The products are mostly purchased at *Vorwerk* sales events, which typically take place in the homes of present and potential future customers. By hosting such an event, current *Vorwerk* customers receive a deferred discount for their product purchase. In 2014, more than 590'000 self-employed sales representatives generated an overall revenue of EUR 2.8 billion. The *Vorwerk* business model is almost similar to the one of *Tupperware*, which focuses on kitchen and household products as well.

3. InsurTech Adopters

Digital Insurers

Oscar, *Inshared*, and other digital insurers combine "Direct Selling" with "Digitization", "Cash Machine", and "E-Commerce".

E-Commerce – "*Sell via Online Channels*"

1. Description and Four Business Model Dimensions

With this business model, traditional products and services are distributed through online channels such as mobile apps, websites, etc. (**how?**). Providers employing this strategy can realize several competitive advantages. First, without the need of an overwhelming physical shop infrastructure, firms can both enhance their product portfolio and reduce fixed costs. Moreover, the global nature of the internet allows to reach many more people at lower costs compared to traditional sales channels (**why?**). Second, electronic systems are also well-suited to manage after-sales processes and customer support (**what? how?**). Third, customers can make their necessary comparisons and purchases directly online, and thus a major part of potential intermediation networks can be replaced as well (**why?**). Besides lower prices, customers further benefit from lower time and travel expenses.

2. General Innovators

The probably most successful firm employing this business model is *Amazon*, which started as the first digital-only bookseller. Characterized by its efficient logistics and high flexibility, the firm has been able to expand its product offerings year after year. Today, customers can purchase almost every article via its e-commerce platform, either from *Amazon* itself or from other retailers through their so-called market place.

3. InsurTech Adopters

All categories except the technology-oriented group

InsurTech examples for the "E-Commerce" pattern are *Check24*, *Knip*, *Simplesurance*, *InShared*, and *trōv*.

Layer Player – "*Offering Specialized Know-How*"

1. Description and Four Business Model Dimensions

Instead of offering full services, layer players explicitly focus on one or several specific parts of the value chain (**how?**). With their expertise, these firms serve several different industries (**what?**). Consequently, such a specialization helps them to realize efficiency gains and economies of scale. Moreover, this might result in a leading position regarding the setting of market standards. Its customers, in turn, benefit from the in-depth know-how of the layer player and can concentrate on their own areas of expertise (**why?**).

2. General Innovators

A successful example of a layer player is the online payment provider *PayPal*. It fully concentrates on this part of the value chain and serves several large companies such as *eBay*, *Netflix*, or *Lindt*, among many others. Being a subsidiary of *eBay* from 2002 until 2014, *PayPal* had its second initial public offering in 2015 with the market capitalization being USD 46.6 billion. In comparison, the corresponding market capitalization of *eBay* at *Paypal's* IPO amounted to USD 34.6 billion only.

3. InsurTech Adopters

Comparison Portals

Check24 and *Comparis* run the "Layer Player" pattern, thereby offering comparison services beyond insurance products. Customers can check the prices of real estate properties, energy contracts, mobile phone subscriptions, and many other goods and services.

Leverage Customer Data – "*Making Use of What You Know*"

1. Description and Four Business Model Dimensions

Each time products and services are sold and consumed, data on the customer, seller, and other transaction characteristics are generated. By means of appropriate technological instruments such as database based software solutions, software algorithms etc., this enormous data can be analyzed and transformed into valuable information (**how?**). That is, leveraging customer data helps firms to identify customers' preferences, potential savings, etc. Similarly, this kind of data forms the basis for market simulations, profitability analyses, advertisement testings, etc. (**how? why?**).

2. General Innovators

The business model of *Facebook*, the world's largest social network provider, concentrates on the analysis of user data. Their algorithms analyze the relationships among the *Facebook* members, their interests and hobbies, their business affiliations, etc., which helps them to select appropriate and personalized ads that the member sees on all of their social network pages.

3. InsurTech Adopters

Internet of Things (IoT)

Withings and *nest* provide technologies such as wearables and smart home devices that allow the insurance industry to "Leverage Customer Data".

Licensing – "*Commercializing Intellectual Property*"

1. Description and Four Business Model Dimensions

Licensing firms generate intellectual property that is then licensed by third parties. Instead of transforming them into valuable products and services, these firms aim to earn money with the rights themselves (**how?**). An advantage is that licenses can be sold to several customers. Moreover, firms can use their resources to exclusively concentrate on research and development, whereas investments in production infrastructure and marketing activities are not required (**why?**).

2. General Innovators

Disney is among the most successful licensing companies in the world. That is, all merchandise related to its characters and movies, such as films, CDs, toys, costumes, etc., is licensed to third parties. While the latter are specialized in producing these goods, *Disney* can focus on developing its brand. This strategy has been very successful and has earned the company immense profits.

3. InsurTech Adopters

Blockchain & Smart Contracts

The solutions of *Eris* and *Everledger* and other providers of Blockchain technology might be usable by other companies under "Licensing" agreements.

Pay-per-Use – "*Pay As You Go*"

1. Description and Four Business Model Dimensions

Firms applying the pay-per-use business model need a specific infrastructure or system in order to record how long and how much their customers use the offered products and services (**how?**). Then, instead of paying a fixed flat rate price, customers are charged for their effective usage (**what?**). Such form of pricing involves a higher flexibility for customers and avoids inefficient resource allocations due to periods of non-usage. That is, customers with lower consumption pay less than customers with a higher consumption (**why?**).

2. General Innovators

Swiss TV provider *Swisscom*, for instance, offers its customers pay-per-view services in addition to their standard TV contracts. Customers can purchase selected movies and sport events on demand and do not need to extend their fixed plan subscription.

3. InsurTech Adopters

On-Demand Insurance

Examples are *trōv* and *Metromile*. These InsurTech startups sell insurance policies for which the customer is billed according to their effective use of coverage.

Peer-to-Peer – "*Enable Transactions Between Individuals*"

1. Description and Four Business Model Dimensions

Peer-to-peer companies aim to bring together an individual selling and an individual buying party. Therefore, transactions such as purchasing, lending, and sharing among private persons are facilitated (**what?**). The intermediation party provides the platform and organizes and monitors all business deals (**how?**). Given its leaner structure compared to traditional market players, the resulting transaction and operational costs are significantly lower. Moreover, market inefficiencies are reduced, while transparency for all parties involved is increased. The peer-to-peer provider itself receives a (fixed) transaction fee and may generate additional revenue through advertising banners (**why?**).

2. General Innovators

Among the first companies offering a peer-to-peer platform is *eBay*. Via its online auction site, private parties can sell and buy articles and items that they do no longer need. Over the past decade, more and more commercial providers have utilized the platform's popularity in order to sell their offerings. Today, most transactions are B2C, while classic C2C accounts for a small fraction only. In the German market, rather local offerings in the sense of classified advertisements can be auctioned via eBay's separate platform "eBay Kleinanzeigen".

3. InsurTech Adopters

Peer-to-Peer Insurance

Prominent InsurTech adopters of "Peer-to-Peer' are *Friendsurance* and *Bought by Many*. The former returns money that has not been used to pay claims in a peer group to the members of that group, whereas the latter forms groups of peers with a similar type of risk transfer demand in order to convince insurers to provide coverage.

Subscription – "*Taking A Season Ticket To Services*"

1. Description and Four Business Model Dimensions

Buying a subscription allows customers to access the products and services of a company whenever they want. Both the agreed usage frequency and duration are typically defined in the subscription contract. Similarly, it is specified at which points in time the customer has to make his payments, i.e. upfront, annually, monthly, etc. (**why?**). An advantage is that customers do not have to pay separately for every usage or consumption, which saves them time and effort (**how?**). Furthermore, a subscription is likely to be cheaper compared to single purchases, if a certain usage is exceeded (**what?**). Providers, on the other hand, have a high degree of planning reliability, since such contracts usually run for at least several months (**why?**). However, in order to maintain customer loyalty, providers need to continuously develop and expand their offerings without negatively affecting the quality.

2. General Innovators

Netflix, for instance, offers streaming services for movies and TV series. Customers with an active subscription can access its offerings whenever and from wherever they want. In addition, *Netflix* extended its business by providing one-off fee on-demand products as well as producing its own media content, which is exclusively accessible via their platform.

3. InsurTech Adopters

Big Data Analytics & Insurance Software, *Blockchain*

Startups that provide special software solutions such as *bigML* or *Eris* tend to generate profits by charging their subscribers.

White Label – "*Successful Brand Without a Brand*"

1. Description and Four Business Model Dimensions

Companies applying the white label business model do not strive to establish a strong brand or serving private customers directly. Rather, their products are sold to commercial buyers that distribute them to different market segments under different brands and names (**what?**). Thus white label companies incur only their own production costs, while both distributional and advertising costs are significantly lower or even zero (**how? why?**). Their customers, in turn, can utilize and market white label offerings such that their own targets are met.

2. General Innovators

White label is particularly common in the food industry, where one product is distributed by several retailers under several brands with different packaging, advertising, prices, etc. *Richelieu Foods*, for instance, produce private label frozen pizzas, sauces, salad dressings, marinades, and deli salads. These are then sold by various retail chains under their own brands. Today, approximately 70 percent of all food articles within a retail store belong to the no-name and store-brand product category produced by white label companies.

3. InsurTech Adopters

Insurance Cross Sellers

Again, *massup* and *Simplesurance* may serve as InsurTech examples. Both companies allow risk carriers the sale of "White Label" insurance policies for consumer products and services at the point of sale.

4.4 Roles in the Insurance Ecosystem

As mentioned above, the color coding of the InsurTech categories in Figure 23 refers to their roles in the classical insurance ecosystem. A schematic version of the latter is visualized in Figure 24. On the very left of the industry value chain are the property-casualty, life, and health risks, for which individuals and companies demand insurance coverage. Adjacent is the distribution stage, in which risks are transferred to primary insurers through different sales channels such as brokers and agents. The insurers assume the risks in exchange for appropriate premiums. Selected extreme exposures such as those from natural catastrophes, for instance, are either wholly or partially transferred to reinsurance companies via reinsurance brokers. Similarly, primary insurers and reinsurers may choose alternative risk transfer formats such as insurance-linked securities in order to pass risks on to the capital markets.

The gray boxes in Figure 24 are the traditional market participants and the white boxes highlight which entry points the current InsurTech generation targets along the value chain. Although it is generally advisable for all incumbents to remain vigilant, most of the activity to date has focused on the front part of the insurance ecosystem. IoT devices such as those of *TrueMotion* (car) and *Withings* (health), for instance, are directly related to the insurance risks. *On-demand* concepts such as *trōv*, *digital brokers* such as *Knip*, and *comparison portals* such as *Check24*, in contrast, aim to render traditional distribution channels obsolete. Thus, in the long run, they are likely to become a threat to insurance brokers and agents. Similarly, at the risk carrier stage, *digital insurers* such as *HavenLife*, *Ottonova*, and *Lemonade* exhibit a competitive stance. Firms such as *bigML* or *IBA*, in contrast, provide solutions of supportive nature. As can be seen in the right part of the picture, there are no InsurTech startups that explicitly concentrate on reinsurance brokers or reinsurance companies yet.

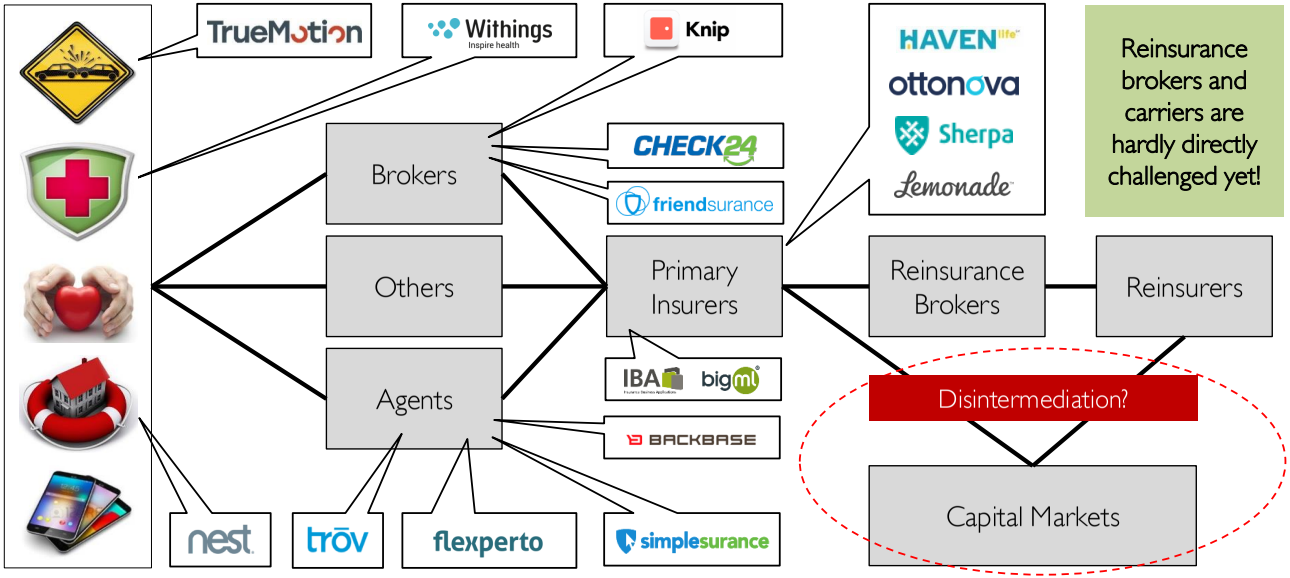


Figure 24: The Insurance Industry Ecosystem (Value Chain)

4.5 Directions for Further Evolution

Disintermediation

A critical threat to incumbents is that technology-driven business model innovations of certain startups may lead to an outright disintermediation. In other words, if InsurTech firms manage to establish a more direct and efficient route from risk to capital, some incumbents could face demise due to irrelevance rather than competition. Should this scenario occur, the only escape for traditional players will be a dramatic innovation of their business models in order to open up completely new markets and customer segments. As depicted in Figure 25, several industries have undergone such fundamental shifts in the balance of power, since technology-driven new entrants such as *Uber*, *Facebook*, *AirBnB*, or *Alibaba* managed to conquer the key access points to the customer. Similarly, pressure on the banking industry is rising, since FinTech firms such as *LendingClub* or *Prosper* have established a peer-to-peer concept, which connects lenders and borrowers without a financial intermediary. Although a similar model may be somewhat more difficult to establish in the insurance industry, the aforementioned examples show that it would be careless to ignore such a possibility. What if digital distribution channels were able to degrade insurance companies to pure risk warehouses? What if, in a more extreme scenario, individuals were even able to transfer their risks without insurance companies?

Recombinations of Business Model Patterns

Beyond the business model patterns underlying our nine InsurTech categories, there are several promising recombinations that could have much more radical consequences for incumbents than what we have seen so far. Examples either already exist or are looming on the horizon. As pointed out earlier, *Bought by Many* aims to bring together individuals interested in insurance coverage for niche risks that are currently not served by incumbent insurers. Thus, it can be viewed as a combina-

Figure 25: Conceivable Developments in the Future

tion of the "Peer-to-Peer" and "User Design" business model patterns. In the latter, the customer serves both as product designer and consumer (Gassmann et al., 2014). While customers benefit from getting the opportunity to realize their own product ideas without the need of establishing the required infrastructure, insurance companies can avoid development costs. Moreover, by providing the insurance coverage, they generate additional premium revenue.

Another example is the soon-to-launch InsurTech startup *Sherpa* that adds "Mass Customization" to the four business model patterns of our *digital insurer* category. According to Gassmann et al. (2014), "Mass Customization" combines mass production and customization and is widely employed in the automobile industry. By drawing on common building blocks, the manufacturer has the advantage of keeping his own efficiency as high, whereas customers may still obtain a tailor-made end product. In this spirit, *Sherpa* plans to offer personalized, fully digital insurance coverage directly via online channels based on a comprehensive individual risk assessment. Instead of having to buy multiple, fragmented policies, consumers would thus be able to get a single, easy-to-understand "all-in-one" risk solution. Middlemen that make the product more expensive for the customer would be cut out of the process. Compared to the current *digital insurers* such as *Oscar*, *InShared* or *Haven Life*, *Sherpa* provides a completely new concept, which might indeed have the potential to fundamentally change the insurance ecosystem.

An equally dangerous development are InsurTechs startups that strive for vertical integration. Gassmann et al. (2014) call this the "Integrator" pattern, since its goal is to control the majority of steps in the value chain. The partnership between *Munich Re* and *trōv* is harbinger for such a business model. The former takes care of distribution and the latter carries the risk, leaving the primary insurers out of the equation. Another recent example is the German startup *GetSafe* that initially

started as a *digital broker* and is now turning toward becoming its own risk carrier. It does so despite the fact that its current insurance policies are jointly developed with incumbent primary insurers that take over the risks. Based on the considerable amount of relevant know how that *GetSafe* has already built up, it may not be long before its metamorphosis from a *digital broker* to a *digital insurer* is completed.

Moreover, it would be conceivable to enrich the "Pay-per-Use" concept of the *on-demand insurance* category with the so-called "Customer Loyalty" business model pattern. Under the latter, firms provide customer value beyond their basic services, which is then likely to result in a sustainable and long-lasting business relationship. Popular means in this regard are incentive-based programs that reward loyal customers with discounts and special offers. *Metromile*, for instance, could follow the example of its UK equivalent *insurethebox* and give away free miles to its customers in case some prespecified criteria are met. In doing so, customers are voluntarily bound to the company and face higher hurdles when wanting to switch to a different provider (Gassmann et al., 2014).

The final and probably most far-reaching recombination comprises the two patterns "Peer-to-Peer" and "Crowdfunding". The latter implies that the financing of a project is either outsourced to the general public or a specific group of individuals. That is, insurance risks could be offered to investors the same way FinTech firms such as *LendingClub* offer investors consumer credits for purchase (see Figure 25). In return for the risk capital provision, investors would receive an appropriate investment return. This would essentially lead to a kind of insurance-linked securities on frequency risks such as car, homeowners, or household insurance. In contrast to the various makeshift concepts applied by the first generation of peer-to-peer startups, this business model innovation would be a genuine peer-to-peer format and therefore result in disintermediation. Hence, it may cause severe problems for primary insurer incumbents.

5 Disruptive Potential and Incumbent Responses

Although the term "disruption" is nowadays used in an inflationary manner, its interpretations vary significantly. To avoid misunderstandings and establish a common meaning in the context of our study, we draw on the well-known disruption theory as coined by Clayton M. Christensen in 1995. We start with the distinction of "disruptive" and "sustaining" innovations, before introducing a third type that is relevant for the InsurTech landscape, which we will refer to as "enabling" innovation (Section 5.1). In the next step, we then discuss five key factors beyond disruptive potential, which we expect to be major drivers of business success in the InsurTech space (Section 5.2). Furthermore, we introduce an intuitive matrix that allows to assess the threat potential of InsurTech startups based on the interaction between the firms' disruptive potential and any second success dimension (Section 5.3). Finally, we present five generic response strategies for incumbents ("observe", "compete", "invest", "develop", and "cooperate"), determine their adequacy for the different fields of the InsurTech matrix, and discuss examples currently observed in the market (Section 5.4).

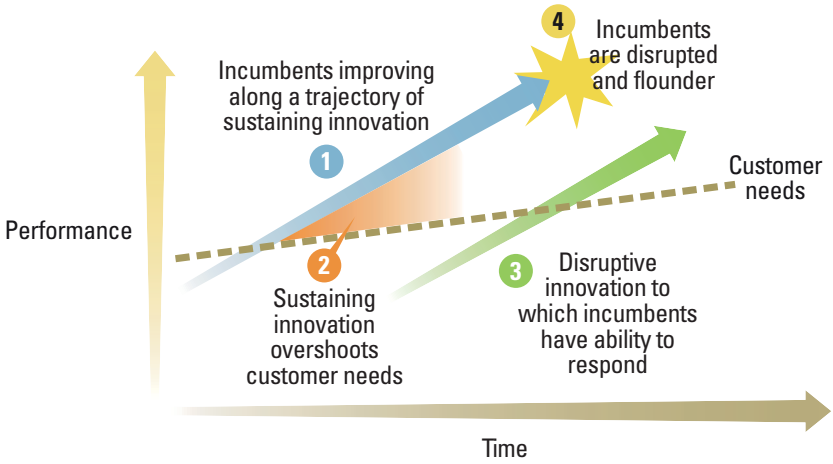
5.1 What is a Disruptive Innovation?

In their seminal article, Bower and Christensen (1995) distinguish between sustaining and disruptive innovations and point out that these two types have different impacts on an industry, which can be illustrated by the concept of so-called "performance trajectories" (Figure 26). Sustaining innovations are defined as improvements of existing products and services for existing customer groups that can either happen gradually or through major jumps. A typical example for sustaining innovators are mobile phone manufacturers, which continuously develop new generations of smart devices with more functionalities, such as the *Apple iPhone 7* or the *Samsung Galaxy S8*. In case such improvements are incremental advances, they are considered to be an evolution, whereas

major breakthroughs constitute a revolution. Another important characteristic of a sustaining innovation is that it often exceeds customer needs. Only few users regularly exhaust the full range of capabilities of their smart phone. King and Baatartogtokh (2015) provide the example of computing power. While, in earlier times, processing has only been possible with time delay due to the lower computing capacity, today's processors clearly overshoot human capacities.

Disruptive innovations, on the other hand, are products and services that initially target the lower end of an existing market or a totally new market and then begin to successively move upwards over time (Figure 26). In most cases, the respective firms are rather small and only exhibit few resources. Although to begin with, their offerings are mostly inferior to those the of the incumbents, they eventually displace existing markets, products, as well as competitors (Christensen et al., 2015). According to King and Baatartogtokh (2015), disruptive innovations are characterized by a higher convenience, a lower price, and less complexity. Moreover, the probably most important element of disruptive innovation is the anticipation of future customer needs. Successful incumbents tend put a lot of emphasis on current needs and may therefore fail to adopt technologies or business models that will meet their customers' unstated or future needs. It is this behavior that, over time, may cause their disruption and subsequent demise.

Historically, disruptive innovations have substantially changed several industries. A prominent example is the automobile sector. At the end of the 19th century, horse carriages were the most widely used means of transportation. Then, in 1886, Carl Benz introduced the world's first automobile, the so-called "Benz Patent-Motorwagen". In contrast to the widespread public opinion, however, this only constituted a sustaining innovation. Although transportation had become easier and, to a certain extent, more comfortable, the expensive product was not targeted



Source: King and Baatartogtokh (2015).

Figure 26: Elements of the Theory of Disruptive Innovation

at the lower end of the market. The actual disruptive innovation in this context was triggered later by the launch of *Ford's* Model T. Due to its mass production with the help of assembly line processes, *Ford* could offer it at a low price. Soon, more expensive horse carriages were crowded out by the mass-produced cars fulfilling mainstream customer needs. Together with the horse carriages, other related industries such as wagon-makers, wagoners, and horse food producers were disrupted as well. Further prominent examples of disruptive innovations are shown in Table 7.

To sum up, disrupters distinguish themselves from incumbents in various aspects (Table 8). First, they are mostly smaller and younger companies that have fewer resources than traditional incumbents.[4] Second, while incumbents target sophisticated customers at the upper end of the market, disrupters start at the bottom. Third, they offer simpler products of suitable functionality at low prices. Hence, they earn smaller mar-

[4]Note that the resource advantage of incumbents also manifests itself in assets such as customer relationships, industry know-how, etc.

Disrupter	Disruptee
Cellphones	Landline Telephones
Distance Education	Full-Time Colleges
Mini Mills	Integrated Steel Mills
Online Stores	Brick-and-Mortar Stores
Ultrasound	Radiography
USB Flash Drives	Floppy Disk Drives
Wikipedia	Traditional Encyclopedias
Word Processing Software	Typewriter

Table 7: Examples of Disruptive Innovations

Characteristic	Disrupter	Incumbent
Size	Small	Big
Age	Young	Old
Resources	Low	High
Target Market	Lower End	Higher End
Product / Service	Simple	Sophisticated
Profitability	Low	High
Customer Needs	Anticipated	Current
Network	Small	Large
Risk Appetite	High	Low

Table 8: Disrupters vs. Incumbents

gins than incumbents. Since the latter typically chase higher profitability, disrupters can avoid head-to-head competition with them. Fourth, disrupters anticipate future customer needs and demands, whereas incumbents place a lot of emphasis on their existing customers. Hence, their initially lower profitability does not deter disrupters from becoming powerful in the future, since incumbents may fail to innovate their business model before the customer demands served by the new entrants become mainstream. Finally, disrupters typically have a high risk appetite and little to lose, while traditional firms face a trade-off between innovation and the current success of their business.

In addition to sustaining and disruptive innovations, we introduce a third type that we term enabling innovations. Companies moving along this trajectory provide technology that may help incumbents to modernize their businesses. Examples with respect to the insurance industry comprise the InsurTech categories *IoT*, *Big Data*, and *Blockchain*. Wearables, for instance, allow risk carriers in the life insurance sector to better track a person's health status. Similarly, property-casualty insurers can use smart home products such as thermostats, pipe sensors, and advanced alarm systems to assess the risks of fire, elemental damage, and burglary. The data transmitted by IoT devices, on the other hand, can be analyzed with software and algorithms provided by *Big Data* startups. Finally, *Blockchain* technology enables insurers to store and trace all transactions electronically, fully automated, and tamper-proof.

5.2 Why Disruption is not the Same as Success

Although being on a disruptive trajectory may ultimately result in the replacement or disintermediation of incumbents, it is not tantamount to business success. In other words, just because an entrant is considered to be disruptive, it does not necessarily have to be successful in the long run. The reason is that success exhibits many more determinants than just disruptive potential. Figure 27 shows a non-exhaustive list of key success factors that may ultimately be decisive for the fate of both incumbents and entrants in the insurance ecosystem.

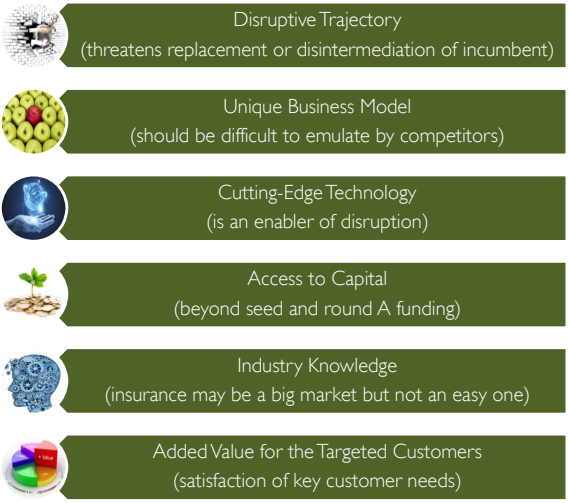


Figure 27: Key Success Factors

Naturally, most successful firms are characterized by an innovative business model, which should be difficult to emulate. Also, a cutting-edge technology is an enabler of disruption and thus, helps firms to achieve a strong market position. Similarly, sufficient capital beyond seed and round A funding as well as a profound industry and customer knowledge are key success factors. Finally, to be successful, firms must add a clear value for their targeted customers.

5.3 Threat Potential of Current InsurTech Startups

As pointed out above, disruptive potential is only one factor for business success. In this chapter, we therefore propose an intuitive InsurTech matrix, which illustrates the relationship between disruptive potential and any second characteristic from Figure 27.[5] Since most of the recent discussion about InsurTech is centered around the funding levels of the startups, we decide to follow this trend and select "available capital" as the second parameter. We define early-stage funding (up to round A) as "limited" available capital and later stage funding (beyond round A) as "ample" available capital.

Our matrix distinguishes the threat potential of InsurTech startups by means of five different fields (see Figure 28). Firms introducing sustaining innovations are either considered to be *lightweights* (limited capital) or *usual suspects* (ample capital), while firms on a disruptive trajectory are classified as *threats* (limited capital) or *disrupters* (ample capital). Additionally, startups providing an enabling innovation are referred to as *enablers*.[6] Figure 28 indicates that only few of the current InsurTech firms are on a disruptive trajectory. Examples are *Bought by Many*, *Slice*, and *Sherpa*. These startups have innovative business models, target new customer needs or niche segments of today's market, and aim to make insurance simpler and more user friendly. Given their limited capital base, however, they are currently only arising *threats*. *Lemonade*, *trōv*, and *Metromile*, in contrast, already collected funding beyond round A. In addition, all three of them exhibit disruptive characteristics and may thus be viewed as *disrupters*. *Lemonade*, for instance, goes beyond a mere digitization of the classical insurance business. Through its fee-based revenue mechanism and charity aspect, it may indeed change the way customers perceive insurance carriers. Sev-

[5] As mentioned above, the list in Figure 27 is not exhaustive. Further success factors can be used for the y-axis of the matrix as well.

[6] Please note that we do not distinguish enablers according to their available capital.

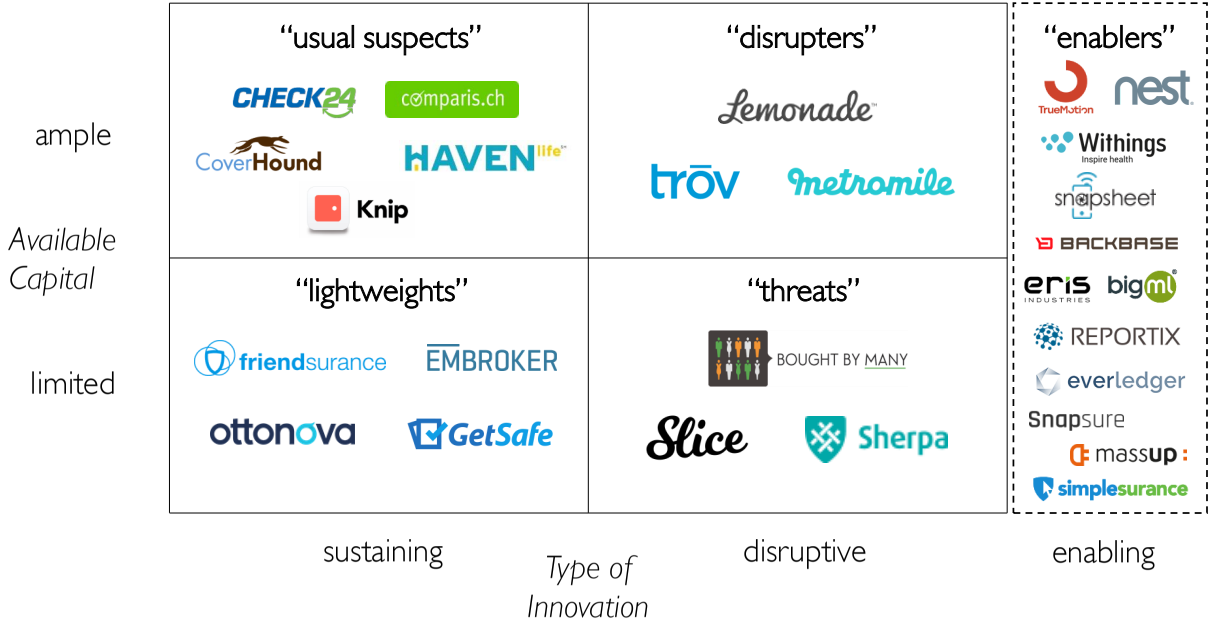


Figure 28: InsurTech Matrix

eral other InsurTech startups launched sustaining rather than disruptive innovations. Although *digital insurers* such as *Ottonova* and *HavenLife*, for instance, clearly improve the traditional insurance business model, they lack the characteristics of a genuine disruptive innovation. Likewise, *comparison portals* such as *Check24* and *digital brokers* such *Knip* simply make the insurance purchase process more convenient for many customers. Finally, most *InsurTechs* consider themselves as *enablers*, aiming to support the insurance industry with their technological advancements. This is also attested by a recent statement of Startupbootcamp InsurTech (2016). It says that *"InsurTechs are more likely to operate as enablers than disrupters. The majority of InsurTech startups are focused on activities that will help incumbent insurers to do a better job, rather than to steal their business. This is not to say insurers can afford to dismiss InsurTechs who are increasingly taking margins from elements of the value chain."*

5.4 Incumbent Reactions

Figure 28 highlighted that some of the current InsurTechs are indeed on a disruptive trajectory and have ample available capital that makes them a real threat for incumbents. The latter therefore need to select appropriate strategic responses in order to protect themselves and maintain their current market position.[7] To guide this process, we want to introduce five generic response strategies, each of which is targeted at the challengers in a certain field of our InsurTech matrix (see Figure 29). Furthermore, we also assess their adequacy and give current examples already observed in the market today.

Observe

The so-called "lightweights", i.e. all InsurTech startups on a sustaining trajectory with currently limited available capital, do no require an immediate response from incumbents. Instead, their main focus should be on collecting information with regard to the business model of the startup, target customer base, product structure, etc., while their strategic response can be chosen at a later stage. However, incumbents should not feel too sure of themselves, since lightweights are capable to develop major breakthroughs at any time, which would substantially improve their current position. That is, they will then find easier access to capital and realize benefits of scale. To be well-prepared for any such case, incumbents need to ensure that they preserve their ability to react swiftly in order to reposition themselves to the new competitive environment. While this strategy seems to be highly appropriate for most lightweights, particularly innovative first movers are typically hard to spot.

As pointed out in the previous chapter, the German startup *GetSafe* initially started as a *digital broker* and now turns toward becoming

[7] Naturally, these reactions depend on the type of incumbent. An appropriate response strategy to *digital brokers* such as *Knip*, for example, is likely to differ between traditional brokers and primary insurers.

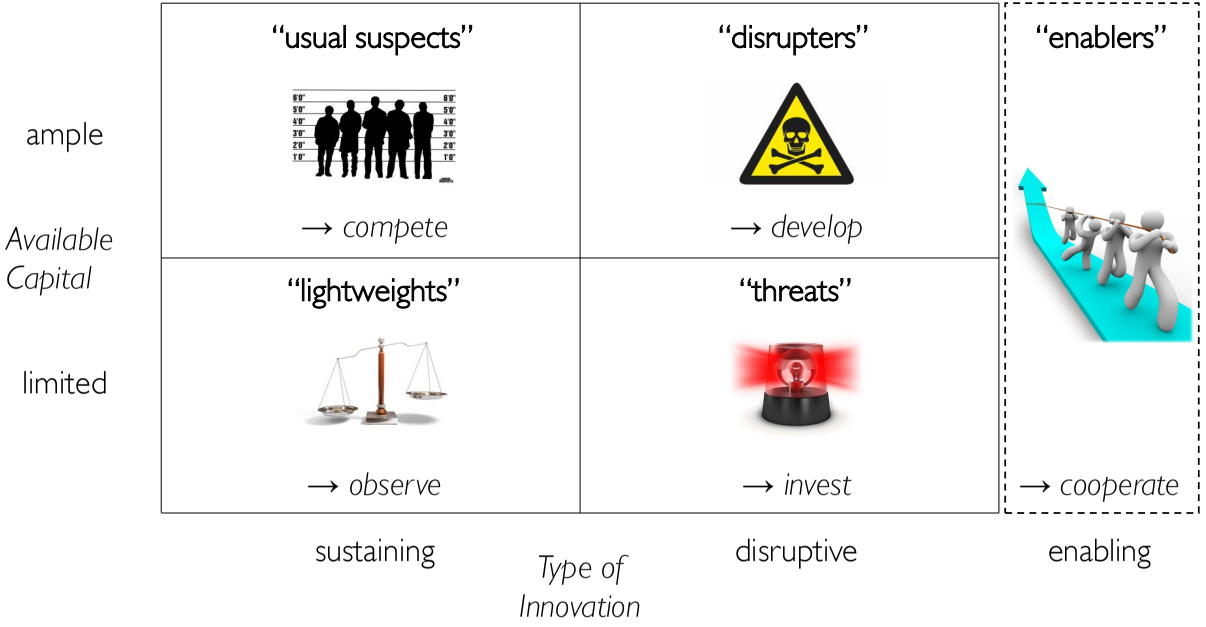


Figure 29: InsurTech Matrix with Generic Response Strategies

its own risk carrier. However, in light of the facts that their offering constitutes a sustaining innovation and that their prospects of success are currently somewhat uncertain, primary insurers are recommended to follow an observe strategy.

Compete

The "usual suspects", on the other hand, are ahead of the lightweights with respect to their available capital. Given that their offerings improve current products and services (sustaining innovation), incumbents are recommended to enter competition. Due to their considerable advantage in terms of market power, they are able to aggressively attack the new entrants with the aim to ultimately crowd them out. It is of major importance that incumbents do not wrongly assume those firms to be lightweights, since in such a case crucial time will pass and lost market share will be even more expensive to be recaptured.

In their report on the U.S. small-business insurance market, Boston Consulting Group (2016a) points out that both independent agents and carriers willing to support them are required to make some "no-regret moves" in order enter head-to-head competition with *digital brokers* such as *Knip*. That is, agents should enter competition by developing more customer-centric services and sales offerings as well as consolidating their partnerships with risk carriers. In doing so, they are likely to become an important part in the insurance ecosystem of the future. Carriers, on the other hand, should develop new products with modular structures, ensure that their e-commerce IT capabilities are up-to-date, as well as improve their model-based pricing capabilities. For example, this would help them to transfer their underwriting process to the digital world and thus, significantly increase their efficiency.

Invest

Startups classified as "threats" are already developing disruptive products and services, but are currently still short on capital. This offers opportunities for capital-heavy incumbents, who may follow an investment strategy. By doing so, they can drive innovation outside of their own balance sheet. Moreover, it does not matter whether this is done by own venture capital funds (like *Allianz* did in 2015), via incubator and accelerator programs (like the InsurTech accelerator of *Swiss Re*), or by direct investments in InsurTechs.[8]

In simple terms, the offerings of the on-demand insurance provider *Slice* are almost identical to those of *trōv*. However, with its current funding level amounting to approximately USD 4 million, *Slice's* available capital is strictly limited (*trōv*: USD 92 million). Hence, the startup is considered to be an attractive target for incumbents following the "investment strategy".

A different investment approach has been adopted by the primary insurance company *AXA*, which launched its own InsurTech incubator (*AXA Kamet* with EUR 100 million) and venture capital fund (*AXA strategic ventures* with EUR 230 million) in 2015. The latter is globally oriented and has offices in San Francisco, New York, London and Paris (Crunchbase, 2017). Moreover, it specifically targets insurance verticals, financial services, enterprise software ,as well as financial and insurance technology (AXA, 2017a). In its first two years, 20 investments have been made (AXA, 2017b).

[8] Incumbents typically decide between these alternatives according to their market position, investment goals, etc.

Develop

"Disrupters", i.e. InsurTechs with a disruptive innovation that are already well-funded, can usually no longer be tackled by an investment strategy. As these entrants have the potential to disrupt the existing market structure, however, incumbents should not rely on their current market position and customer base. Instead, the further strengthening of own capabilities is the key. For instance, incumbents should concentrate on pushing digitization forward, developing breakthrough technology in-house, as well as anticipating future customer needs. The development strategy is not only a promising response to disrupters but also ensures technological advantages for the competition in the well-established insurance market.

Italian-based primary insurer *Generali*, for instance, recently entered a partnership with Microsoft (Hook, 2016) and started to "develop" technological progress in-house. According to Generali (2016), the aim of this collaboration is not only to improve operational processes and efficiency of employees and agents but also to create new insurance products and business models through digital innovations. More specifically, a digital technology platform aims to provide a more effective customer interaction and centricity (Econotimes, 2016).

Cooperate

Incumbents also have the possibility to enter cooperations with (InsurTech) startups providing "enabling" innovations. In doing so, they are able to create business advantages by embracing the technology offerings of their partners. Moreover, partnerships allow them to move to the forefront of digitization without being exposed to unknown risks associated with the in-house development of new technologies, complex investment activities, etc. At the same time, incumbents are given a major chance to improve the customer experience while the startups are still seeking their position in the insurance ecosystem.

#	Dimension	Insurer	InsurTech Startup
1	Tolerance for Failure	Low	High
2	Average Age of Employee Tenure	20+ Years	18 Months
3	Technology	Legacy	Cutting-Edge
4	Tendency under Stress	Passive-Aggressive	Overtly Aggressive
5	Focus on Value	Long-Term / Shareholders	Short-Term / Backers (Exit)
6	Finish Quality	Perfection	Minimum Viable Product
7	Funding	Via Committee	Via Individual or Small Firm (VC)
8	Decision-Making	Collaborative	Independent, Entrepreneurial
9	Speed of Decision-Making	Glacial	Lightning
10	Decision-Making Bias	Internal Efficiency	Market Impact
11	Time to Market	Slow	Fast
12	Company Culture	Conservative	Progressive

Source: Celent (2017)

Table 9: Differences Between Insurers and InsurTech Startups

However, as shown in Table 9, incumbents and InsurTech startups exhibit significant differences with respect to several important corporate dimensions that, in turn, might impede fruitful cooperations. On the basis of an empirical survey among both insurers and startups, Celent (2017) point out that in particular the two dimensions "tolerance for failure" as well as "speed of decision-making" provoked the most comments among their respondents. Moreover, the different progress regarding the technological level, i.e. "cutting-edge" versus "legacy IT systems", are considered to constitute a further critical hurdle. On the one hand, it is a major driver why incumbents are interested in cooperations with InsurTech startups at all. On the other hand, incumbents face severe difficulties to adjust their structures in a running business while also keeping an eye on their profitability.

A recent example for a successful cooperation is the collaboration between *Munich Re* and *trōv* in the U.S. (Thrasher, 2016).[9] *trōv* provides a mobile technology platform that allows customers to switch their insurance coverage for selected personal items on and off (Simpson, 2013). The aim of *Munich Re* is to bring the service to the U.S. and to gain access to *trōv's* digital technology platform. Furthermore, the service facilitates access to an under-served insurance segment and generates real-time data on insured items to provide tailored products.

Ignore

Finally, incumbents could trust in the insurance industry's entry barriers, i.e. its high regulations, extensive capital requirements, etc. and completely ignore the InsurTech trend. However, it needs to be taken into account that such a strategy is highly dangerous or as William Edwards Deming (1900-1993), an American physicist, once put it: "*Survival is optional. No one has to change*".

[9] *Munich Re* is not considered to be the corresponding incumbent for *trōv*. Instead, *trōv* offers a disruptive innovation in the existing market of primary insurers.

6 Empirical Analysis

This final section comprises the empirical results from our online survey, which has been completed by senior executives and founders from all important players related to InsurTech, i.e. primary insurers, reinsurers, brokers, InsurTech startups, venture capital firms, incubators, as well as accelerators. Additionally, we also gathered further competent opinions from insurance correspondents, business consultants, and IT experts, among others, in order to end up with a comprehensive sample size. In the following, we first outline our survey design, data collection process, and undertaken methodology (Section 6.1). Subsequently, we present the empirical results (Section 6.2). We start with some general information such as sample composition as well as sources of information and overall expertise about InsurTech among the market participants. In the next step, we elaborate on incumbents and their stance towards InsurTech, before moving on to the perspectives of venture capital firms, incubators/accelerators, as well as InsurTech startups. Finally, we shed light on how our survey respondents assess the importance of the six success factors of InsurTech startups as discussed in the previous chapter.

In brief summary, our analysis reveals several important insights. First, the incumbents that responded to our survey exhibit a decent degree of familiarity with the InsurTech space. Reinsurers, for instance, clearly view themselves as pioneers, which is fully consistent with the large range of InsurTech-related activities, in which they engage. The traditional brokers in our sample, on the contrary, feel the highest pressure from the new entrants. Second, in line with these perceptions, the three types of incumbents clearly favor different reactions to the challenges brought about by the rise of InsurTech. That is, the brokers tend to adopt a competitive stance, the primary insurers remain neutral, and the reinsurers strongly lean towards partnerships. Third, the majority of entrants, on the other hand, seems to be prepared to team up with

all different incumbents. As a result, cooperation is the most frequently adopted strategy for the time being. Nevertheless, the InsurTech firms rate their own disruptive and opportunity potential higher than the incumbents, which might lead to less considerate moves at later stages.

6.1 Methodology and Survey Design

The aim of our empirical analysis is to discover how the different players in the industry ecosystem assess the potential of the current startup generation. We therefore have conducted several comprehensive international surveys that differ between the aforementioned categories. While the first survey targets primary insurers, reinsurers, and brokers, the second complementary survey further takes into account specific questions related to venture capital firms, incubators, and accelerators. Finally, our third survey captures all important aspects for the InsurTech startups. Participation in our surveys was anonymous for all respondents. Figure 30 highlights that the questionnaire comprises a total of five sections. As can be seen, Section D deals with promising response strategies to InsurTech incumbents could draw on and thus, has not been shown to all respondents characterizing themselves as InsurTech startups.

Since there is no extant academic research on InsurTech to serve as guidance to how to design the survey, all questions have been elaborated by experts from the *Institute of Insurance Economics at the University of St. Gallen (I.VW-HSG)* in close collaboration with InsurTech specialists from the reinsurance company *Swiss Re*.

In mid-October 2016, we attended the *EUROFORUM InsurTech* conference in Munich and collected email addresses from important InsurTech decision makers. After the desk research for further potential participants as well as the survey design had been completed, a total of 262 emails containing our online survey link were sent out in early November 2016. Two weeks later, we also attended the *InsurTech Ris-*

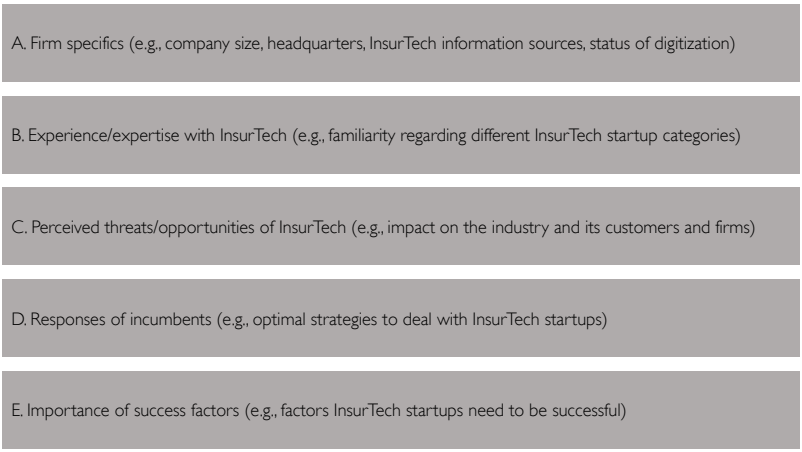


Figure 30: Survey Design

ing event in London, where further important contacts to the InsurTech scene could be established. The corresponding 122 emails were sent in mid-December 2016. At the same day, the first respondent group received a reminder, while the reminder for the second group was sent in mid-January 2017. All interested parties could participate in our online survey between November 4, 2016 and February 27, 2017. A total of 70 people completed the entire survey, while 43 people started answering but did not conclude the survey. Based on 384 emails sent to decision makers belonging to all aforementioned categories, the overall response rate amounts to 18.2 percent.[10]

[10] Due to an underrepresentation of incumbents in our sample, we refrain from carrying out inference statistical analyses. Hence, all results presented in this section exclusively describe the opinions of our sample respondents.

6.2 Empirical Results

General Questions

Figure 31 shows the allocation of all survey participants to our seven firm categories. As is apparent, InsurTech startups account for the largest fraction of approximately 38.6 percent, followed by other companies (21.4 percent) and primary insurers (18.6 percent).[11] Reinsurers, venture capital firms, and incubators/accelerators have an equal share of 5.7 percent, while insurance brokers are least represented (4.3 percent). Hence, our sample is dominated by those categories that are most affected by developments in InsurTech and therefore provides a solid and well-composed basis for our further analyses.

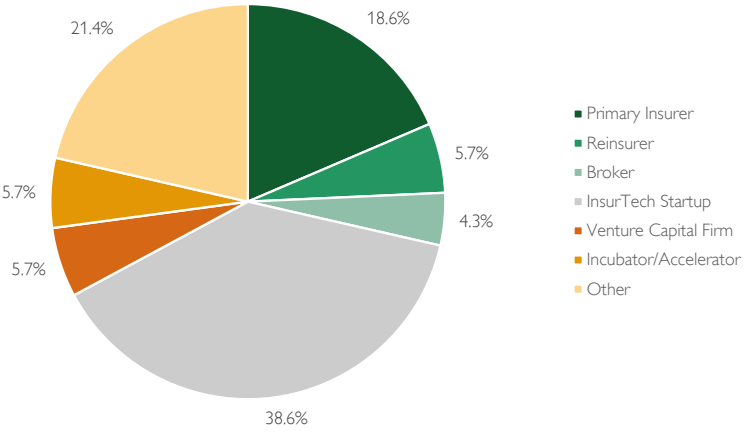


Figure 31: Breakdown of Survey Respondents

[11] In several selected analyses, the primary insurer category is further divided into *life & health*, *property & casualty*, and *universal*.

		Full Sample		Incumbents		InsurTech Players		Other	
		Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
	Total	70	100.0	20	100.0	35	100.0	15	100.0
PI	Life & Health	3	4.3	3	15.0	–	–	–	–
	Property & Casualty	5	7.1	5	25.0	–	–	–	–
	Universal	5	7.1	5	25.0	–	–	–	–
	Reinsurer	4	5.7	4	20.0	–	–	–	–
	Broker	3	4.3	3	15.0	–	–	–	–
	InsurTech startup	27	38.6	–	–	27	77.1	–	–
	Venture capital firm	4	5.7	–	–	4	11.4	–	–
	Incubator/accelerator	4	5.7	–	–	4	11.4	–	–
	Other	15	21.4	–	–	–	–	15	100.0
	Switzerland	9	12.9	5	25.0	4	11.4	–	–
	Germany	22	31.4	10	50.0	9	25.7	3	20.0
	UK	17	24.3	2	10.0	5	14.3	10	66.7
	United States	10	14.3	2	10.0	8	22.9	–	–
	France	2	2.9	1	5.0	1	2.9	–	–
	India	2	2.9	–	–	2	5.7	–	–
	Other	8	11.4	–	–	6	17.1	2	13.3
	0-50	34	48.6	1	5.0	27	77.1	6	40.0
	51-100	6	8.6	1	5.0	2	5.7	3	20.0
	101-250	4	5.7	–	–	3	8.6	1	6.7
	251-500	3	4.3	3	15.0	–	–	–	–
	501-1,000	6	8.6	3	15.0	2	5.7	1	6.7
	1,001-5,000	9	12.9	6	30.0	1	2.9	2	13.3
	5,001-10,000	5	4.3	3	15.0	–	–	–	–
	above 10,000	5	7.1	3	15.0	–	–	2	13.3

Table 10: Sample Composition: Firm Type, Headquarters, Size

A more detailed overview on the sample composition with respect to firm types, headquarters, and firm sizes is given in Table 10. The results for the *full sample* are shown in the first column, while columns two (*Incumbents*), three (*InsurTech players*), and four (*Other*) contain the latter for three main categories. From the first row one can see that the total of 70 survey respondents is allocated to 20 incumbents, 35 InsurTech players, and 15 other companies. That is, the *Incumbents* category comprises all primary insurers (PI), reinsurers, and insurance brokers. The former, in turn, can be further divided into life & health, property & casualty, and universal primary insurers. InsurTech startups, venture capital firms, and incubators/accelerators, on the other hand, are subsumed in the category *InsurTech players*.

Most firms in our sample are headquartered in Germany (31.4 percent), the UK (24.3 percent), and the U.S. (14.3 percent). This figure is even more pronounced for the *incumbents* with a German share of 50 percent. Moreover, with 25.0 percent, the corresponding number of firms operating from Switzerland is almost twice as high as in the full sample (12.9percent). From the third column, one can see that the *InsurTech players* in our sample are well-distributed across all countries. The 17.1 percent stating that their headquarters are located in another country than the ones shown in our questionnaire, come from the following states: Spain (2 firms), Australia (1), Bulgaria (1), the Netherlands (1), and New Zealand (1).[12]

Finally, the lower part of the table indicates the sample composition with respect to the number of employees. Among the *incumbents*, most firms employ more than 500 persons, while approximately one third has more than 5,000 employees. The opposite is observed for the *InsurTech players*, where 27 firms are rather small and employ fewer than

[12] The two other headquarters of the third category (*other*) are located in the Netherlands and Sweden.

50 people.[13] For the *other* companies, the firm sizes are almost evenly distributed except for the predominance of the small firms, i.e. the 40 percent that employ between zero and 50 people.

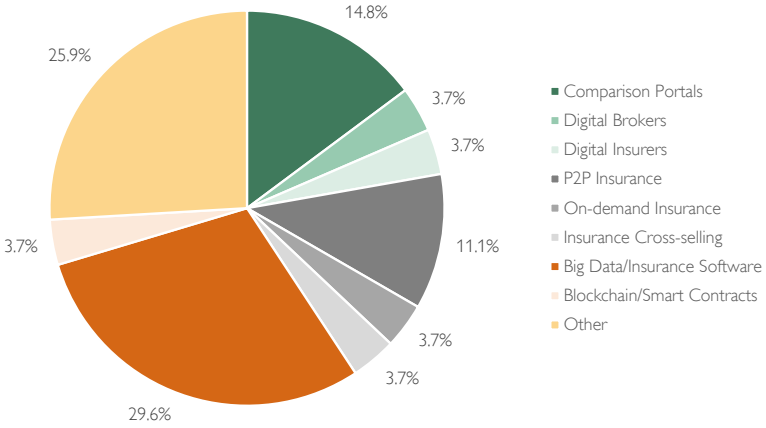


Figure 32: Breakdown of InsurTech Survey Respondents

Figure 32 further highlights how the nine InsurTech categories from Table 6 are represented by the 27 InsurTech firms in our sample. The clear majority of 30 percent operates in the field of *Big Data Analytics/Insurance Software*, followed by the *other* category (approximately 26 percent) comprising firms that, for instance, consider themselves as so-called "assekuradeurs", etc. While *comparison portals* account for 14.8 percent and *peer-to-peer insurance solutions* for 11.1 percent, all remaining categories achieve an identical share of 3.7 percent.

Another interesting and important point is how market participants acquire their required information. Generally, both interested commercial and private parties have almost every imaginable possibility to get

[13] Although this number coincides with the total number of InsurTech startups in our sample, some of the latter do not fall into the 0-50 persons category.

the latest information about the current InsurTech landscape and trends. The *Google* search engine, for instance, provides more than 124 million results for "insurance tech" and approximately 410 million results for "insurance technology". Figure 33 shows which information sources our survey respondents use in order to keep abreast of all InsurTech-related developments.

With shares equal to and above 87 percent, one can see that the internet turns out to be the primary source of information for all three firm types. While *incumbents* further resort to InsurTech studies (85 percent) and newsletters (85 percent), respondents belonging to the *other* category rather prefer expert conferences (93 percent). As indicated by the bars at the very right, almost no relevant sources of information aside from studies, the internet, industry sources, conferences, and newsletters exist.

However, despite the fact that most of the information sources shown in Figure 33 are public domain, expertise levels on InsurTech-related issues vary substantially among companies and their managers. That is, while some of them are well-informed and have a deeper understanding, others lack familiarity or any know how with respect to InsurTech topics and startups. As demonstrated by Figure 34, this heterogeneity is also observed among our survey participants.[14] At first glance, one can see that among the different firm categories particularly the *incubators/accelerators* (70 percent) and *venture capital firms* (50 percent) consider themselves to be highly experienced and familiar with InsurTech. Similarly, almost half of them (44 percent) report a *very high* InsurTech know how and expertise, respondents belonging to the *other* category, i.e. journalists, consultants, etc., turn out to be much ahead of all in-

[14] Their InsurTech experience and expertise levels have been measured by means of five questions with five answer options each. To be more specific, each respondent had to give a total of five answers, which have been aggregated for all categories from *very low* to *very high*.

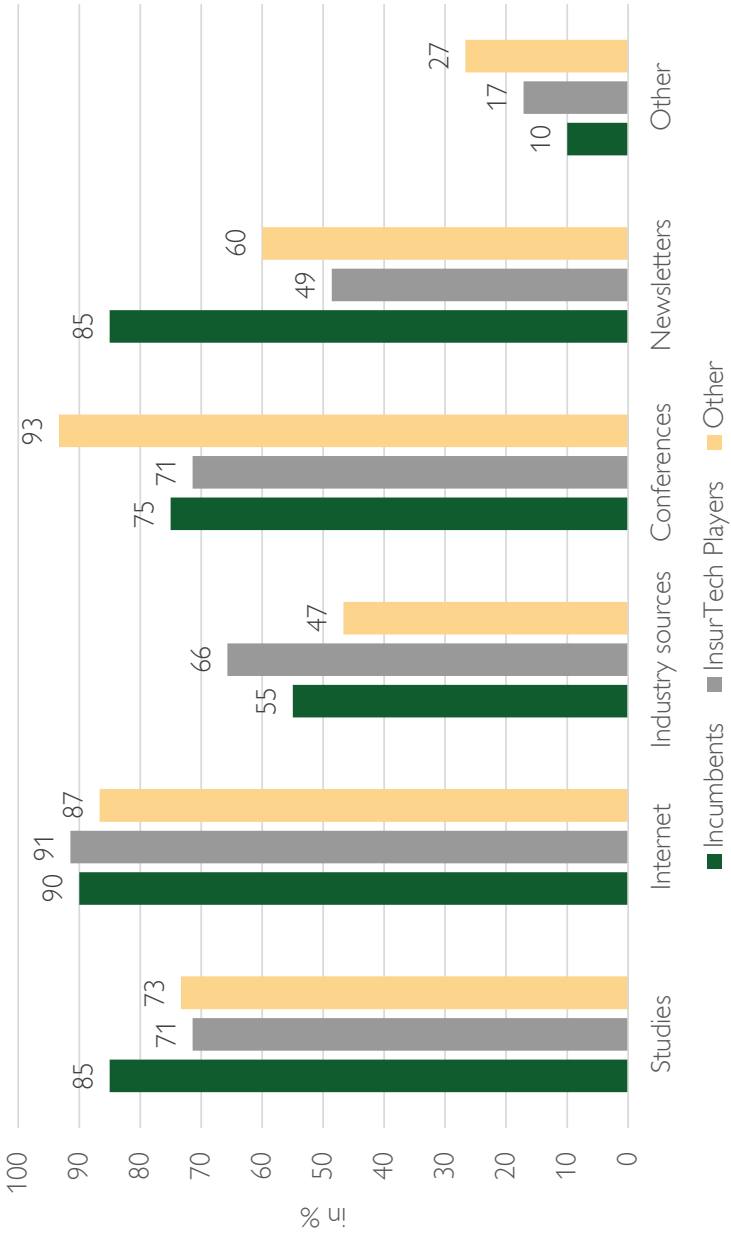


Figure 33: InsurTech Information Sources

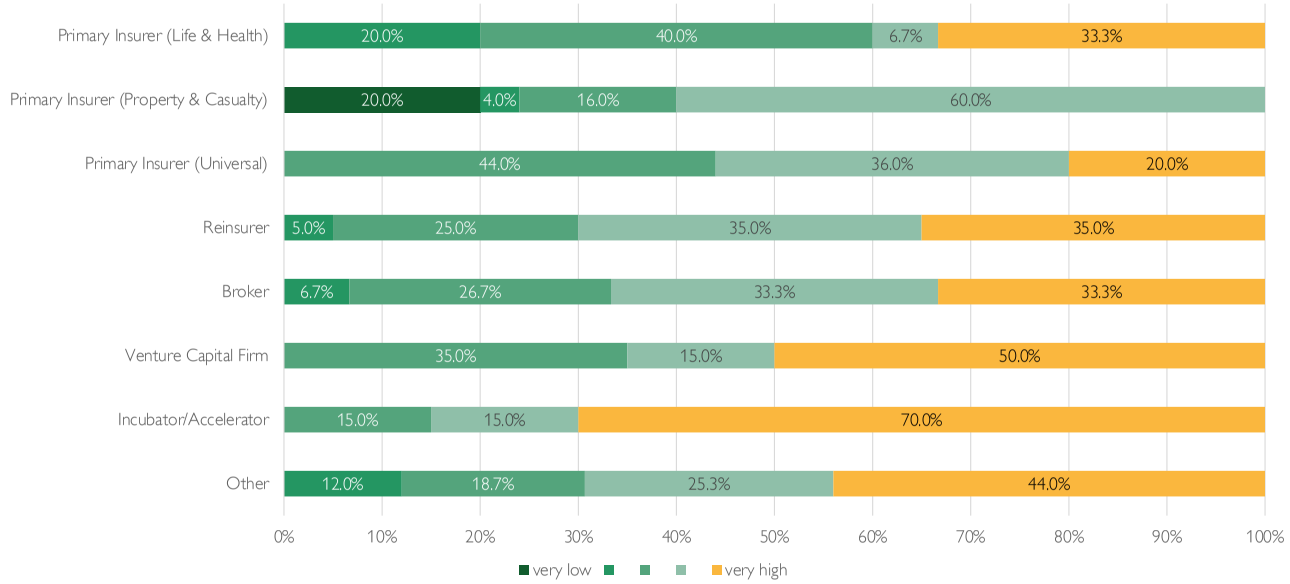


Figure 34: InsurTech Experience and Expertise

cumbent insurance firms and brokers. An interesting observation for the *insurance brokers*, in turn, is that the overall pattern of their self-assessment is almost identical to the pattern of the *reinsurers*. *Primary insurance companies*, on the other hand, are significantly different from the remaining market players and seem to be rather late bloomers with respect to InsurTech. This holds particularly true for *property & casualty firms*, among which 20 percent assess their own InsurTech expertise as *very low*. Even more, the graph further illustrates that none of them considers their own familiarity to be *very high*.

Incumbents and Their Stance Towards InsurTech

Besides these general insights, focusing on all parties in the insurance market, this subsection exclusively deals with the traditional incumbent firms, i.e. primary insurers, reinsurers, as well as insurance brokers, and their specific views on InsurTech.

In this regard, Figure 35 provides a first impression on how they have adapted their organizational structures to the ongoing digitization. First, as one can see from the bars at the top, 30.8 percent of the *primary insurers* stated that they have employed a "Chief Digital Officer", while *reinsurers* (25 percent) and *insurance brokers* (0 percent) are less advanced in this regard. The same holds true for the question of whether they have a corporate strategy focusing on InsurTech. Second, for explicit expert teams concentrating on InsurTech within the organization, the bars at the bottom indicate that *reinsurers* have a significant advantage over the other incumbent market players. Nonetheless, with all percentages being above 60 percent, it can be assumed that all firms in our sample have recognized the overall importance of the InsurTech trend. However, at the organizational level, particularly *reinsurers* (25 percent) and *insurance brokers* (33.3 percent) signaled that any clear corporate InsurTech strategy is lacking so far. One possible explanation could be that these firms have decided to pool their resources in small and focused expert teams in order to develop appropriate strategies, while their implementation in the organizational culture seems to have been postponed to later points of time.

As has already been outlined in the previous chapters, a clear differentiation between different InsurTech startup types with their significantly diverse business models is needed. This is all the important for the incumbents expected to be particularly interested in those startups that operate at the same stage of the insurance value chain. Generally, an increased interest in specific startups is likely to result in a higher

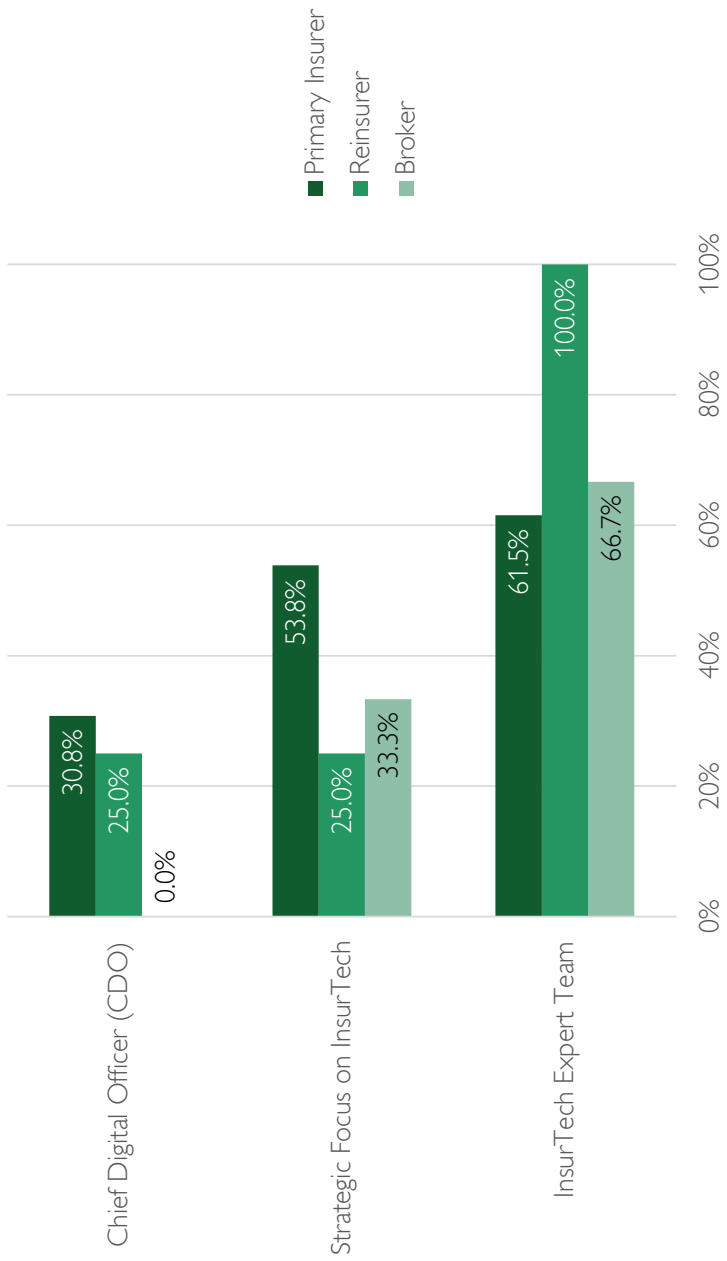


Figure 35: Incumbents: Stages of Digitization

familiarity, which, in turn, might also indicate that there were some connecting factors in the past. A lower familiarity, on the other hand, can be interpreted as a lack of knowledge or interest. Figure 36 shows the incumbents' assessments of their familiarity with our nine InsurTech categories. At first glance, a notable difference between *reinsurers* and *primary insurers* as well as *insurance brokers* is observed. This is even more pronounced for *Blockchain & Smart Contracts*, *digital insurers*, and *P2P insurance*. With an overall average valuation of 3.9, *reinsurers* seem to have a clear advantage in knowledge compared to the other two incumbents for almost all startup types. Second, the curves of the *primary insurer* and *insurance broker* are almost identical, which is also expressed by their common average familiarity amounting to 3.2. Although the latter indicates that their expertise of today's startup landscape is neither very high nor low, both *Big Data/insurance software* as well as *Internet of Things* seem to be rather unknown startup types. Finally, with respect to their fully digital counterparts, *insurance brokers* are one step ahead of the *primary insurers*.

Besides such inherent interests and the resulting familiarity levels, the roles of the InsurTech startups in the ecosystem are also considered to be the major drivers of their perceived disruptive potential. The latter is highlighted in Figure 37. It also reveals several substantial differences between the incumbents that can very probably be traced back to their own business models and value propositions. First, *primary insurers* exhibit a relative neutral assessment for each category without any significant deviations downwards or upwards. Instead, its average across all InsurTech classes equals 3.2. Second, although *reinsurers* are associated with an intermediate average of 3.4 as well, significant upward deviations become apparent. More specifically, according to their opinion, both *Big Data & insurance software* and *Internet of Things* InsurTech startups are likely to have a disruptive impact on the insurance industry. Third, *insurance brokers* attribute a high disruptive potential

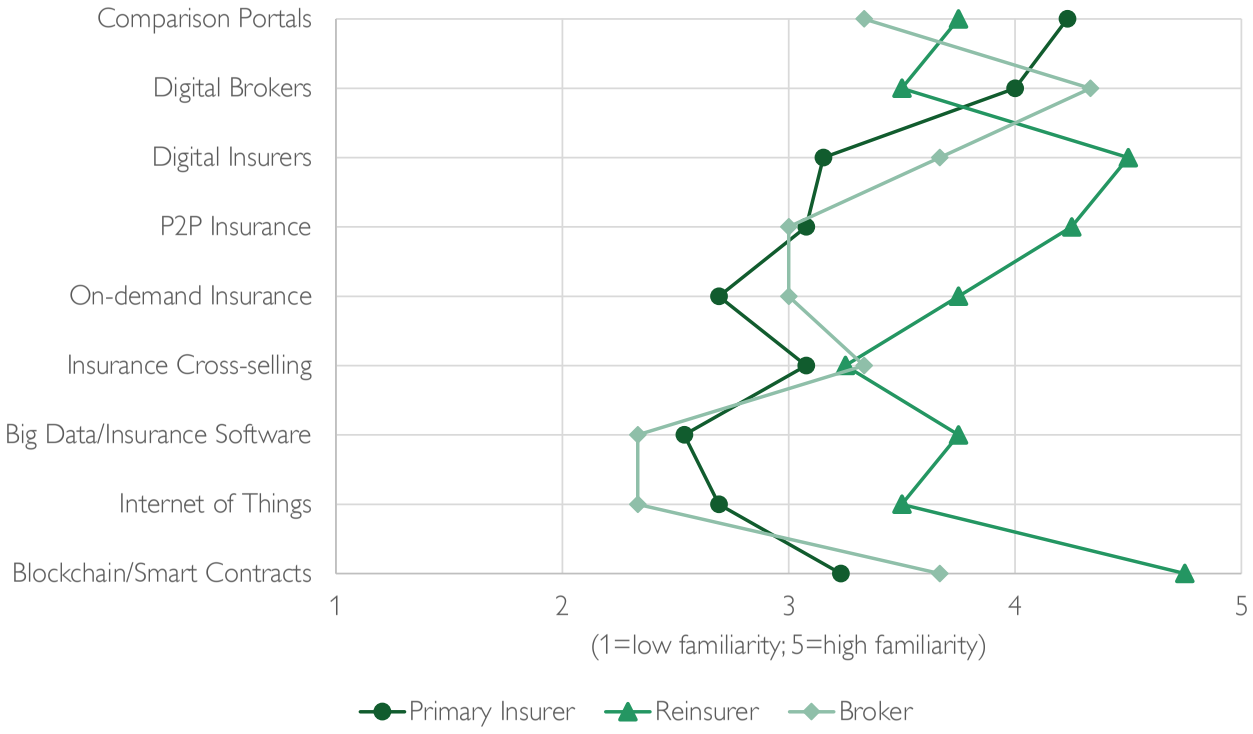


Figure 36: Incumbents: Familiarity with InsurTech

to their fully-digital counterparts. This stands in clear contrast to the opinions of *reinsurers* and *primary insurers*. Together with *digital insurers*, *Big Data & insurance software*, and *Internet of Things*, incumbents' assessments differ significantly for this category (*digital brokers*). Finally, from the perspective of the startups, *Big Data & insurance software* (3.9) and *Blockchain & Smart Contracts* (3.7) are ranked as most disruptive among all incumbents, while the opposite holds true for *comparison portals* (2.8) and *insurance cross-selling*. Moreover, an interesting insight is that none of the three players assumes that the current *P2P insurance* startups can become severe disrupters.

Analogous to the disruptive potential, incumbents might have different evaluations regarding the opportunities that each InsurTech category offers to the industry (Figure 38). One can see that the *primary insurers* show certain similarities to their assessments in Figure 37, although they tend to be on a higher level for almost each category. To be more concrete, all individual assessments are above 3 with the average being 3.6, which are both clear indicators for their overall positive evaluation of the InsurTech startups. In this regard, particularly firms offering *Big Data analytics & insurance software* and *digital insurers* are considered to be valuable enrichments of the current market players. *Insurance brokers* also correspond to their previous assessments of the disruptive potential. That is, InsurTech categories evaluated as disruptive are those that are said to provide the highest opportunity potential. Moreover, with an overall average of 3.7, they turn out to have the highest expectations among all incumbents. *Reinsurers*, in contrast, are rather pessimistic with respect to the opportunities InsurTech firms are offering. This can be seen from their relatively low average of 3.1 and the fact that two evaluations are clearly below the neutral threshold. Interestingly, even startups concentrating on *Big Data analytics & insurance software* and the *Internet of Things*, which are regarded as highly disruptive, do not achieve very high assessments.

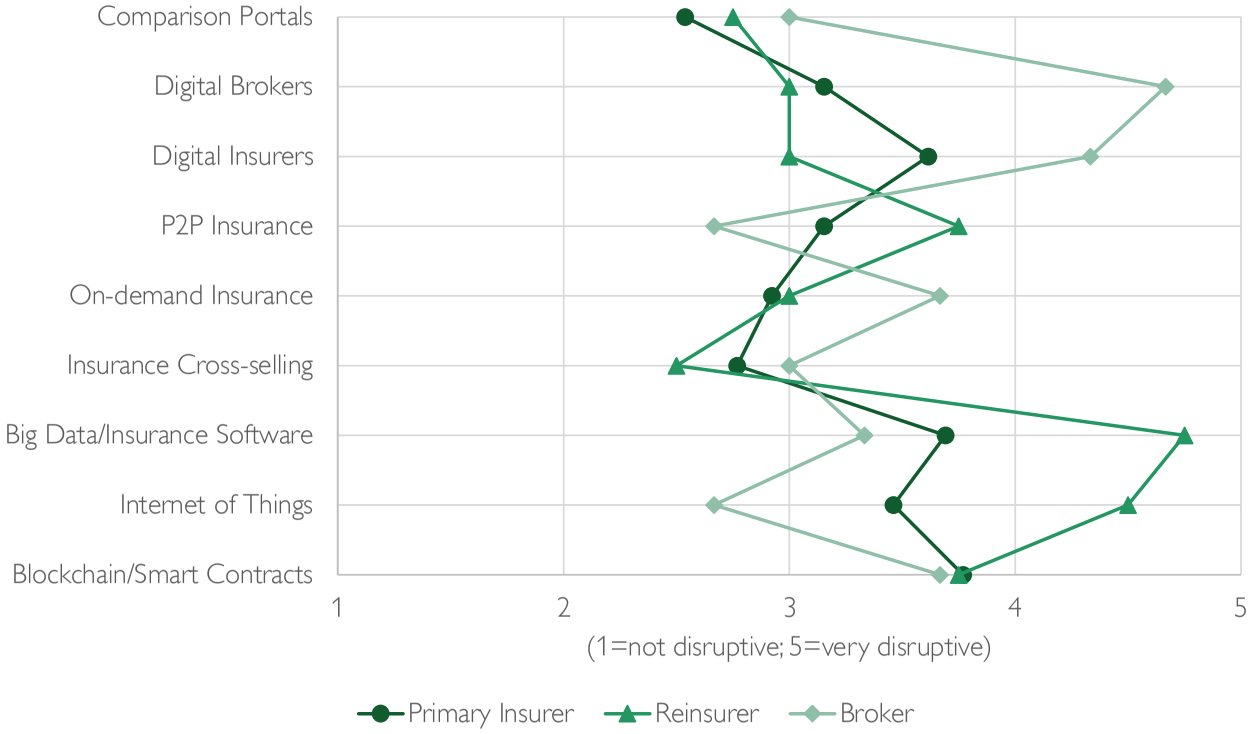


Figure 37: Incumbents: Disruptive Potential of InsurTech

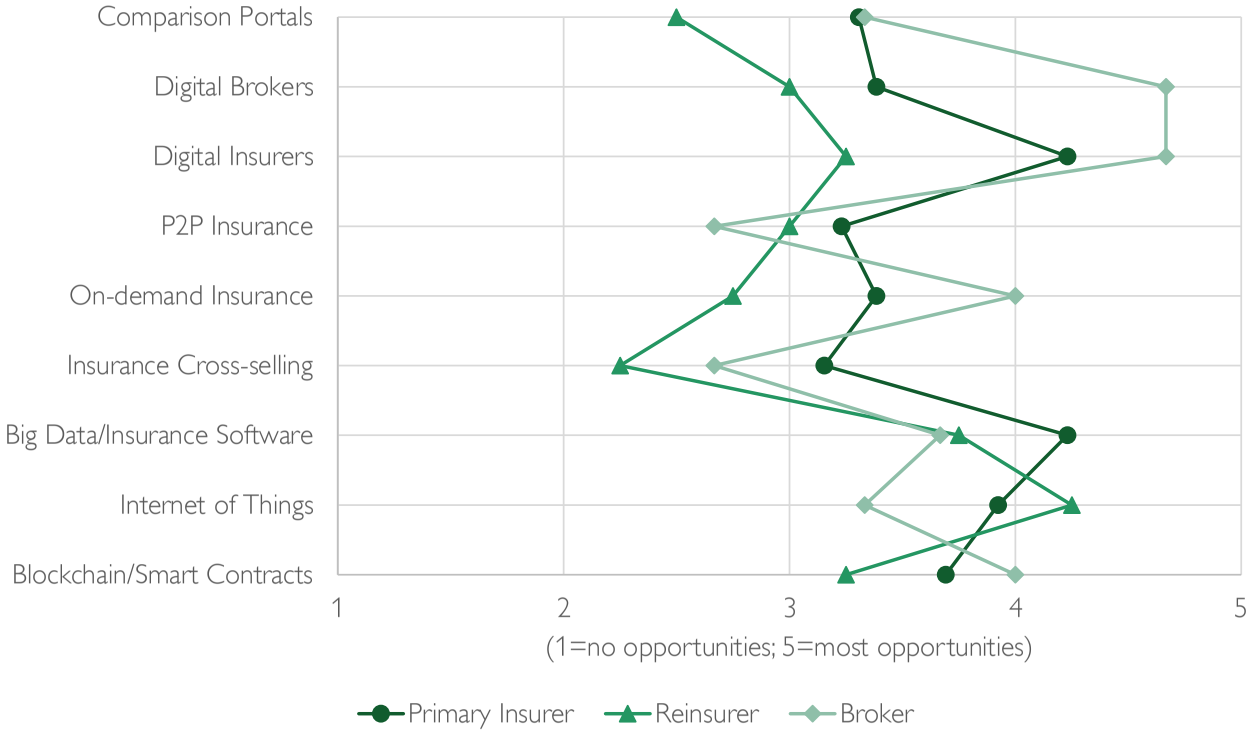


Figure 38: Incumbents: Opportunity Potential of InsurTech

We go a step further and analyze how the assessments of the disruptive and opportunity potential of the InsurTech categories with respect to their own business differ between our three incumbent types. The former is shown in Figure 39. At first glance, one can see that the evaluations of the *primary insurers* are relatively centered with an average of 3.1. A comparison with Figure 37 reveals some positive and negative discrepancies. For example, although *digital brokers* are considered to be disruptive (above 3) in general, this does not necessarily hold true for their own businesses. A similar result is observed for *peer-to-peer insurance*, while *on-demand insurance* has a higher disruptive potential for *primary insurers* than for the market as a whole. Except for *Big Data analytics & insurance software*, *Blockchain & Smart Contracts*, and *Internet of Things* startups, *reinsurers* do not feel threatened by the InsurTech movement. This is also expressed by their low average assessment of 2.8.

The opposite holds true for *insurance brokers* (average: 3.3), who classify five of the nine InsurTech categories as potential threats for their own business. Particularly their digital counterparts, i.e. *digital brokers* (4.3) and *comparison portals* (4.0), are viewed as critical competitors in the future. In line with Figure 37, all incumbents consider *Big Data analytics & insurance software* firms to pose the greatest threat to the current industry structure.

Regarding the opportunities InsurTech firms offer the incumbents' businesses, *reinsurers* (average: 3.3) view all categories as promising except for *insurance cross-selling* providers and *comparison portals* (Figure 40). Similarly, *primary insurers* (average: 3.3) also exhibit a positive view with respect to their own businesses and the potential InsurTech provides for them. *Insurance brokers* (average: 2.9), on the other hand, are rather pessimistic and regard only the categories *Big Data analytics & insurance software* as well as *Blockchain & Smart Contracts* as promis-

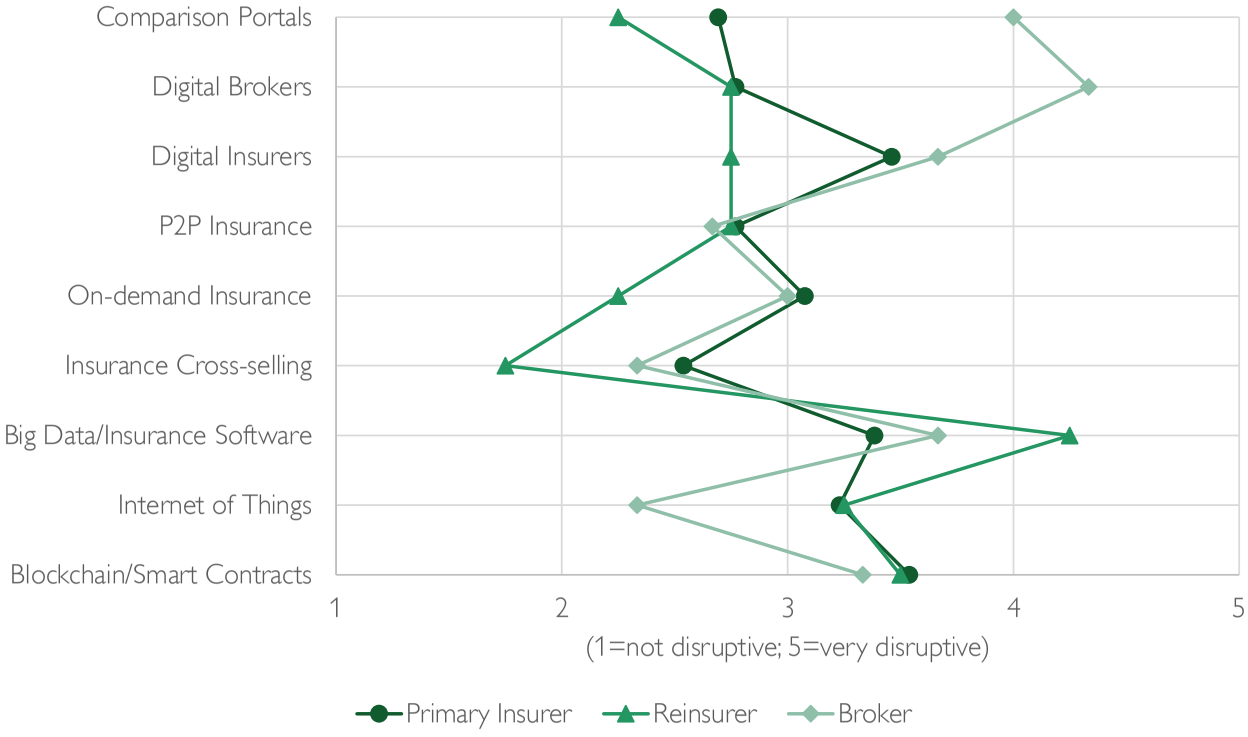


Figure 39: Incumbents: Disruptive Potential for Own Business

ing opportunities. This observation is confirmed from an aggregate perspective, from which it is apparent that these two InsurTech startup types are associated with the highest average assessments amounting to 4.3 and 3.8, respectively.

Based on the assessments shown in Figures 37–40, an overall classification into potential *competitors* and *cooperation partners* can be carried out. The corresponding results are displayed in Figure 41. As could have been expected from the previous analysis, there are substantial differences between *primary insurers*, *reinsurers*, and *insurance brokers*. The graph illustrates that *reinsurers* consider all nine InsurTech categories as potential cooperation partners. This is also expressed by their high overall assessment of 4.4 on average. Furthermore, *Internet of Things* and *Blockchain & Smart Contracts* startups achieve their highest possible evaluation of 5.0. The most cautious assessments, in turn, are provided by *insurance brokers*, who deem the first six InsurTech categories as serious competitors. Compared to *reinsurers* and *insurance brokers*, *primary insurers* take on an intermediate position. More specifically, although they consider *digital insurers* a challenge, the categories *comparison portals*, *Big Data & insurance software*, as well as *Internet of Things* are expected to be promising cooperation partners. Finally, with an average of 4.1, these two InsurTech categories are assigned the highest cooperation potential among all incumbents, whereas particularly *peer-to-peer insurance* (2.9) as well as *on-demand insurance* (3.0) are assumed to become serious competitors.

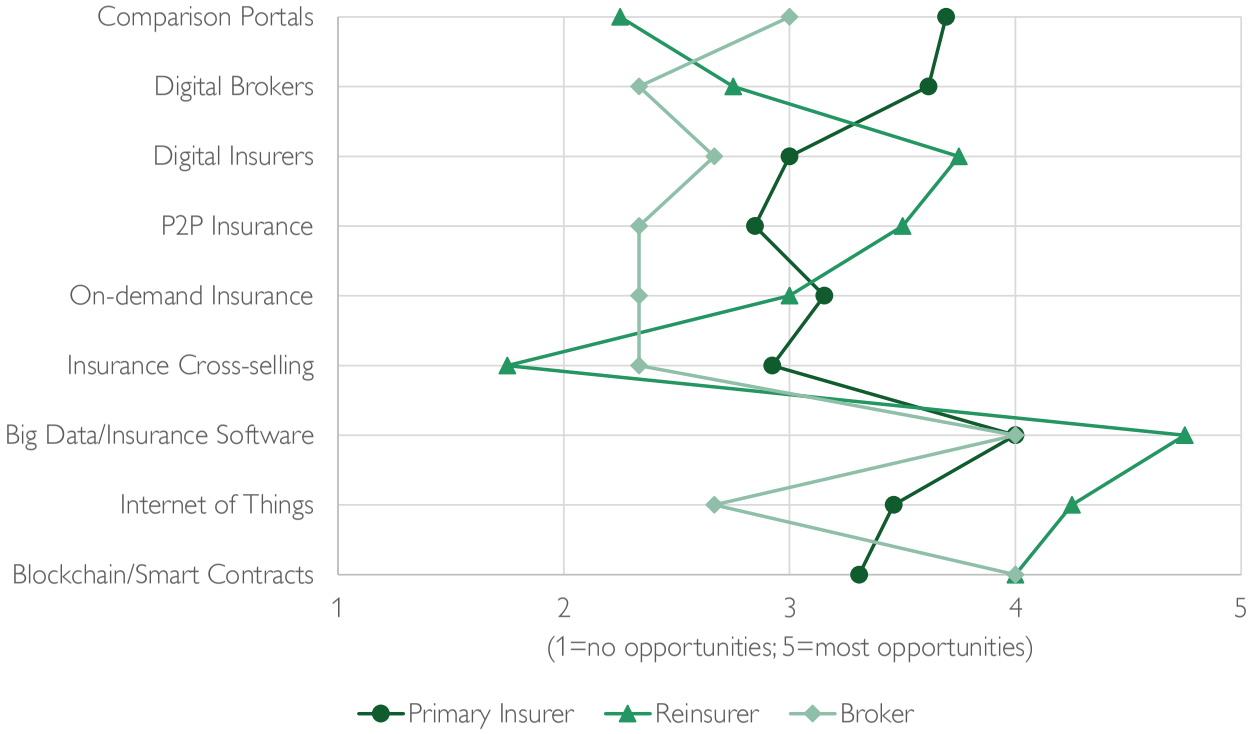


Figure 40: Incumbents: Opportunity Potential for Own Business

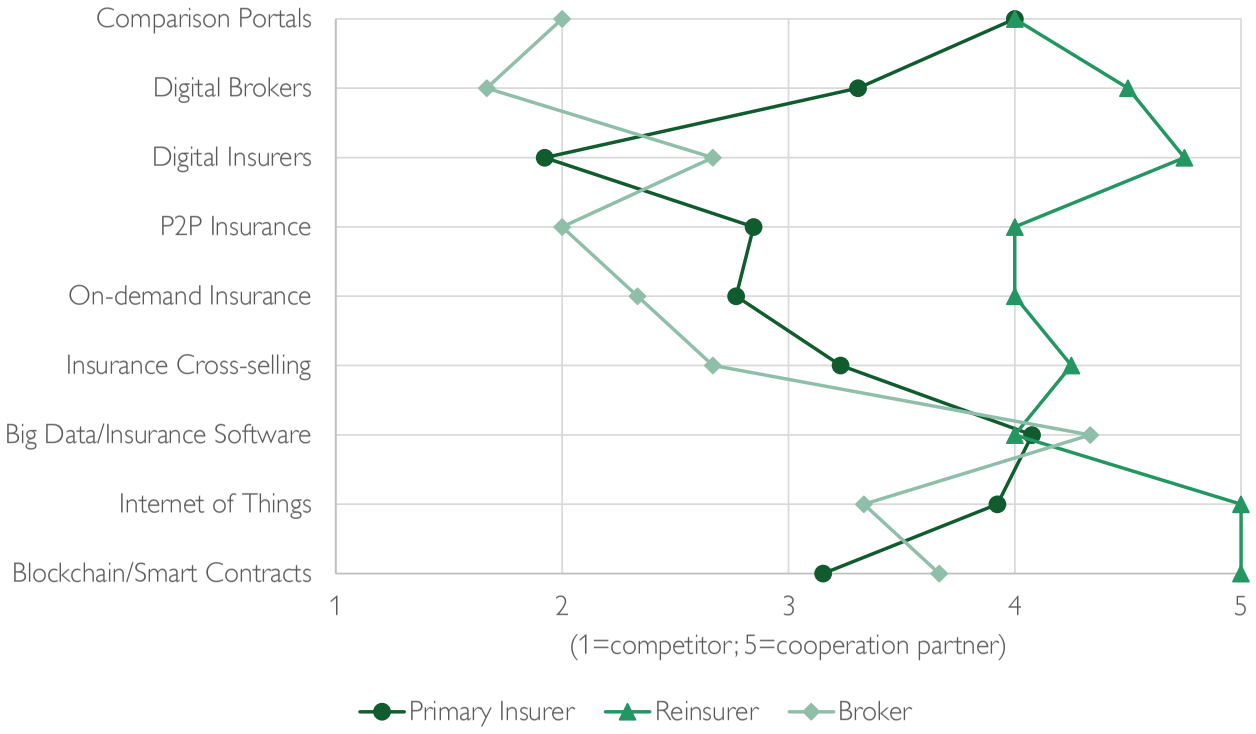


Figure 41: Incumbents: Competitive Assessment of InsurTech

Venture Capital Firms and Incubators/Accelerators

In addition to *insurance companies* and *insurance brokers*, both *venture capital firms* and *incubators/accelerators* have a major interest in the current InsurTech movement. This subsection shows some selected results with respect to their corporate strategies, current activities, as well as potential responses to InsurTech startups

Figure 42 demonstrates that every second *venture capital firm* in our sample has a strategic focus on InsurTech and a specialized expert team. Moreover, it is obvious that each of them holds a current investment in at least one InsurTech startup company. The same is observed for the *incubators/accelerators*, who all run a support program for startups focusing on the insurance industry. Compared to the *venture capital firms*, their strategic focus is more pronounced and exclusively centered around InsurTech. Additionally, 75 percent have an InsurTech expert team. However, both firm types are well positioned and are at the same stages as the traditional insurance market *incumbents*, i.e. *primary insurers*, *reinsurers*, and *insurance brokers*, as shown in Figure 35.

Their assessments concerning the attractiveness to invest (*venture capital firms*) or to offer a supporting program (*incubators/accelerators*) for each of our nine InsurTech categories are displayed in Figure 43. Similar to the *primary insurers*, *reinsurers*, and *insurance brokers* (shown in Figure 40), both *venture capital firms* and *incubators/accelerators* consider *Big Data & insurance software* startups as the most promising InsurTech category. While the former are also interested in *Blockchain*, the latter rather concentrate on the *Internet of Things*. Interestingly, this category causes the second largest disagreement directly behind *peer-to-peer insurance* startups, which seem to be of lesser relevance for *venture capital firms*. *Incubators/accelerators*, on the other hand, have an enhanced evaluation of almost all categories except for *comparison portals* and *digital brokers*. Given that most *comparison portals* are among the

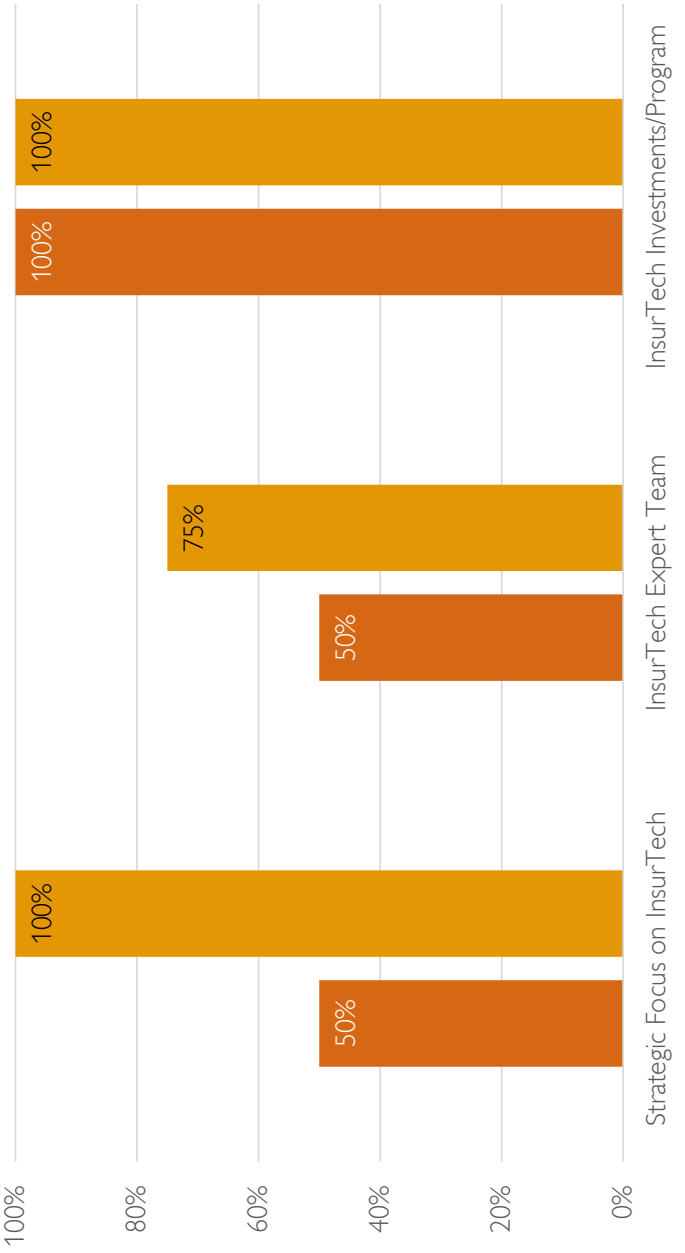


Figure 42: Strategies of VC Firms and Incubators/Accelerators

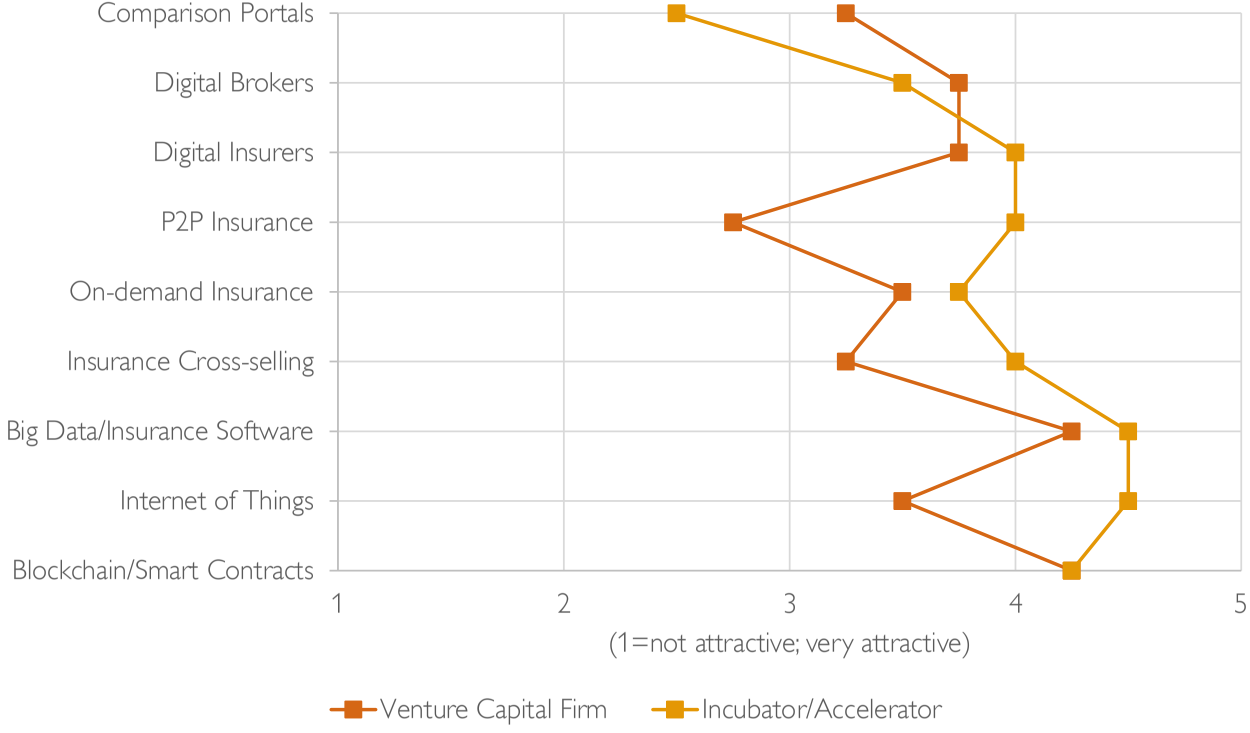


Figure 43: Investments & Support per InsurTech Category

oldest InsurTech firms, this result is not entirely surprising. However, with their average assessments being clearly above the neutrality threshold (3.6 and 3.9), both firms take an overall positive stance on the InsurTech trend.

Section 5.4 outlines a total of six possible response strategies to the InsurTech movement, i.e. *ignore*, *observe*, *compete*, *cooperate*, *develop*, as well as *invest*. In order to implement them appropriately, *venture capital firms* and *incubators/accelerators* need a clear strategy/agenda with regard to current InsurTech startups and trends. Moreover, an informed decision also requires a certain level of InsurTech-related know how, which might vary considerably between the nine different InsurTech categories. Alongside *venture capital firms* and *incubators/accelerators*, the traditional insurance incumbents, i.e. *primary insurers*, *reinsurers*, as well as *insurance brokers* must also keep their knowledge and information up to date. In this regard, Figure 44 shows how the different incumbents assess their own positions.

As can be seen, there are significant disagreements between the different parties. That is, only *primary insurers* (12.8 percent) and *other* firms (1.7 percent), i.e. journalists, consultants, etc. state that their InsurTech knowledge is "very low" and that their current strategy/agenda is "unclear". Moreover, with 15.4 percent, the former achieve the lowest share among all firms that consider their own strategy as "very clear". *Insurance brokers*, on the other hand, show a homogeneous distribution across the categories, while the same holds true for *reinsurers*, although they are on a significantly higher level. That is, the majority (58.3 percent) feels to be well-informed, while none of them can be found in the two lowest categories. Similarly, *venture capital firms* have a sound knowledge, which also applies to most of the *other* companies. As could have been expected, *incubators/accelerators* are in the leading position among all parties. More specifically, more than 90 percent of the compa-

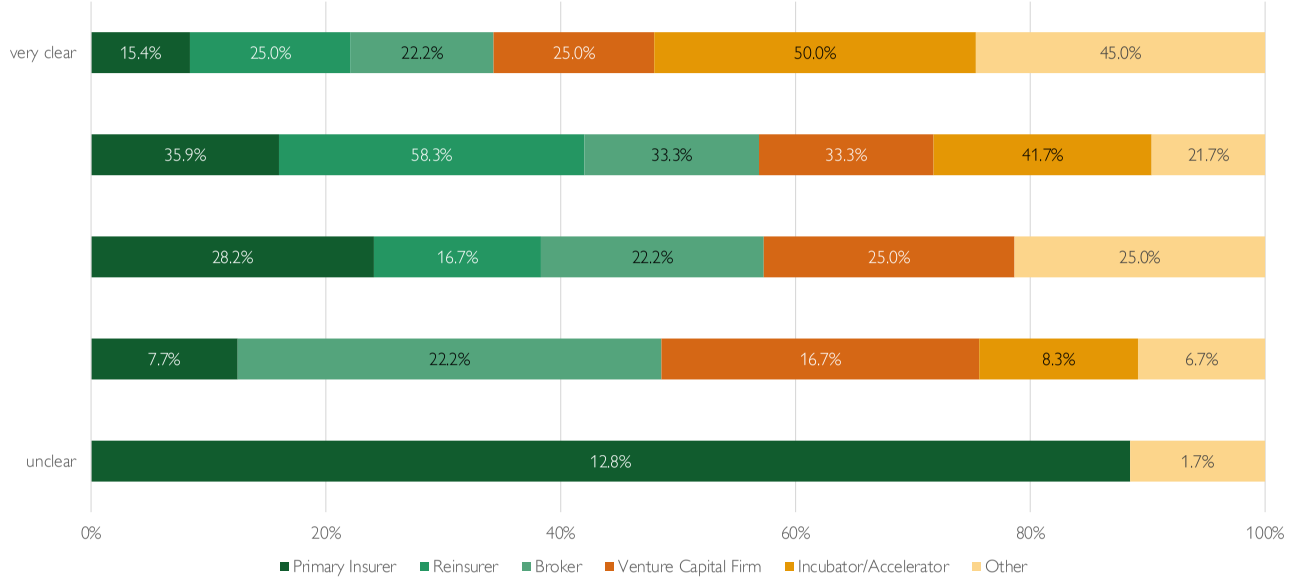


Figure 44: Strategy/Agenda/Know How Regarding InsurTech

nies consider their own InsurTech strategy/agenda to be close to "very clear". Interestingly, a total of 64.6 percent of all answers indicates that their understanding and know how with respect to InsurTech is "clear" to "very clear", while only 12.5 percent are up to the two lowest categories.

In the next step, we analyze how the incumbent insurers and brokers evaluate the appropriateness of the six response strategies regarding the InsurTech trend (Figure 45). At first glance, it is apparent that the shape of the three lines is almost identical, although the absolute values are significantly different. More specifically, all incumbents share the opinion that *ignore* is the most inappropriate strategy (average: 1.6) but disagree with respect to *observe*, *compete*, and *invest*. Both *primary insurers* and *reinsurers* have similar assessments for the first five strategies, that are most congruent for *cooperate* and *develop*. Interestingly, only *reinsurers* consider an investment in InsurTech startups as fully appropriate. For *insurance brokers*, on the other hand, *observe* turns out to be their first-best response, followed by *developing* own solutions and *cooperations* with InsurTech firms. However, the interpretation of the answers shown in Figure 41 should be taken with caution since they exclusively refer to the overall InsurTech movement. To be more concrete, all incumbents gave their opinion independently from our nine InsurTech categories. Thus, it needs to be expected that the appropriateness of the six strategies significantly differs between the latter.

In line with Figure 45, Figure 46 shows how the *venture capital firms*, *incubators/accelerators*, as well as the *other* respondents in our sample evaluate the proposed six response strategies. The first important observation is that the shapes of the lines are similar to the incumbent insurers and brokers. However, in contrast to Figure 45 (*insurance brokers*), all three firms exhibit almost the same pattern without any significant disagreements. This is underlined by identical averages of 3.5 (*venture*

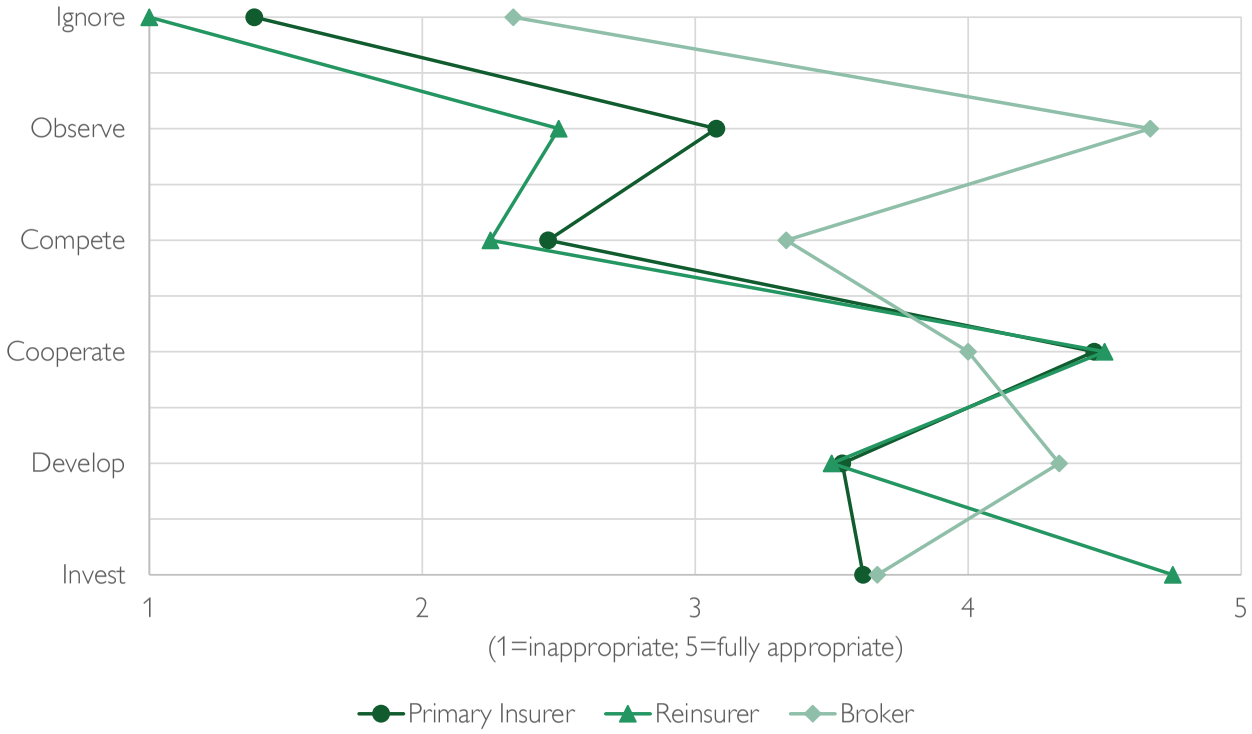


Figure 45: Potential Response Strategies to InsurTech (1/2)

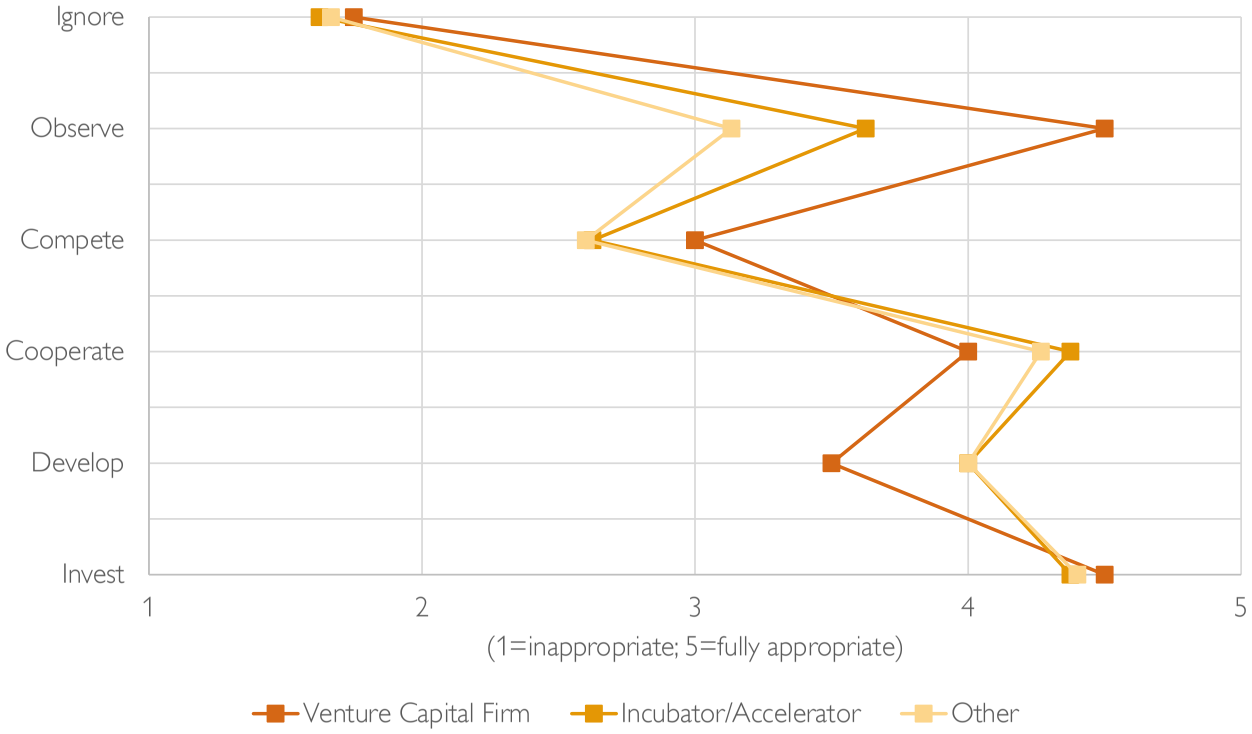


Figure 46: Potential Response Strategies to InsurTech (2/2)

capital firms), 3.4 (*incubators/accelerators*), and 3.3 (*other* companies). Second, *ignore* remains to be the most inappropriate strategy with an overall average amounting to 1.6. As expected, *invest* is considered to be first-best (average: 4.4), directly followed by *cooperation* (average: 4.2).

InsurTech Startups

We want to concentrate on the responses of our *InsurTech startup* founders and employees, in order to analyze whether and how their assessments differ from those of the *primary insurers*, *reinsurers*, *insurance brokers*, *venture capital firms*, *incubators/accelerators*, and *other* companies. Before doing so, however, we first start with their current funding stages and volumes, which are displayed in Figure 47. Among the 27 startups in our sample, the majority (66.7 percent) either received seed or stage A funding, while 25 percent are already beyond round C. More specifically, 10 startups collected seed funding, 8 are at stage A, 2 at stage C, and 7 even beyond. Regarding the funding volumes, the averages per round equal USD 1.2 million (seed), USD 7.7 million (round A), USD 44.7 million (round C), and USD 43.8 million (beyond).

As already addressed before, position of the InsurTech startup in the insurance ecosystem is expected to be the main driver behind the assessment, which of the traditional incumbents are rather seen as competitors than as promising cooperation partners. Figure 48 shows how the incumbents are classified by the InsurTech startups in our sample.[15] The graph provides several interesting insights. First, the majority of the startups considers all *primary insurers* as potential cooperation partners, which is most pronounced for *property & casualty* (77.8 percent), *universal* (66.7 percent), and *life & health* companies (59.3 percent). An inverse ranking is observed for the other end of our scale, where particularly the two former are viewed as serious competitors (7.4 percent each). However, the overall cooperation potential regarding all *primary insurers* is significantly positive. Second, *reinsurers* are not associated with any competitive potential, while 70.4 percent perceive them as promising for future cooperations. Third, a completely different picture is obtained for *insurance brokers*. With 44.4 percent, less than half of the InsurTech

[15] Please note that we refrain from depicting Figure 48 for each InsurTech category separately in order to ensure their anonymity.

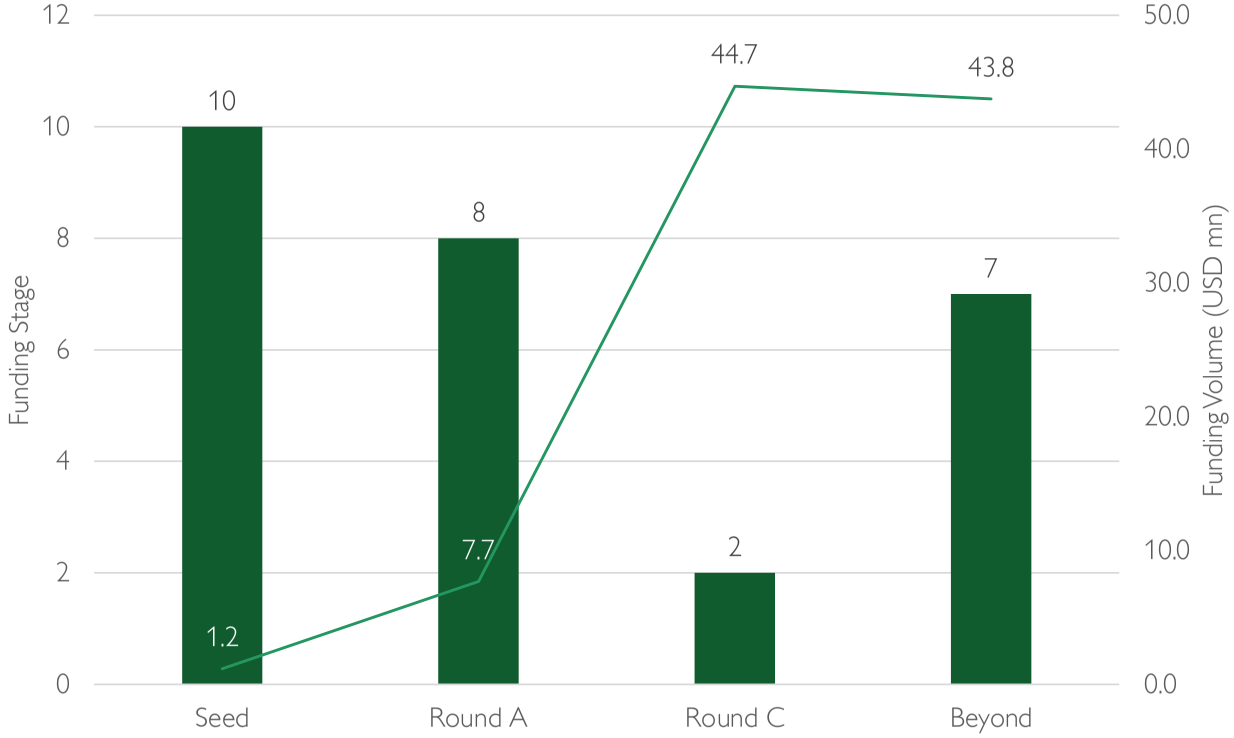


Figure 47: InsurTech Startups: Funding Stages and Volumes

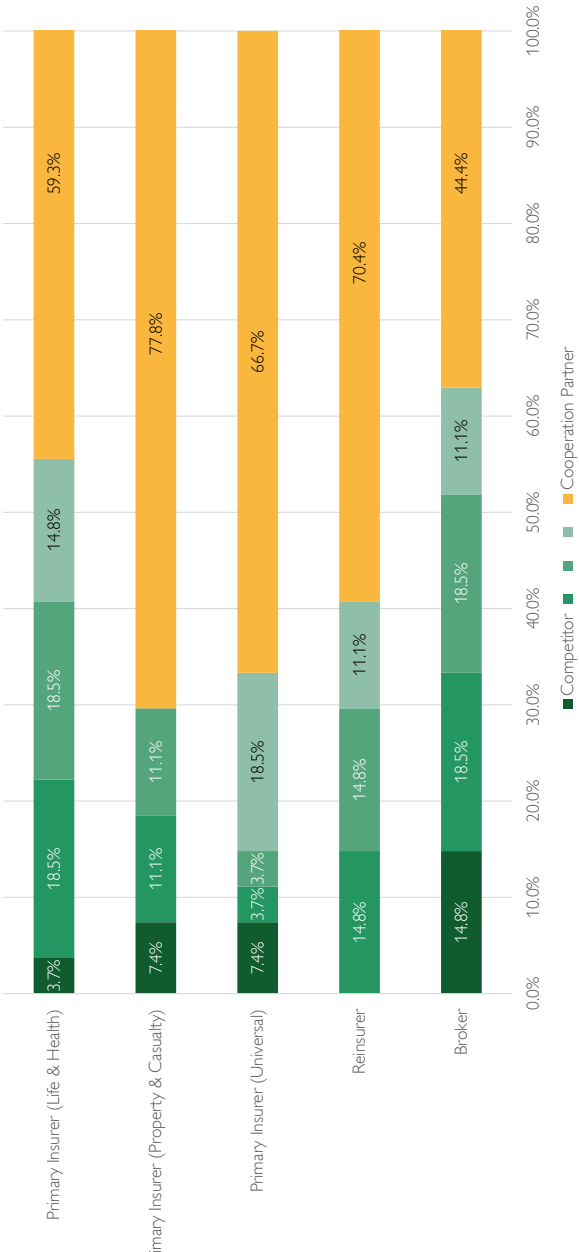


Figure 48: InsurTech Startups: Stance Towards Incumbents

startups in our sample are of the opinion that *insurance brokers* are cooperation partners. Instead, every third of them evaluates them as a natural competitor. Finally, given these assessments across the five different incumbents with clear preferences for *primary insurers* and *reinsurers*, it might be concluded that most InsurTechs are rather centered around the distribution stage in the insurance ecosystem, whereas only few of them currently intend to become their own risk carriers.

Similar to Figure 37 in the section of how to deal with incumbent insurers, the next step of our analysis aims to examine how the InsurTech firms assess the disruptive potential of the different InsurTech categories. Their evaluations are shown in Figure 49, which also contains the responses of the *venture capital firms*, *incubators/accelerators*, and *other* companies. The graph illustrates that *InsurTech startups* consider almost all categories to be rather disruptive, i.e. all assessments are above 3 with an average of 3.6. However, from their perspectives, *insurance cross-selling* (2.9) and *comparison portals* (3.0) do not fulfill the disruption criterion. *Venture capital firms*, on the other hand, exhibit a right-skewed pattern (average: 3.7) with *Big Data & insurance software* (4.3) and *Blockchain & Smart Contracts* (4.0) being the most disruptive InsurTech categories. Furthermore, in line with Figure 48, *digital brokers* (4.0) also achieve a high ranking, which implies that their traditional counterparts, i.e. *insurance brokers*, are indeed rather competitors than cooperation partners. Both *incubators/accelerators* and *other companies* have an identical average assessment of 3.6, although their individual responses differ significantly for some InsurTech categories such as *digital insurers* and *comparison portals* respectively. Among all nine InsurTech types, startups focusing on *Big Data & insurance software* (4.2), *on-demand insurance* (4.0) and *digital insurers* (4.0) are considered to exhibit the highest potential to disrupt the industry. Hence, their assessments do not notably deviate from those of the incumbent insurers and brokers as shown in Figure 37.

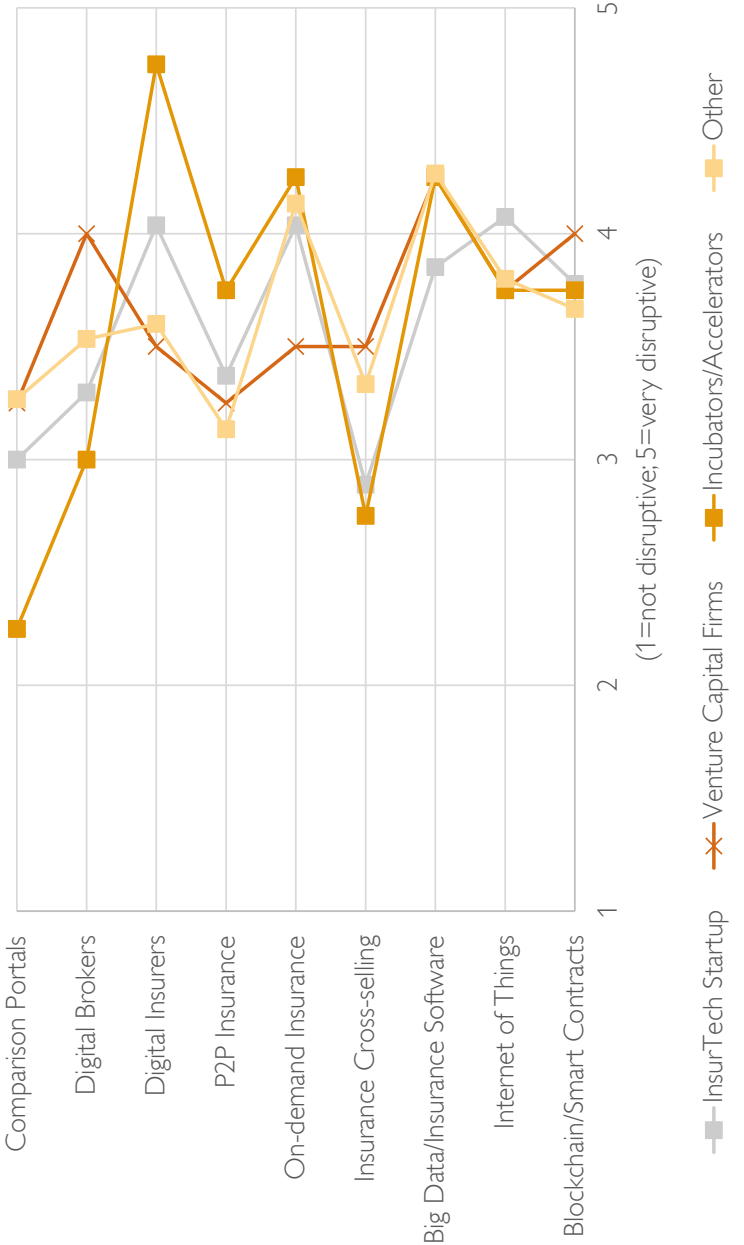


Figure 49: InsurTech Players: Own Disruptive Potential

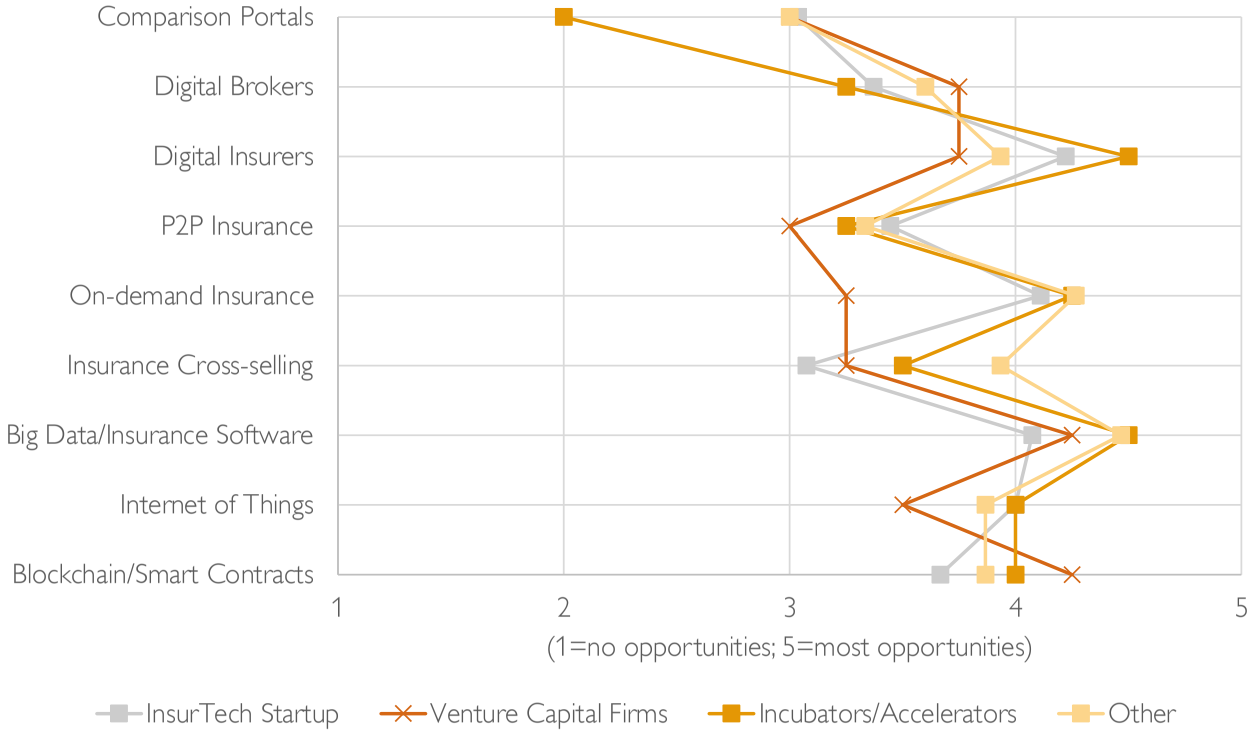


Figure 50: InsurTech Players: Opportunity Potential of InsurTech

Finally, in line with Figure 38, we also want to give an impression how the InsurTechs assess their own opportunity potential for the insurance industry. Analogous to the incumbents, Figure 50 shows that their overall tendency is positive with a global average of 3.7. Moreover, the patterns of the *InsurTech startups*, the *incubators/accelerators*, as well as the *other* firms are almost fully identical. The only exception, however, are *comparison portals*, which receive a low rating (2.0) of the *incubators/accelerators*. Also, *venture capital firms* arrive at different assessments than the remaining parties for several categories such as *on-demand insurance* and *Internet of Things* startups. Compared to Figure 38, containing the responses of the traditional incumbents, it can be concluded that the self-assessment of the InsurTech startups regarding their opportunity potential is considerably more positive.

Success Factors of InsurTech Startups

The final analysis aims to reveal how our survey respondents assess the importance of the six success factors InsurTech startups might need to have in order to become sustainable market participants. The results are shown in Table 11 with the underlying scale ranging from one (not important at all; highlighted in red) to five (very important; highlighted in green). Additionally, intermediate levels of importance are depicted in yellow. From the last row, it is apparent that all participants agree on the fact that InsurTechs need to provide additional value for their targeted customers (average: 4.9). Regarding the five remaining success factors, however, there is some notable disagreement between the different firms. For example, *life & health primary insurers* (4.7) and *insurance brokers* (4.3) evaluate the capital base as highly important, whereas *incubators/accelerators* (2.0) attach almost no importance to this success factor. Similarly, opinions significantly differ with respect to industry and customer knowledge, particularly between the *life & health primary insurers* (4.7) and *universal primary insurers* (3.0). Besides the added value factor, an innovative business model (4.1) and the application of cutting-edge technology (4.0) are considered to be the most important traits of an InsurTech among all market participants. Another interesting insight relates to the first aspect that states that a successful InsurTech startup needs to be on a disruptive trajectory. As can be seen from the table, respondents are divided into proponents, i.e. *life & health primary insurers* (4.3) and *insurance brokers* (4.3), while all remaining firms rather consider this factor to be only of intermediate importance.

Success Factors	L&H	P&C	Univ.	Reinsurer	Broker	InsurTech Startup	VC Firm	Incubator/ Accelerator	Other
Disruptive Trajectory	4.3	3.4	3.0	3.0	4.3	3.7	3.5	3.8	3.3
Innovative Business Model	4.7	4.4	4.2	3.5	4.7	3.7	3.8	4.0	3.9
Cutting-edge Technology	5.0	3.6	3.6	4.5	4.3	4.1	3.5	3.5	3.9
Capital Base	4.7	3.2	2.2	2.3	4.3	3.5	2.8	2.0	3.4
Industry and Customer Knowledge	4.7	3.4	3.0	3.3	4.0	3.9	4.5	4.3	3.9
Added Value for the Targeted Customers	5.0	4.8	5.0	4.8	5.0	4.9	5.0	5.0	4.6

Table 11: Importance of Success Factors of InsurTech Startups

7 Summary and Outlook

The InsurTech sector is continuing to grow at a relentless pace. Due to the sheer number of entrants, incumbents need to take this development seriously. Our study aims to help outside observers navigate this fast-moving environment, offering guidance through central concepts from the academic management literature. Based on a highly practical three-dimensional InsurTech taxonomy, we analyze the topography of the current startup landscape. Two aspects stand out in this regard. First, although the vast majority of activities still focuses on the distribution part of the industry ecosystem, full-stack InsurTech risk carriers are starting to become more commonplace. Second, we observe hardly any real game-changing business model innovations yet, as many existing startups are essentially pepping up the classical industry approaches with the patterns "e-commerce" or "digitization" as defined in the St. Gallen Business Model Navigator. Consistent with this observation, most entrants are not on a disruptive trajectory in the sense of Christensen's famous theory. Instead, our InsurTech strategy matrix assigns them to the category "enablers", suggesting "cooperation" as the incumbents' reaction of choice for the majority of currently prevailing scenarios.

These findings are confirmed by the results of our empirical analysis. Overall, the incumbents that responded to our survey exhibit a decent degree of familiarity with the InsurTech space. The reinsurers clearly see themselves as pioneers. This is fully consistent with the large range of InsurTech-related activities in which they engage. The traditional brokers in our sample, on the contrary, feel the highest pressure from the new entrants. In line with these perceptions, the three types of incumbents clearly favor different reactions to the challenges brought about by the rise of InsurTech: the brokers tend to adopt a competitive stance, the primary insurers remain neutral, and the reinsurers strongly lean to-

ward partnerships. The majority of entrants, on the other hand, seems to be prepared to team up with all incumbents. As a result, cooperation is the most frequently adopted strategy for the time being. Nevertheless, the InsurTech firms rate their own disruptive and opportunity potential higher than the incumbents. This attitude might lead to less considerate moves at later stages.

Consequently, the still relatively comfortable situation given right now may change soon. Naturally, the first InsurTech generation has focused on those parts of the industry ecosystem least regulated and which require little insurance know how, such as the customer interface. However, several more dangerous directions for the evolution of the sector are plausible in the near future. More specifically, we have identified a number of powerful business model recombinations that are either about to be launched or clearly visible on the horizon. One such out-of-the box approach is pursued by a new class of digital insurer that offers personalized insurance based on a comprehensive individual risk assessment. In addition, genuine peer-to-peer concepts, which enable risk transfer directly to the capital markets, could call the primordial relevance of insurance companies into question and therefore lead to outright disintermediation. In other words, what will be the role of insurance companies, if they are no longer needed to provide coverage? The only escape from such a scenario seems to be a dramatic business model innovation by incumbents that opens up completely new markets through highly relevant value propositions for customers. Therefore, even a blurring or complete break up of the traditional insurance industry boundaries is conceivable in the long run.

InsurTech Glossary

1. *Accelerator:* a coaching program for startup founders, where offices, contacts and experts are either provided or facilitated. Accelerators assist founders in implementing their ideas and rapidly take them to market. In addition to contacts, feedback and support, one goal is to roll out a beta version of the product. The course often ends with a pitch day, when the entrepreneurs present their business ideas to investors to attain *seed investment*.

2. *Business Angel:* an experienced entrepreneur who invests in startups and supports founders with experience and contacts.

3. *Blockchain:* a decentralized, digital ledger of transactions, each entry with a unique ID, generated by participants in a particular market, enhancing trustable instance.

4. *Crowdfunding:* a form of funding, where contributions or donations are requested through a platform or a company site. Through this form of funding, companies or individuals potentially have access to more capital than through conventional funding means.

5. *Crowdsourcing:* a company gives a task to an external group of individuals. The group members do not necessarily have to be experts, but could also be users of the company's products or service. They contribute their knowledge and experience to help improve the products.

6. *Digitization:* the process of changing from an analogous to a digital format. In a business context, this means to employ digital technologies in order to change a business model and provide new revenue and value-producing opportunities.

7. *Family Office:* companies that manage large private assets. The company can be a family business, or an external asset manager that manages assets owned by several families.

8. *FinTech:* a portmanteau of "financial services" and "technology". FinTech companies compete in the marketplace of traditional financial institutions and intermediaries in the delivery of financial services using new technology and innovation.

9. *Growth Capital Funds:* funding for mature companies with revenue between EUR 10 and 50 million, when the company is in need of capital for expansion or restructuring. The expected return is usually lower than that of venture capital funds.

10. *Incubator:* an institution that serves to help and develop startups. Incubators are on hand for startups with expertise and resources. In return, the incubator has direct access to the startups' developments. They can also be entities affiliated with a company, which foster inovative ideas from employees and help implement those ideas.

11. *InsurTech:* a subcategory of FinTech, an umbrella term for the application of modern technologies in the risk transfer sector.

12. *On-Demand Insurance:* individual micro-policy by form filling and mouse clicking.

13. *Peer-to-Peer (P2P):* communication or cooperation between two equally privileged, equipotent parties. Peer-to-peer insurance enables participants to reciprocally insure each other, where customers create their own risk tools and transfer only peak risks to an insurance company.

14. *Robo Advisors:* artificial intelligence to advise customers via webpages, apps or mobile devices.

15. *Seed Investment:* also known as seed capital, seed money or seed funding. The first funding of startups. Investors provide startups with capital for company formation. In return, the investors will

hold company shares or have a share in the profits. After seed profit follow funding rounds series A, series B, series C and so on.

16. *Smart Contracts:* fully executable insurance contracts delivered with the use of computer code.

17. *Spot Insurance:* a short-term insurance applying to a specific situation, e.g. when a person lends a car to a friend for one day and needs a 24-hour third-party driver protection.

18. *Usage-Based Insurance:* the price of insurance depends on the individual behavior. The most important applications are pay-as-you-drive (premium depends on the amount and time of the day) and pay-how-you-drive (premium depends on the driving behavior like speed or braking behavior) in motor insurance using telematics and pay-as-you-live in health insurance using wearables.

19. *Venture Capitalist:* an investor who provides capital particularly for startups and bears a risk of capital loss. A special variant is venture debt funds which grant loans to startups.

8 Appendix: InsurTech Startup Profiles

1. *Backbase*
2. *BigML*
3. *Bought By Many*
4. *Check24*
5. *Comparis*
6. *CoverHound*
7. *Embroker*
8. *Everledger*
9. *Friendsurance*
10. *GetSafe*
11. *HavenLife*
12. *Knip*
13. *Lemonade*
14. *MassUp*
15. *MetroMile*
16. *Monax*
17. *Nest Labs*
18. *ottonova*
19. *Reportix*
20. *Sherpa*
21. *Simplesurance*
22. *Slice*
23. *Snapsheet*
24. *Snapsure*
25. *trōv*
26. *TrueMotion*
27. *Withings*

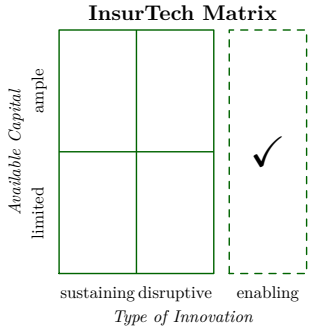
Year Founded: 2013
Country: Netherland
Staff: 251–500
Funding: Undisclosed
Website: backbase.com

Backbase develops and delivers portal software solutions for financial and large enterprises. It offers Bank 2.0 portal software that enables financials to deliver online banking services across multiple devices, including tablets and smartphones, and turns online channel into a customer experience platform; and Backbase Portal 5.4, a solution to manage and optimize online platforms. The company also provides mentoring, implementation, training, and support services. It serves financial services, software and original equipment manufacturers, manufacturing, travel and transportation, telecom, media, government, and healthcare customers worldwide.

InsurTech Category:
Big Data Analytics

Business Model Patterns:
Subscription and Layer Player

Role in Ecosystem:
Technology



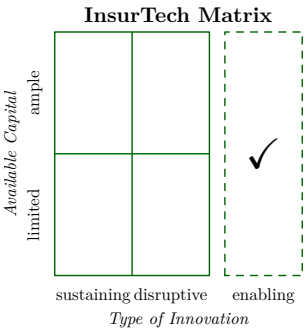
Year Founded: 2011
Country: USA
Staff: 11–50
Funding: USD 1.63 mn
Website: bigml.com

BigML is a machine learning company that provides software as a service (SAAS) for manipulating and analyzing data. The service can be used in production mode or development mode. Development mode is free but limited in the size of tasks that can be completed. Production mode is a paid mode and credits can be purchased ad hoc in blocks or on a subscription basis. This is a familiar pattern from other cloud based services like storage or compute servers. BigML provides three main modes to use the service: web Interface, command Line Interface and application programming interface.

InsurTech Category:
Big Data Analytics

Business Model Patterns:
Subscription and Layer Player

Role in Ecosystem:
Technology



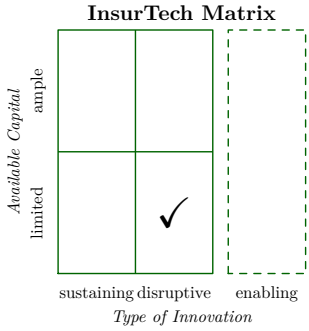
Year Founded: 2013
Country: UK
Staff: 11–50
Funding: USD 9.14 mn
Website: boughtbymany.com

Bought By Many is a free, members-only service that helps customers find insurance for the things in their life that are out of the ordinary. It enables people with niche interests — such as model railway enthusiasts or owners of exotic pets — to club together to get a discount on the insurance that they buy from established insurance companies. It now has over 250,000 customers and 300 live groups.

InsurTech Category:
Peer-to-Peer Insurance

Business Model Patterns:
Peer-to-Peer and E-Commerce

Role in Ecosystem:
Distribution



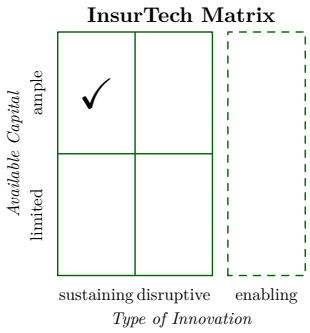
Year Founded: 1999
Country: Germany
Staff: 51–100
Funding: Undisclosed
Website: check24.de

Check24 is a German comparison website offering insurance, finance products, energy, telecommunications, travel and smartphone comparisons. The Munich-based online portal also brokers policies in insurance segments. Their mission is to provide consumers with greater transparency when they choose major life investments, such as mortgages and insurance.

InsurTech Category:
Comparison Portal

Business Model Patterns:
E-Commerce and Layer Player

Role in Ecosystem:
Distribution



comparis.ch

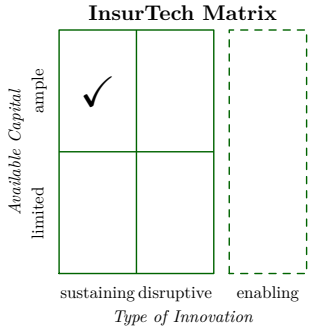
Year Founded: 1996
Country: Switzerland
Staff: 51–100
Funding: Undisclosed
Website: comparis.ch

Comparis.ch is the leading Swiss internet comparison portal offering e-commerce services. The site enables customers to easily and quickly compare rates and services of health insurance providers, other insurers, banks and telecommunications providers as well as offers for properties, cars and motorcycles.

InsurTech Category:
Comparison Portal

Business Model Patterns:
E-Commerce and Layer Player

Role in Ecosystem:
Distribution



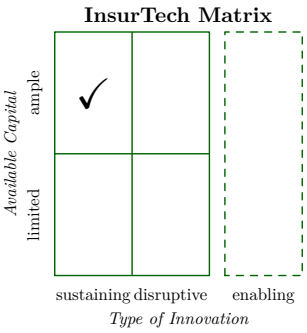
Year Founded: 2010
Country: USA
Staff: 101–250
Funding: USD 57.48 mn
Website: coverhound.com

Dedicated to giving consumers transparent access to the best car insurance rates, CoverHound provides smart recommendations and personalized quotes. With the guarantee of no spam and promise to keep all private information safe, consumers stay in control. CoverHound graduated from AngelPad in spring 2011, and immediately secured seed funding from Blumberg Capital.

InsurTech Category:
Comparison Portal

Business Model Patterns:
E-Commerce and Layer Player

Role in Ecosystem:
Distribution



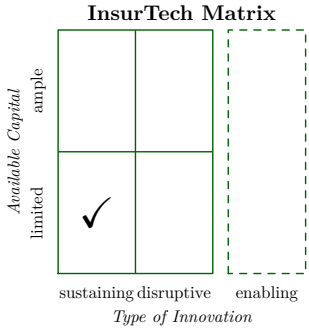
Year Founded: 2015
Country: USA
Staff: 11–50
Funding: USD 14.4 mn
Website: embroker.com

Embroker is a tech driven commercial insurance company that's radically improving how businesses buy and manage coverage. By leveraging a free online technology platform, data, and the expertise of a team of experienced commercial brokers, Embroker delivers better outcomes.

InsurTech Category:
Digital Broker

Business Model Patterns:
Affiliation and E-Commerce

Role in Ecosystem:
Distribution



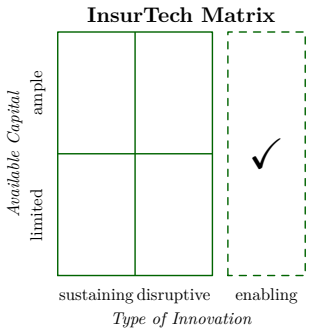
Year Founded: 2015
Country: UK
Staff: 11–50
Funding: USD 118 mn
Website: everledger.io

Everledger provides an immutable ledger for diamond ownership and related transaction history verification for insurance companies, owners, claimants, and law enforcement agencies. The global startup uses the best of emerging technology including blockchain, smart contracts and machine vision to assist in the reduction of risk and fraud for banks, insurers and open marketplaces.

InsurTech Category:
Blockchain and Smart Contracts

Business Model Patterns:
Licensing and Subscription

Role in Ecosystem:
Technology



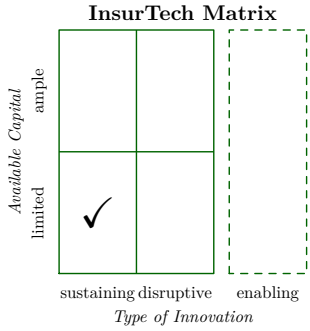
Year Founded: 2010
Country: Germany
Staff: 51–100
Funding: USD 15.3 mn
Website: friendsurance.de

Friendsurance operates on a peer-to-peer insurance concept, which rewards small groups of users with a cash back bonus at the end of each year they remain claimless. It operates as an independent broker in the German market with approximately 60 domestic insurance partners. The company's claims-free bonus is available on a range of retail products in Germany: home contents, private liability, and legal expenses insurances.

InsurTech Category:
Peer-to-Peer Insurance

Business Model Patterns:
Peer-to-Peer and E-Commerce

Role in Ecosystem:
Distribution



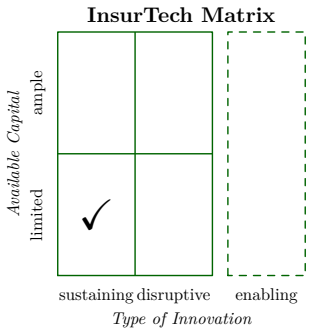
Year Founded: 2013
Country: Germany
Staff: 51–100
Funding: Undisclosed
Website: getsafe.de

The GetSafe App helps consumers to manage all their insurance policies in one place. GetSafe pioneered the Mobile Insurance Broker model in Germany and is among the country's fastest growing and best-known InsurTech startups. The app gives consumers a digital overview of their existing insurance policies, helps consumers optimize their insurance portfolio, and offers them free and independent advice through certified insurance experts.

InsurTech Category:
Digital Broker

Business Model Patterns:
Affiliation and E-Commerce

Role in Ecosystem:
Distribution



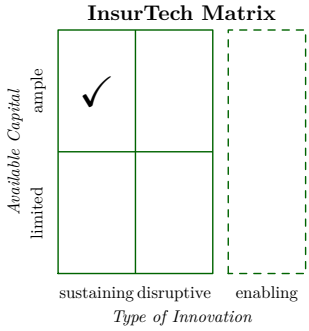
Year Founded: 2014
Country: USA
Staff: 51–100
Funding: Undisclosed
Website: havenlife.com

Haven Life is a tech-focused life insurance agency that offers the only affordable, fully medically underwritten term life insurance policy that can be purchased entirely online. They aim at transforming the typically time-consuming and confusing process of buying life insurance into one that's easier and faster.

InsurTech Category:
Digital Insurer

Business Model Patterns:
Digitization, E-Commerce, Cash Machine and Direct Selling

Role in Ecosystem:
Risk Carriers



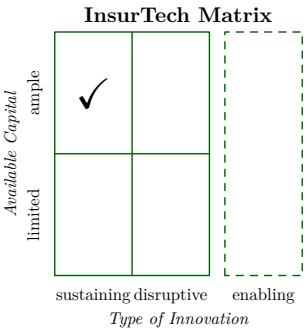
Year Founded: 2013
Country: Switzerland
Staff: 101–250
Funding: CHF 18.3 mn
Website: knip.ch

Knip app is an innovative mobile insurance manager that makes it easy for consumer to track all their insurance policies, premiums, and benefits. Their staff is there to advise users on all facets of their policies. Consumers can electronically adjust premiums, execute new policies, or cancel old ones. Knips' insurance experts strive for transparency and unbiased advice.

InsurTech Category:
Digital Broker

Business Model Patterns:
Affiliation and E-Commerce

Role in Ecosystem:
Distribution



Lemonade™

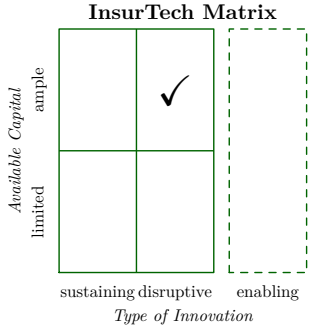
Year Founded: 2015
Country: USA
Staff: 11–50
Funding: USD 60 mn
Website: lemonade.com

Lemonade Insurance Company is a licensed insurance carrier, offering homeowners' and renters' insurance powered by artificial intelligence and behavioral economics. By replacing brokers and bureaucracy with bots and machine learning, Lemonade promises zero paperwork and instant everything. And as a Certified B-Corp, where underwriting profits go to nonprofits, Lemonade is remaking insurance as a social good, rather than a necessary evil.

InsurTech Category:
Peer-to-Peer Insurance

Business Model Patterns:
Peer-to-Peer and E-Commerce

Role in Ecosystem:
Risk Carriers



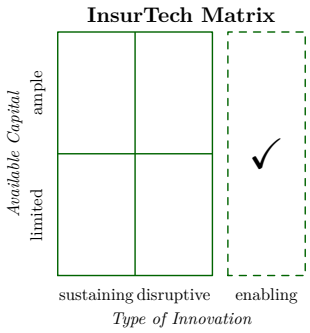
Year Founded: 2015
Country: Germany
Staff: 1–10
Funding: USD 16.3 mn
Website: massup.de

MassUp is an web-based white-label platform that enables brokers to sell annex, niche, and short-term insurance products such as electronics, sports equipment, pets, and other lifestyle products. The company's partners are given the facility to deploy and process their sales on all desktop, tablet, and mobile devices as well as earn commissions and validate contracts. The company follows a B2B approach and charges a percentage fee on every contract in addition to a fixed fee for setup.

InsurTech Category:
Insurance Cross-Selling

Business Model Patterns:
Cross-Selling and White Label

Role in Ecosystem:
Distribution



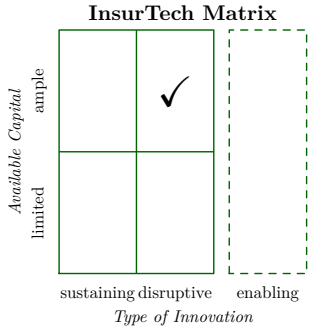
Year Founded: 2011
Country: USA
Staff: 101–250
Funding: USD 205.5 mn
Website: metromile.com

MetroMile provides per-mile car insurance products and services. It offers mileage-based pricing by calculating users' insurance costs each month based upon the actual miles they drive. The company provides users with Metronome device that is plugged into the car to track mileage in real-time. It offers claims services, such as glass repairs, roadside assistance, and accidents and other claims.

InsurTech Category:
On-Demand Insurance

Business Model Patterns:
Pay-per-Use and Aikido

Role in Ecosystem:
Risk Carriers



MONAX

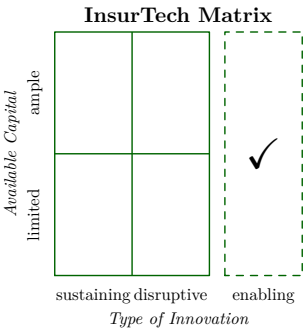
Year Founded: 2014
Country: USA
Staff: 11–50
Funding: Undisclosed
Website: monax.io

The monax platform is an open platform for developers and devops to build, ship, and run blockchain-based applications for business ecosystems. Monax sells legally compliant smart contract-based SDKs to accelerate the marketing with sophisticated ecosystem applications. With monax clients can leverage an enterprise-grade, mature, free and open-source application platform that utilizes best in breed, modular components to quickly build ecosystem applications that operate well with clients' existing systems and infrastructure.

InsurTech Category:
Blockchain and Smart Contracts

Business Model Patterns:
Licensing and Subscription

Role in Ecosystem:
Technology



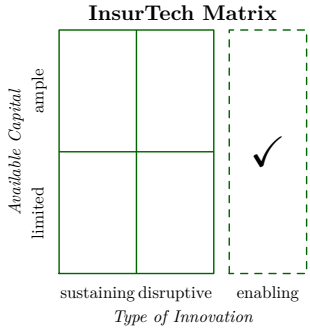
Year Founded: 2010
Country: USA
Staff: 1000–5000
Funding: USD 80 mn
Website: nest.com

Nest Labs is a home automation producer of programmable, self-learning, sensor-driven, Wi-Fi-enabled thermostats, smoke detectors, and other security systems. Its featured products include Learning Thermostat, Smoke+CO Alarm, Indoor Cam, Outdoor Cam. As of May 2017, Nest works with the Google Home.

InsurTech Category:
Internet of Things

Business Model Patterns:
Laverage Customer Data and Layer Player

Role in Ecosystem:
Technology



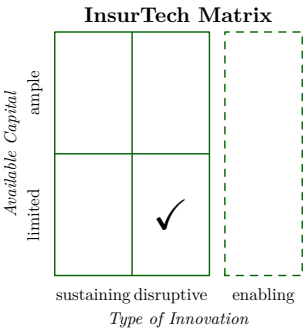
Year Founded: 2015
Country: Germany
Staff: 11–50
Funding: USD 15 mn
Website: ottonova.de

ottonova offers is a digital provider of both private health insurance and supplementary insurance. The customers can select their plans and sign contracts through the company's app. It is targeting young people who are digital-affine and who make good money — such as lawyers, accountants and consultants as only self employed or people with income above a certain threshold are eligible for private health insurance in Germany. With its core value being trust and reliability, the company stands for transparency and clear information that everyone can understand.

InsurTech Category:
Digital Insurer

Business Model Patterns:
Digitization, E-Commerce, Cash Machine and Direct Selling

Role in Ecosystem:
Risk Carriers



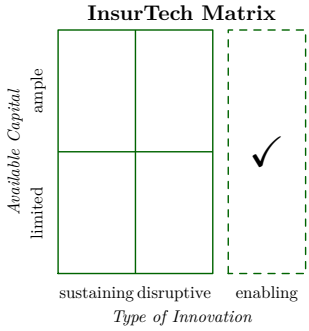
Year Founded: 2016
Country: Germany
Staff: 1–10
Funding: Undisclosed
Website: reportix.com

Reportix offers tools, solutions, services, consulting and training for extensible data management solving advanced data challenges in regulatory, financial and contractual processes utilizing mature data standards such as XBRL. Reportix creates software for insurance utilizing extensible smart contracts on blockchain technology.

InsurTech Category:
Blockchain and Smart Contracts

Business Model Patterns:
Licensing and Subscription

Role in Ecosystem:
Technology



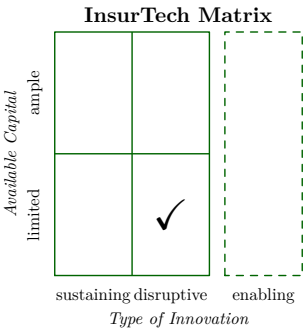
Year Founded: 2015
Country: Malta
Staff: 11–50
Funding: Undisclosed
Website: justsherpa.com

Sherpa offers its customers tailor-made insurance solutions. Sherpa is a trusted guide that supports the modern connected consumer by taking over the searching, paperwork and menial tasks of traditional insurance, and using personal information to generate customized insurance option with the highest benefit-cost ratio.

InsurTech Category:
Digital Insurer

Business Model Patterns:
Digitization, E-Commerce, Cash Machine and Direct Selling

Role in Ecosystem:
Risk Carriers



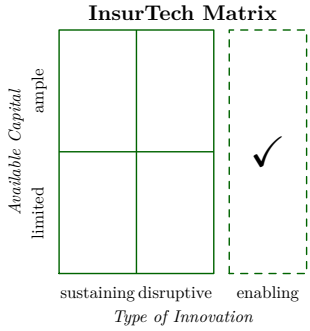
Year Founded: 2012
Country: Germany
Staff: 101–250
Funding: USD 33.07 mn
Website: simplesurance-group.com

Simplesurance operates in all 28 EU countries, Norway, Switzerland, US and Canada and develops innovative cross-selling solutions for e-commerce shops to combine traditional insurance industries with fast-paced digital business. Simplesurance's solution enables e-tailors to cross-sell product insurances within — but not only — their checkout processes and even before. Therewith online-shops are able to monetize their customers twice in one process and gain additional margins and profit.

InsurTech Category:
Insurance Cross-Selling

Business Model Patterns:
Cross-Selling and White Label

Role in Ecosystem:
Distribution



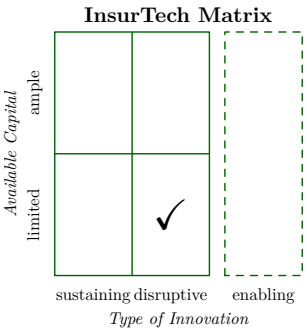
Year Founded: 2015
Country: USA
Staff: 11–50
Funding: USD 3.9 mn
Website: slice.is

Slice Labs is an insurance technology startup that offers an on-demand insurance platform to support the on-demand economy. The platform allows participants to easily purchase insurance policies when they need it without committing to any annual plans. It offers a pay-per-use policy for Uber and Lyft drivers that covers drivers from the time they turn on the rideshare application until they turn it off. Slice Lab's goal is to reimagine insurance through design, data, and technology.

InsurTech Category:
On-Demand Insurance

Business Model Patterns:
Pay-per-Use and Aikido

Role in Ecosystem:
Distribution



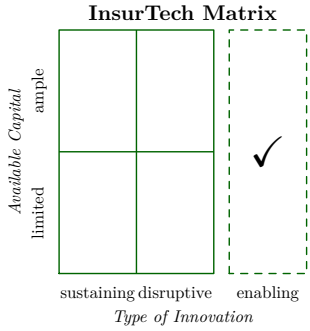
Year Founded: 2010
Country: USA
Staff: 51–100
Funding: USD 31.25 mn
Website: snapsheetapp.com

Snapsheet is a free application for iPhone, Android, and the web that enables users to receive bids from local autobody shops. The application allows users to file and publish brief vehicle damage reports, complete with photographs. Within a time period of 24 hours, body shops in near vicinity will provide certified custom estimates for repair costs. Customers can then work through the application or with Snapsheet's customer support team to schedule appointments with body shops of their choice.

InsurTech Category:
Insurance Software

Business Model Patterns:
Subscription and Layer Player

Role in Ecosystem:
Technology



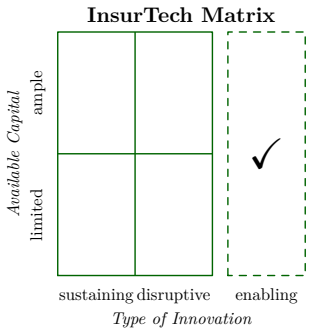
Year Founded: 2015
Country: Germany
Staff: Undisclosed
Funding: Undisclosed
Website: snapsure.de

Snapsure generates insurance proposals based on image informations within seconds. This is the worldwide first AI in the insurance business based on image recognitions. We are providing our White-Label-API for insurance companies. Which allows them to create a new and full digital sales channel for their customers.

InsurTech Category:
Insurance Cross-Selling

Business Model Patterns:
Cross-Selling and White Label

Role in Ecosystem:
Distribution



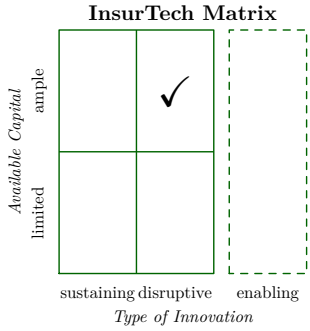
Year Founded: 2012
Country: USA
Staff: 11–50
Funding: USD 91.27 mn
Website: trov.com

trōv is an on-demand insurance platform that collects details of the things important to a user and protects them. trōv's app is designed to offer insurance for individual items for various lengths of time. Protection for each item can be toggled on and off using "micro-duration policies". The application allows users to track their possessions using a photograph or an item or receipt and is backed up to the cloud. trōv partners with insurance carriers based on geographic region to offer coverage for the items protected through the app.

InsurTech Category:
On-Demand Insurance

Business Model Patterns:
Pay-per-Use and Aikido

Role in Ecosystem:
Distribution



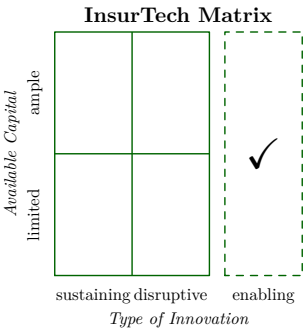
Year Founded: 2012
Country: USA
Staff: 11–50
Funding: USD 10 mn
Website: gotruemotion.com

TrueMotion provides a smartphone-based insurance platform that enables insurance companies to distinguish between safe and risky drivers, reward safe drivers with discounts on their insurance, and revolutionize the industry by enabling pricing based on actual driving behavior.

InsurTech Category:
Internet of Things

Business Model Patterns:
Laverage Customer Data and Layer Player

Role in Ecosystem:
Technology



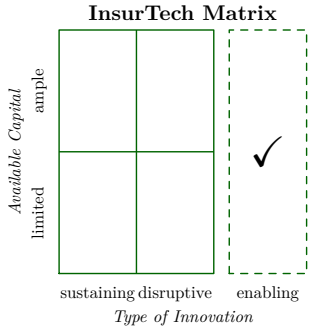
Year Founded: 2008
Country: France
Staff: Undisclosed
Funding: USD 33.83 mn
Website: withings.com

Withings is a Paris-based company that specializes in the development of connected objects. Withings is known for design and innovation in connected health devices, such as the first Wi-Fi scale on the market, an FDA-cleared blood pressure monitor, a high-definition wireless security camera, a smart sleep system, and a line of automatic activity tracking watches. The company was acquired by Nokia on the 26th of April 2016.

InsurTech Category:
Internet of Things

Business Model Patterns:
Laverage Customer Data and Layer Player

Role in Ecosystem:
Technology



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About the Authors

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Alexander Braun is Member of the Executive Board of the Institute of Insurance Economics at the University of St. Gallen (HSG). Before his time at HSG, he worked for an American investment bank in London. Mr. Braun studied Business Administration in Mannheim, Melbourne, and St. Gallen. His current research and consulting areas comprise Alternative Risk Transfer (especially Insurance-Linked Securities), the digitization of the insurance industry (especially InsurTech), financial regulation (especially Solvency II), as well as selected topics in Asset Management, Asset Pricing, and Insurance Economics. The research and teaching activities of Mr. Braun have been awarded, amongst others, by the American Risk and Insurance Association (ARIA) and the Asia-Pacific Risk and Insurance Association (APRIA). For further information please refer to www.ivw.unisg.ch/ab.

Dr. Florian Schreiber

Florian Schreiber is Project Manager at the Institute of Insurance Economics at the University of St. Gallen (HSG). Before joining HSG, he worked in the corporate finance department of DZ Bank in Frankfurt am Main. His main research areas comprise insurance regulation (focus on Solvency II), behavioral insurance (focus on customer preferences), digitization of the insurance industry (focus on InsurTech), as well as selected topics in Insurance Economics, Life Insurance, and Performance Measurement. Dr. Schreiber holds a Ph.D. in Management from the University of St. Gallen and a Diplom-Volkswirt from the University of Freiburg (Germany).

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