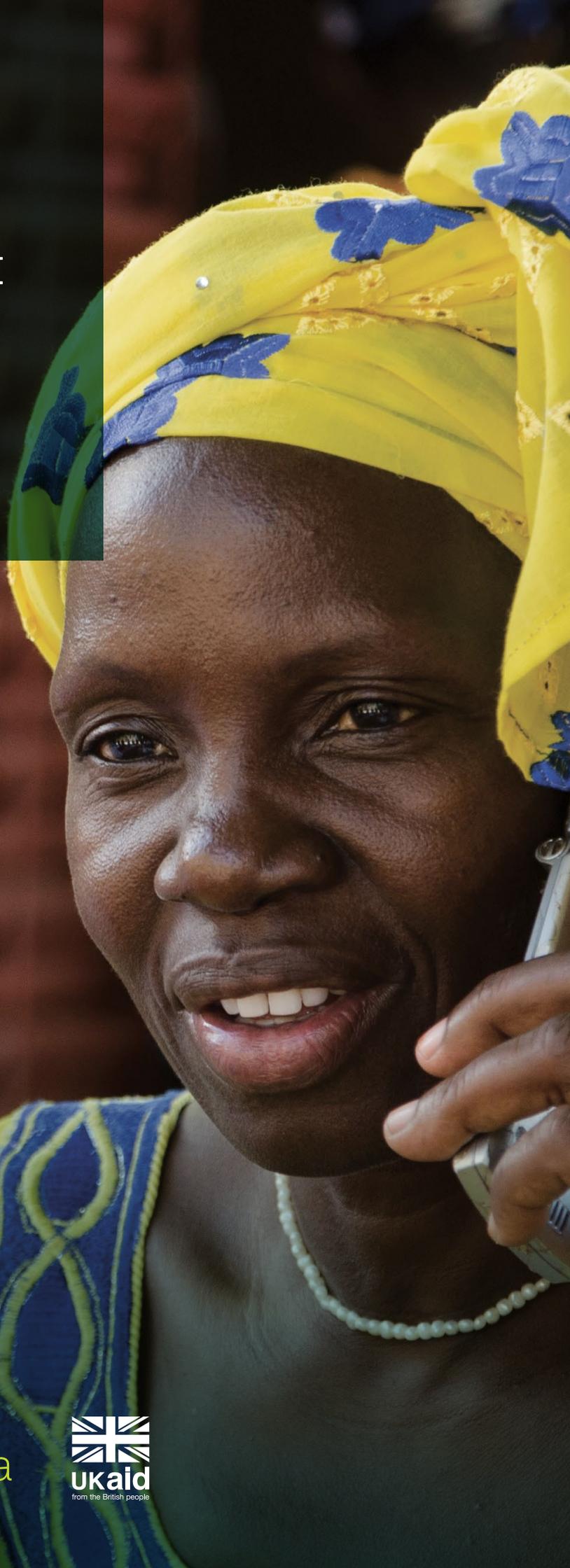

InsurTech for development

A review of insurance
technologies and applications in
Africa, Asia and Latin America

Research Study
March 2017





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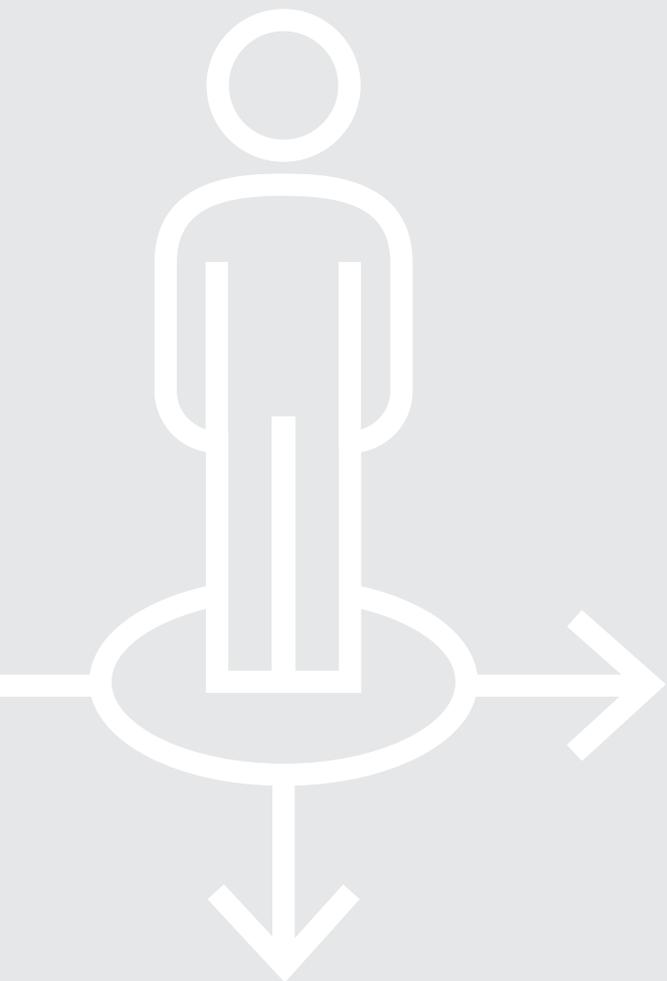
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01 Introduction



Despite almost two decades of focus on the under and uninsured, microinsurance reaches just under 300 million people across the developing world. This is only around 10% of the potential market for insurance (Microinsurance Network [2015], Lloyd's [2009¹]). There is general consensus that this is mainly a delivery problem.

Insurance providers struggle to cost-effectively reach, acquire, service, collect premiums from and pay claims to consumers who have limited purchasing power. They are often far from traditional financial sector infrastructure, cannot be served cost-effectively via traditional brokers or individual sales agents, and – to top it all – are likely not to be familiar with the insurance value proposition. Whilst promising examples of insurers overcoming the delivery barrier have been documented, insurance cover for billions of excluded adults appears to be a long way down the road.

¹ In Africa, an estimated 62 million people are insured, which translates to just 5.4% of the total adult population (Biese, et al., 2016). In Asia, 4.3% of the population or 170 million people in total are covered (Premasis, et al., 2014), whereas in Latin America and the Caribbean this number stands at 49 million (7.9% of the population) (McCord & Biese, 2014). This falls far below the estimated range for potential insurance penetration in the developing world of 1.5-3 billion policies (Lloyd's, 2009).

New digital technologies and business approaches are starting to change the nature of insurance delivery. These technologies, popularly known as 'InsurTech', promise to reach more low-income individuals cost-effectively, and in a way that delivers more customer value. But is technology the game-changer it promises to be? To assess the potential, an evaluation of technology applications is needed. This study seeks to contribute to the discussion by providing a comprehensive overview of active InsurTech initiatives in emerging markets.

InsurTech in the emerging world.

InsurTech can be described as "an insurance company, intermediary or insurance value chain segment specialist utilising technology to either compete or provide valued-added benefits to the insurance industry" (Sia Partners, 2016). This report is based on a database of InsurTech initiatives in the developing and emerging world, with information gathered through desktop research, key interviews and participation registries of FinTech incubators. Our review goes beyond the traditional microinsurance space. Whilst microinsurance is generally regarded as insurance aimed at the low-income market, for the purposes of this study, we also confer a broader meaning of referring to all those currently excluded from insurance in the emerging world. Initiatives were included in the study if they self-identified as operating with InsurTech or if they have adopted technology commonly identified as InsurTech (e.g. new data and analytics, artificial intelligence, remote sensors and mobile phone delivery)².

These initiatives were then explored for their potential to overcome microinsurance delivery challenges in the following way:

- * **Part I** is a recognition of the baseline delivery challenges from a provider perspective. These were defined in consultation with microinsurance experts and are based on a review of existing research conducted by Cenfri.
- * **Part II** introduces the concept and the six different categories of InsurTech currently observed in the emerging world.
- * **Part III** explores the match between the six categories of InsurTech initiatives to the key microinsurance delivery challenges identified in part I.
- * **Part IV** concludes on the current and potential contribution to addressing these challenges going forward.

² Initiatives were researched from October 2016 to February 2017 and focused only on active initiatives and products.

01 Introduction

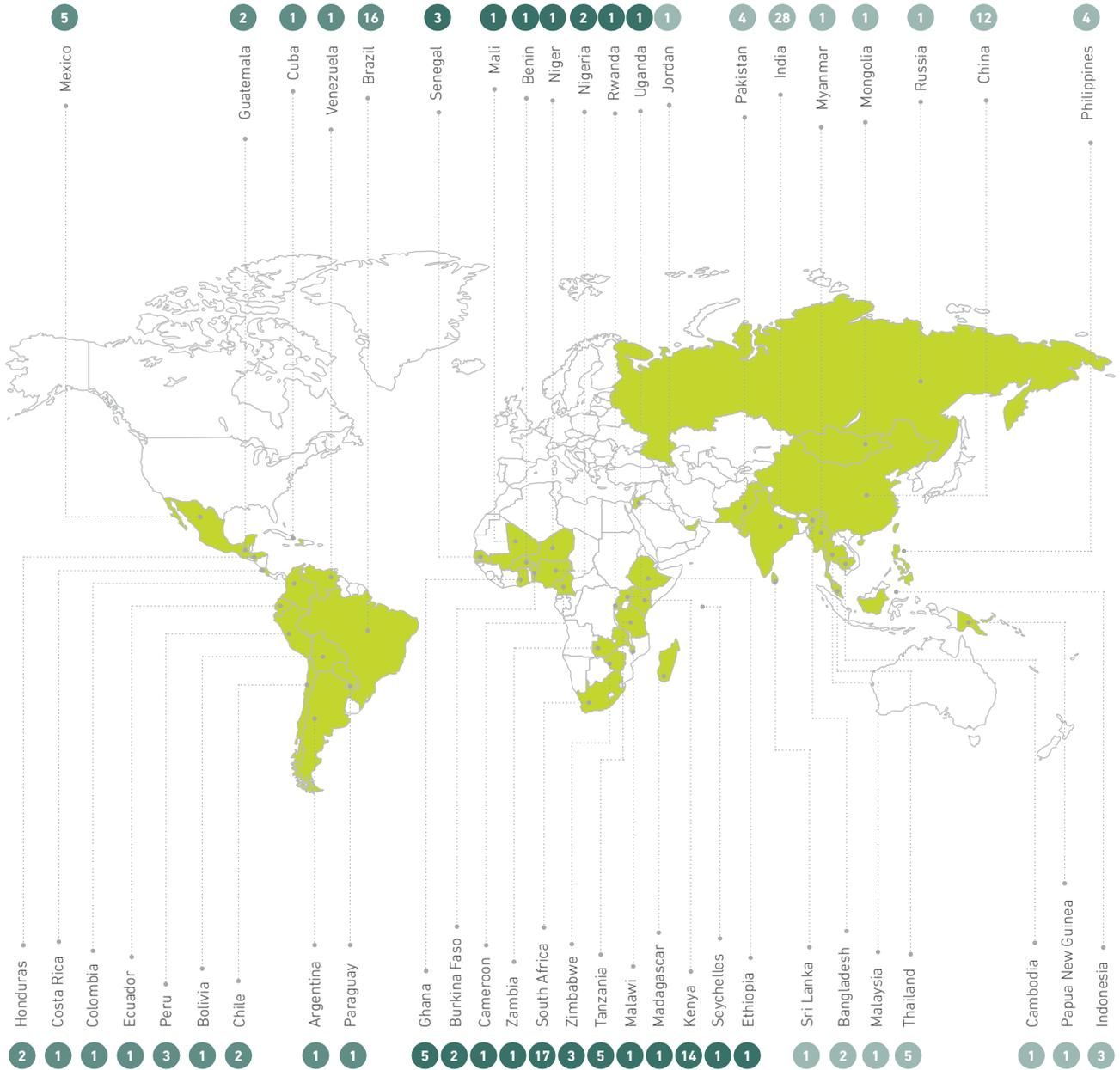


Figure 1: Landscape of InsurTech initiatives from scoping research

Source: Authors' own

Geographic scope. The scoping exercise identified 157 initiatives across middle and low-income countries in Latin America, Africa and Asia. Figure 1 illustrates the geographic spread of the database. It shows that most initiatives identified can be found in Africa. However, there are certain countries in Asia (such as India and China) that stand out in terms of InsurTech penetration. Some initiatives are operational in more than one country but have been counted only once in the scoping exercise; hence Figure 1 adds up to more than 157 initiatives.

The database of initiatives will be made available following the publication of this study and will continue to be updated as the sector grows³.

The scoping exercise identified 157 initiatives across middle and low-income countries in Latin America, Africa and Asia.

³ Access the database here: <https://cenfri.org/insurtech>

02 Microinsurance delivery challenges

To assess the role that technology plays in extending insurance to low-income individuals, it is necessary to first identify the key challenges that providers face in delivering to this market.

Whilst providers face issues unique to their contexts, a review of cross-country microinsurance research suggests five main operational challenges that are common for most providers. These challenges, which are outlined below, manifest across different elements in the insurance delivery process (refer to Box 1 for an overview of the product lifecycle).

The challenges are outlined below:

- * **Lack of information on consumers.** Low-income consumers engage less often with the formal sector than traditional, higher-income insurance consumers. Coupled with lower official documentation ownership and lower formal employment observed in the low-income space, this affects the amount and quality of consumer data that insurers can obtain. Reliable information on asset ownership, health and claims behaviour for insurance purposes is vital for adequate risk profiling, product design, sales, servicing, payments collection and claims assessment.



* **Consumers beyond current reach.** Traditional insurance generally relies on branches, brokers, agent networks and aggregators such as employers for insurance distribution. Physical touchpoints and aggregators are largely concentrated in urban areas or areas with a large number of high-income individuals or commercial enterprises. However, the reality is that a high proportion of the microinsurance target market is unbanked (over two billion adults worldwide⁴), is self or informally employed and/or engaged in farming and lives in rural areas. This makes it difficult to reach this target market to sell policies, provide post-sale service, collect premiums and pay out claims.

* **Different and new consumer needs.** Products designed and priced for mainstream insurance markets often do not meet the specific needs of low-income consumers (Churchill, 2007). Designing products and processes to meet these needs requires a tailored approach, informed by target market realities. This includes consideration of the risk events that will be most appropriate to cover (i.e. cover for assets not traditionally covered by insurance, such as individual livestock), the manner and timing of premium collection (seasonal versus monthly) and which documentation is needed to verify claims.

* **Consumers inexperienced with formal financial services.** Low-income consumers often have lower literacy levels and are generally less familiar with the formal insurance concept (Churchill, 2006). This poses a challenge at multiple interaction points along the product lifecycle, given that the information provided to the consumer needs to be adequately packaged.

* **Constrained business models.** Low-income consumers have, by definition, limited incomes and therefore struggle to afford expensive insurance premiums. This is often compounded by the unpredictability of this target market's income streams. Insurance premiums therefore need to be adequately priced to be affordable and attractive to this consumer segment. A low-premium environment constrains business models for insurers, requiring low costs and high volumes for the business case to be viable. The traditional approach to insurance delivery, however, involves costly infrastructure (both front-end and back-end).

InsurTech promises to address each of these challenges in various forms. The sections that follow provide an overview of how InsurTech is being applied in emerging markets to conclude how the initiatives are faring in overcoming these five challenges.

⁴ Over two billion adults worldwide are unbanked. See the 2016 global Findex report (The World Bank, 2016) for more information: <http://www.worldbank.org/en/programs/globalindex>.

02 Microinsurance delivery challenges

Box 1. The product lifecycle

The product lifecycle describes the different stages in the delivery of insurance products to consumers from a supply-side perspective. The process comprises five stages, as shown in Figure 2 below.

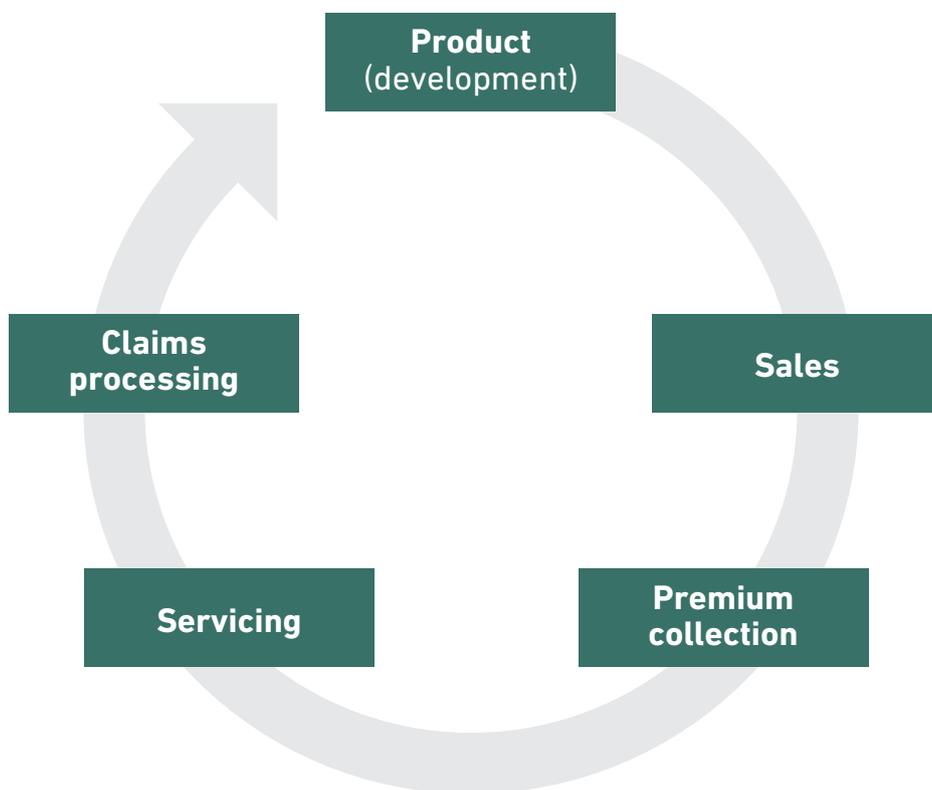


Figure 2: Insurance product lifecycle

Source: Smith, et al. (2011)

The five stages of the insurance product lifecycle:

- * **Product development** refers to the process involved in designing and pricing the insurance product.
- * **Sales** refers to the process of reaching consumers and extending the insurance product to them. It involves the disclosure of information to the consumer and the acceptance of the policy contract by the consumer, provided that he or she meets the relevant requirements.
- * **Premium collection** refers to the systems and mechanisms in place to facilitate the payment of insurance premiums by consumers.
- * **Servicing** is done in the back-office of an insurance provider once a policy is sold. It refers to the processing of an insurance policy and all communication around it, i.e. signing up the consumer, monitoring premium payments, sending out notifications, verifying information provided, handling consumer complaints, etc.
- * **Claims processing** refers to all activities around the processing of an insurance claim. The claim needs to be lodged and verified before a pay-out is made to the consumer.

The product lifecycle describes the different stages in the delivery of insurance products to consumers from a supply-side perspective.

03 InsurTech categories in the emerging world

Review reveals 157 initiatives across Asia, Latin America and Africa.

The 157 initiatives identified span from basic technology application, such as moving from paper-based to digital systems, to more advanced technologies such as artificial intelligence (AI). The largest number of initiatives were identified in Africa, followed closely by Asia. India contributed 28 initiatives to the study followed by South Africa (17), Brazil (16), Kenya (14) and China (12). Note that there are instances where an initiative operates in several countries but is counted in the category only once.

Six distinct categories of technology applications. Technology is the application of scientific or technical knowledge for practical purposes. After scoping the current landscape of application of technology to insurance in emerging markets, six common types emerged. These categories use digital technology for the delivery of insurance in different ways, but all share that the underlying digital technological advancements, for example, improved processing power, sensor technology, analytics software, etc. are what make this possible.

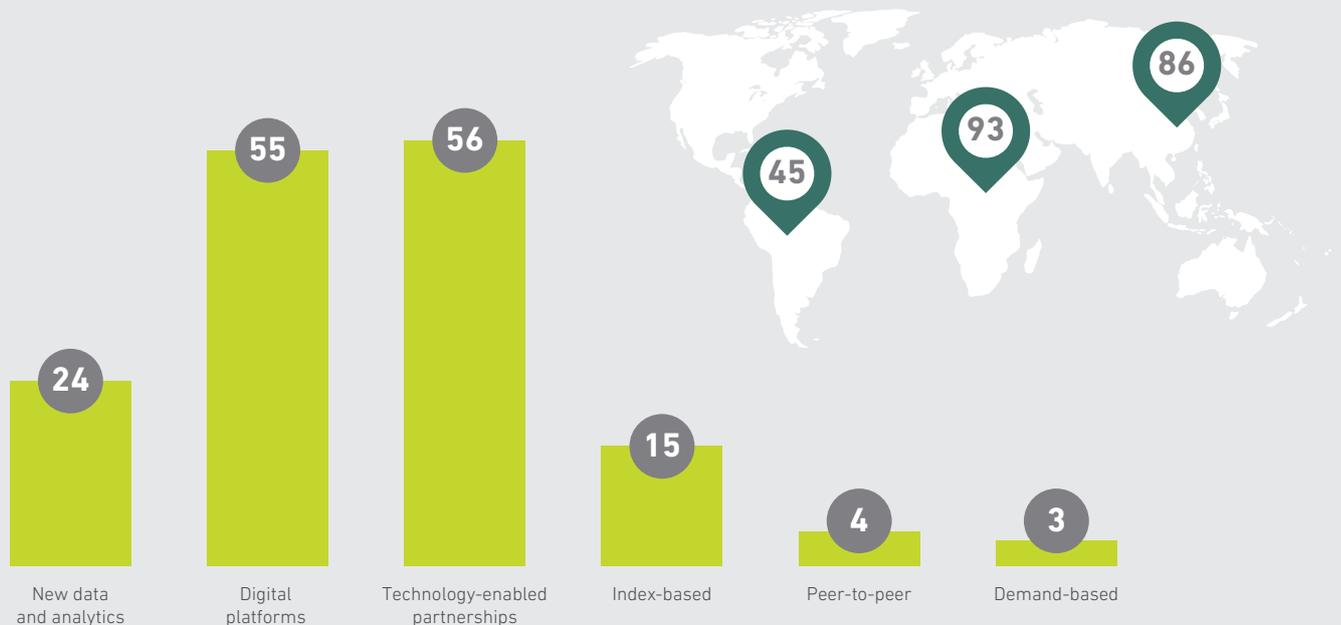


Figure 3: Overview of categories found in scoping exercise

Source: Authors' own

The categories identified are:

- * New data and analytics
- * Digital platforms
- * Technology-enabled partnerships
- * Peer-to-peer insurance
- * Index-based insurance
- * Demand-based insurance

The following section describes these six categories in further detail.

New data, analytics and communication fill the information gap and allow new customer insights.

New data and analytics initiatives collect and analyse data to inform insurers and technical service providers (TSPs) about consumer needs and behaviour patterns. This includes both alternative data sources, as well as new uses of traditional data points.

From the 24 initiatives captured in the review, we identified three distinct components of this technology:

- * **Data collection.** Technology has enabled the collection of a wide range of data that can inform insurers or TSPs about gaps in the insurance delivery process. This data commonly falls under the term big data when compiled into large digital datasets.

For InsurTech, the dataset consists of existing sources such as the insurer's individual consumer data (age, type of policy, length of policy, payment behaviour, etc.) or new data sources available to the insurer or TSP, such as social networks, mobile phone call logs, sensor data, online surveys, etc. to generate information on consumer behavioural patterns.

- * **Data communication.** Connected to the enhanced data collection, there are also new channels to communicate data, often in a more time-efficient and less labour-intensive manner.
 - The long-distance transmission of computerised information, or *telematics*, assists in real-time collection of data and enables insurers to establish direct, unmediated consumer relationships based on direct access to objective and unfiltered data. This gives the insurer or technical service provider a more granular and precise understanding of who their consumers are and how their needs change over time (E&Y, 2016).

03 InsurTech categories in the emerging world

- The *Internet of Things* (IoT) is a network or system of interrelated computing devices, sensors or other objects that have unique identifiers and can communicate with other devices in the network without human involvement. They are key to telematics systems. Wearable devices such as smart watches transmit behavioural data to providers. Similarly, sensors in cars monitor driving behaviour and can assist providers with claims verification and product pricing. Weather sensors transmit weather data to insurers to make agricultural insurance possible. Twenty-six initiatives in emerging markets make use of these to support health, motor and agricultural insurance.
- *Blockchain* and other *smart contracting* systems go a step further by providing a decentralised ledger of transactions that cannot be manipulated and thus are reliable to automate sales and servicing through machine-triggered contracts. These smart contracts can execute themselves without human intervention. For example, in index-based agricultural insurance, if one area experiences too much rain, an automatic flood pay-out is initiated, which cuts out the expensive verification process.

The use of blockchain is recorded in only one initiative in the emerging world, but other smart contracting technology is used in the 15 index-based insurance initiatives for claims pay-outs.

* **Analytics.** More data has been generated in the past two years than had been generated previously since the beginning of time (Nordin, 2016). Sophisticated analytics are needed to make sense of these vast volumes of data and to gather insights that can be used in decision-making. Digital technology enables the automation of analytics or smart analytics, which can process and timeously analyse large volumes of data⁵. Not only can insurers set their own parameters within the various analytical packages, but they can take a step further to link the datasets to automated actions such as AI⁶ or machine learning⁷. Smart analytics are used in product development to uncover needs as well as to support the rest of the product lifecycle in areas such as sales strategies, identifying premium payment patterns, more effective servicing and claims verification streamlining. Only three InsurTech initiatives currently use AI, but other analytics are more widespread with 13 initiatives.

⁵ Insight2Impact (i2i) presents five categories of analytics that FSPs can use to translate data into insights: descriptive, diagnostic, predictive, prescriptive and cognitive. Each category is more advanced in terms of complexity, level of automation, amount of data required, difficulty in applying the method and business value. Each category also represents a reduction in the level of human input required for decision-making. Descriptive analytics tell us what happened, when and where. Diagnostic analytics tell us why. Predictive analytics go a step further telling us what is likely to happen and prescriptive analytics what we can do to make a particular outcome more likely. Lastly, cognitive analytics advise us on the best action to take (Nordin, 2015).

⁶ AI makes activities such as reasoning, learning, planning, problem solving, making observations, analysing and categorising information possible on large datasets without direct human input. Predictive analysis and AI can, for example, identify fraud effectively at every stage in the claims process, by a combination of modelling, rules, text-mining and database searches without human interaction (Rose, 2016).

⁷ Machine learning refers to a set of algorithms that use historical data to predict current or future outcomes (KPMG, 2015). It is a method of data analysis that automates analytical model building. Using algorithms that iteratively learn from data, machine learning allows computers to find hidden insights without being explicitly programmed where to look (SAS, 2017).

Digital platforms enable virtual delivery insurance. The review identified 54 initiatives that have been classified as digital platforms. The prevalence of these platforms appears to be driven in part by higher mobile phone penetration, in particular smartphones; and the widespread adoption of tablets, laptops and PCs. These platforms take face-to-face or human-based elements out of insurance provision and replace them with an online platform. The online platform that seems the most relevant for the microinsurance market currently is the mobile phone. There are already several initiatives in the emerging world that offer digital mobile platforms for insurance, leveraging the widespread adoption of mobile phones and the data these create. The volume of data generated by mobile phones alone is set to increase by more than 200% between 2016 and 2020 (GSMA, 2015). The platforms can provide more reliable information, holistic system processing, user experience, transparency, convenience and customisation at lower costs than traditional channels. The platforms can take on one particular function or span across multiple elements of the product lifecycle (both in the front-end and in the back-end).

The review identified 54 initiatives that have been classified as digital platforms.

There are various types of platforms:

- * **Digital brokers.** Third-party online brokerage services (19 initiatives) assist consumers with comparing and choosing from a variety of insurance products. These platforms can be enabled to facilitate the full sales process (including assisting with queries), and they hold the added benefit of allowing insurers to collect data in the process that can better inform their sales and product design strategies.
- * **Digital servicing (including claims).** Digital platforms not only enable the sale of insurance, but also provide digital servicing, premium payment channels and claims processing. There are 11 initiatives of digital brokers or TSPs performing functions beyond sales.
- * **Automated back-end platforms.** Digital servicing software enables insurance providers to manage and/or automate their back-office processes, which reduces cost and increases efficiency, enabling insurance provision at a wider scale. The first step in this process is the transition from paper to digital servicing. Subsequently, the software can provide front-end functionality through both sales and servicing portals and premium payment channels to integrate the servicing process and reduce the margin of error that paper-based systems are prone to. The scoping exercise uncovered 32 initiatives.

03 InsurTech categories in the emerging world

New technology-enabled partnerships increase the distribution reach of insurance.

The review identified 56 initiatives that leverage technology to allow for new delivery partnerships. Partnerships for insurance delivery are not new, but the introduction of technology makes it possible to include retailers or MNOs in the partnerships that previously played a smaller role in the delivery of insurance. These partners provide insurers with access to their consumer base and linked aspects such as data on these consumers or infrastructure, which can be leveraged for servicing. The key examples of technology-enabled partnerships from the InsurTech scoping exercise are partnerships with MNOs or TSPs acting on the insurers' behalf to provide mobile insurance (m-insurance). M-insurance refers to the delivery of insurance through a mobile money platform⁸. As many as 50 m-insurance initiatives in emerging markets were identified.

Index-based insurance allows for new insurance delivery and claims settlement approaches.

Index-based insurance (IBI) compensates consumers automatically in the event of a loss. A total of 15 IBI initiatives using InsurTech were identified across Latin America, Africa and south-east Asia. Unlike traditional insurance, which assesses losses on a case-by-case basis, IBI offers policyholders a pay-out based on the analysis of a data index across a geographically defined space, which has inbuilt triggers that occur when the index indicates a risk event has occurred (IBLI, 2012). Digital technology enables the system to collect the indicator data in a systematic and detailed way, and it transmits the data to the insurer. Smart contracting can be applied to automate and streamline the pay-out process to save costs. Along with m-insurance, IBI was one of the first applications of digital technology in microinsurance in the agricultural sector. IBI is used to protect against shared rather than individual risk such as the risks associated with weather fluctuations, disease outbreaks, natural disasters or price loss. This is a form of InsurTech that leverages other InsurTech tools, such as those in the new data and analytics category, to enable a new insurance process.

⁸ M-insurance products can take a range of formats (Leach & Ncube, 2014). Loyalty products: insurance is provided at no direct cost to the consumer and are often embedded in airtime purchases. The motivation behind this is to increase the sales of airtime and increase the use of mobile wallets (savings or mobile money transactions) as well as familiarising the consumer with the concept of insurance. Paid products: policy is paid for by deducting airtime, debit order or over-the-counter (OTC) at the partner store, i.e. retailers. Hybrid products: in these so-called freemium models, consumers can upgrade their loyalty product to a higher-value, paid product. After an initial 'test phase' the consumer decides to switch to a paid product to increase the cover.

Peer-to-peer insurance enables new operational models and product categories.

Peer-to-peer (P2P) platforms offer solidarity grouping for individuals who have the same insurable needs. Peer groups, such as owners of houses or cars, families or friends, team up to absorb each other's risks, with everyone contributing premiums to insure each other's losses. This system relies on digital technology to connect the individuals with each other on a digital platform or marketplace independent of location. The review identified four P2P platforms. Advancements in technology allows P2P platform developers to build more consumer-focused, data-driven insurance systems due to their unique insight into the peers included in the group. By relying on peer group members to market insurance and assess risk management and loss prevention needs, P2P groups avoid traditional brokers and agents, reducing the cost of products (Banham, 2016). These groups can be underwritten by traditional insurers, though some prefer to self-insure, sometimes operating in regulatory grey areas. P2P models took two forms in the scoping exercise: the traditional group-based insurance described above, and platforms that connect individual 'risk investors' with individuals seeking risk coverage, effectively forming a one-on-one insurance contract. In total, four P2P initiatives were identified.

Demand-based insurance charges premiums according to use.

Demand-based insurance relies on risk-modelling technology to pick up on triggers by a consumer for insurance provision. Demand-based products are individualised covers, often triggered in real time for either a limited amount of time⁹ or priced according to usage only. The latter has found its application so far in the motor vehicle space (three initiatives). Telematics technology enables the insurer to price a product according to the distance covered by car in a certain period ('pay as you drive') and driving behaviour ('pay how you drive'). The review identified three demand-based insurance initiatives.

As shown in the previous section, the emerging world is applying a wide variety of technology in insurance delivery. But does InsurTech solve any of the core microinsurance challenges outlined in Section 1?

In Section 4, we consider how the initiatives in our global review address each of the main challenges.

⁹This application can be described as 'on-demand insurance', which is not being applied in the InsurTech space in emerging markets so far to our knowledge.

04 InsurTech applied to microinsurance challenges

4.1 Lack of information on consumers

Advancements in digital technology have made it possible to collect a depth of new and traditional data, transfer the information in real time and apply analytics in innovative ways. These aspects are making it easier for insurers to know their consumers. A total of 42 initiatives in new data and analytics, P2P, index-based and demand-based insurance address this challenge (see Figure 4). Six of the initiatives that do so are in Latin America, 16 in Africa and 20 in Asia. Below, we consider the way in which these initiatives use technology to better understand their target markets¹⁰.

Alternative and digital data allow for improved knowledge of customer.

New data sources and expanded collection of traditional sources are applied across the product lifecycle.

- * At the point of product design and sales, these enhanced data points are being used to target marketing better (e.g. **Cignifi**, sub-Saharan Africa, uses voice calls, mobile money transactions or social network interactions to assess consumer profiles and behaviours). For example, online consumer retail purchase history is collected to inform about a potential consumer's risk profile and premium pricing (**Zhong An**, China). Four initiatives operate in this space.

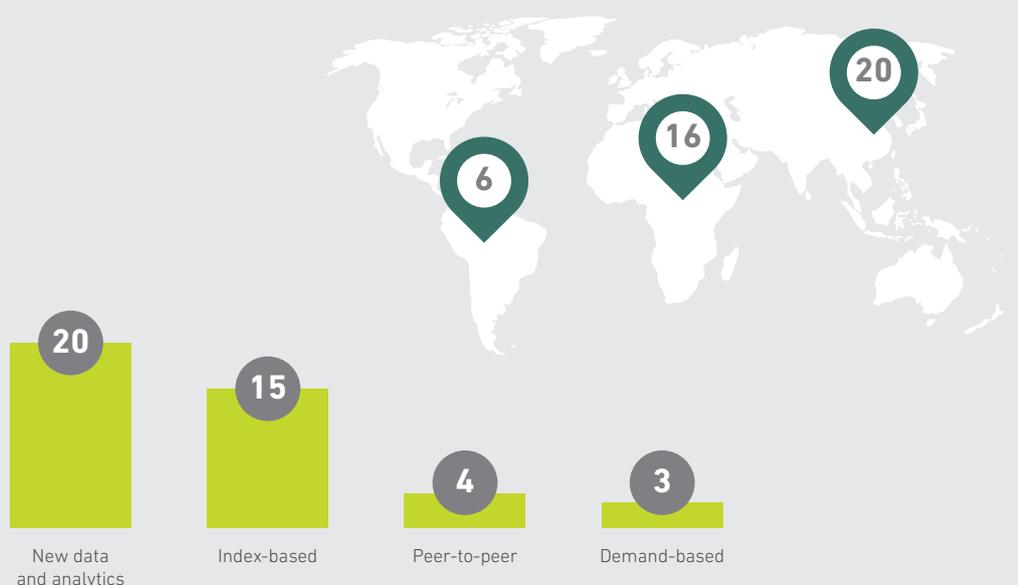


Figure 4: InsurTech categories addressing challenge 1

Source: Authors' own

¹⁰ The main sectors in which these initiatives are active are: automotive, health and agricultural insurance.

* However, it is not only laptops or PCs and mobile phones that are valuable sources for data. In the health, agriculture and motor insurance space, sensors collect data on consumer behaviour that is used as a basis for extending demand-based insurance or providing value-added benefits to policyholders (three initiatives). The use of such data is intended to incentivise better behaviour by consumers, i.e. improve driving or health habits and thereby decrease moral hazard for insurers.

* InsurTech comes in the form of new claims verification tools, such as electronic chips transplanted in livestock are used to verify the insured cattle (e.g. **IFFCO Tokio**, India), and enabling easier data collection of traditional data. For example, **Discovery Insure**, South Africa, allows consumers to upload pictures on their insurance platform to complement claims. In the case of agricultural IBI, the data from sensors in weather stations and satellites is not necessarily new, but the model uses it in a new way to open up insurance coverage based on an index (e.g. **PlaNNet Guarantee**, Senegal). The information gathered from satellites and weather stations automatically triggers a pay-out, dependent on the weather benchmark set, i.e. there is no need to verify claims data provided by the consumer. In total, there are 15 initiatives who rely on these verification tools.

Box 2. Company focus: CityMile

CityMile was founded in 2015 in Brazil. The company is a start-up TSP and offers a usage-based insurance platform which helps insurers to collect data on driving behaviour with the end-goal of incentivising drivers to change their risky behaviour. Furthermore, it aims at making data provision more transparent for consumers who are often not aware which data is being shared with providers. A sensor is installed in a vehicle, which is connected to the consumer's smartphone. It transmits the collected data to the insurance provider. The application on the smartphone provides the consumer with trip, fuel efficiency and mileage statistics tracking, which helps drivers lower their cost of using the vehicle. It also monitors the health of the vehicle. The insurer can turn the statistics into premium discounts, send out driving tips and track their customers' behaviour for product design.

Source: CityMile (2017)

04 InsurTech applied to microinsurance challenges

Digital communication increases real-time access to high volumes of data.

Collecting data digitally has the advantage that it can be transferred via digital channels faster and in greater volumes than paper-based alternatives. Mobile, Wi-Fi and Bluetooth networks transmit data in near real time and cut out the process of manual information inputs, which are time consuming and prone to error (e.g. **ByteMoney**, South Africa). Insurers can access this consumer data immediately and respond accordingly. For example, GPS data that tracks and transmits a car's movements to enable demand-based insurance that responds directly to usage (e.g. **Hollard**, South Africa) or value-added benefits, such as the provision of roadside assistance when the sensor alerts that an accident has occurred (e.g. **Yatis**, India). The data can be communicated from different collection points. In total, there are 16 initiatives relying on telematics technology.

Application of analytics in early stages.

AI and machine learning platforms are not yet widespread in the emerging world (three initiatives) and are largely coming through in InsurTech incubation pilots. Machine learning is used to predict a risk event and alerts the consumer of the imminent risk. It then includes products or added support to mitigate the risk (e.g. **Arya.ai**, India). An example is the prediction of health disorders based on grocery purchases, which leads to a suggestion on life insurance cover. Analytics also support insurance models such as IBI and demand-based insurance. The trigger for insurance in both IBI and demand-based insurance is based on the analytics of data to assess whether the criteria for insurance coverage has been reached. For example, once rainfall data is transmitted and indexed, an automatic pay-out is triggered to the farmer if the index is below/above a certain threshold, cutting out expensive in-person checks (e.g. **Banrural and Aseguradora**, Guatemala).

Insurers can access this consumer data immediately and respond accordingly. For example, GPS data that tracks and transmits a car's movements to enable demand-based insurance that responds directly to usage or value-added benefits, such as the provision of roadside assistance when the sensor alerts that an accident has occurred.

4.2 Inadequate access to consumers

Reaching a new consumer base that is not already aggregated through traditional channels requires a change in tack by insurers – and they are listening. A total of 88 initiatives were recorded addressing the access challenge with the bulk coming from Africa (41 initiatives). Technology-enabled partnerships with mobile network operators or the leveraging of existing infrastructure like mobile phones and other digital channels are most successful in overcoming this barrier to date (56 initiatives), followed by digital platforms (28 initiatives). Four P2P platforms are also enabling access. Figure 5 below shows the initiatives addressing this challenge.

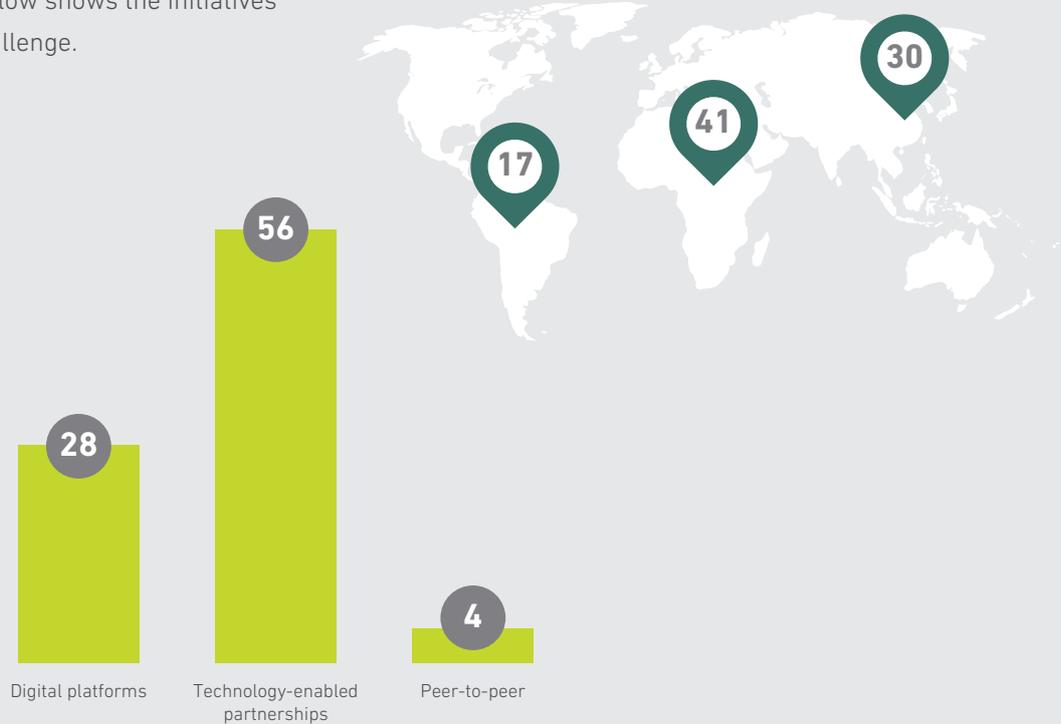


Figure 5: InsurTech categories addressing challenge 2

Source: Authors' own

04 InsurTech applied to microinsurance challenges

Technology enabling online delivery of insurance.

Many of the insurers and third-party service providers considered in the review are offering their products on digital platforms. These platforms take 'business-as-usual' online by enabling consumers to compare policy prices online between different providers, sign up and service their products digitally. Consumers or providers can access the platforms through devices such as portable points of service (POS), tablets, laptops, PCs or mobile phones. The digital platforms are interfaces that simulate a face-to-face interaction. Despite not having replaced human involvement altogether, online chat services or quick-response help queries via online forms facilitate a quicker and more convenient way to communicate for both the consumer and the provider. Instead of having to serve consumers in the insurance branch, sales can be made digitally, either directly (e.g. **Jagadiri**, Indonesia) or through a TSP, which offers information on policies by different insurers (e.g. **Bidu**, Brazil). Servicing and premium payments can be integrated online and claims can be processed remotely (e.g. **InsuredHQ**, Asia). In a P2P model, the platform provided enables individuals, regardless of their location, to insure each other, which previously would have only been possible if they lived close to each other or knew each other.

Access through new technology-enabled partnerships.

InsurTech has enabled insurers to form partnerships beyond the traditional aggregators to increase their access to consumers. Partnerships with MNOs and TSPs to provide m-insurance are the most common type of technology-enabled partnerships. A variety of m-insurance models exist. For example, Bima developed a mobile insurance platform in 16 countries, which can be accessed via the USSD channel on a consumer's mobile phone. Consumers can sign up via the platform and premiums can be paid via the deduction of prepaid airtime credit. It is operational in several Latin American, Asian and African countries¹¹. A different approach has been adopted by **Tigo, Bima and MicroEnsure** in Ghana. They take the approach of embedded, i.e. providing cover free of charge to Tigo customers, and freemium insurance, i.e. providing better cover for those who opt to pay instead of receiving the free cover. Any payment required from the consumer is either deducted from their prepaid airtime credit or mobile money wallet.

¹¹ Ghana, Senegal, Tanzania, Uganda, Bangladesh, Cambodia, Indonesia, Pakistan, Philippines, Sri Lanka, Fiji, Papua New Guinea, Brazil, Haiti, Honduras, Paraguay.

Box 3. Company focus: MicroEnsure

MicroEnsure, a TSP founded in 2002, partners with mobile network operators, microfinance organisations and cooperatives in 20 countries around Africa, Asia and the Caribbean to provide 42 million consumers with insurance delivered by mobile phone. Policies offered include low-cost health, life, property and political violence insurance. MicroEnsure mostly operates on a freemium model basis whereby insurance cover is initially provided to customers for free, with the intention to later graduate them to paid-for cover. For example, in Kenya, MicroEnsure has partnered with the MNO Airtel and Pan Africa Life Assurance to offer free medical cover to Airtel customers based on the amount of monthly airtime used. While Pan Africa Life underwrites the risk, MicroEnsure handles the back-office services as well as the operation of the digital technology platform. Customers opt into the service by dialing a USSD code on their mobile phones. MicroEnsure can leverage Airtel's network to send out mobile phone messages containing the policy information. When a customer needs more information than what is provided, a call centre agent is deployed to assist. For a monthly top-up of about USD2.50, Airtel customers receive up to around USD10 hospital cover and around USD95 life and accident cover. This amount increases with more money spent on airtime. A claim can be made via mobile phone and is also paid out digitally. After several months of experiencing free insurance, consumers are provided with an option to sign up for additional benefits in exchange for USD1-2 monthly in premiums. The goal of this partnership is to bring low-cost insurance to lower-income groups and to encourage consumers to use Airtel, given that many people switch around SIM cards several times a day.

Source: MicroEnsure (2017), StandardMedia Kenya (2017)

InsurTech models changing how insurance is accessed, removing the need for onerous client interaction.

IBI for agricultural insurance covers all farmers who have acquired the product in a specific geographic area instead of assessing an individual farmer's insurability case by case. This means that, instead of requiring access to individual farmers in the area for the full lifecycle of insurance delivery (e.g. risk profiling and claims assessment), they cut down their need to interact with consumers at initial sales, limited policy administration and claims pay-out. For example, IBI policies are attached to the purchase of farming inputs, and they require a simple registering of a geographic location and the setup of a mobile money wallet for claims pay-out (**Kilimo Salama**, Kenya). In a P2P model, access to an insurer is no longer necessary to access insurance. The group manages risk internally, and it therefore cuts down the need for interaction with a third party, aside from the platform that facilitates their interactions. This changes the dynamic for accessing insurance that would have taken place in a traditional insurer-led model and, in some cases, this change can mean consumers that previously would have been excluded from access now hold insurance cover.

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4.3 Different and new consumer needs

Serving a microinsurance market means reaching consumers who have different needs from the traditional higher-income consumer. Only 16 InsurTech models, the majority in Africa (eight initiatives), specifically adapt products to serve the new and different needs in this market, as shown in Figure 6 below. Digital platforms (seven initiatives) dominate.

P2P allows for new products and delivery approaches.

P2P platforms are one of the few initiatives identified that explicitly adapt their offering to the needs of specific groups. Two P2P platforms offer new risk covers, such as divorce cover by Tongjubao, China (see Box 4 below) or rural fire protection (e.g. Grassroots Nairobi, Kenya). Aside from designing unique product cover, these groups allow for personalisation in the process of insurance delivery. Teambrella (to be launched worldwide) connects individuals globally through 'teams' that set the terms of coverage. The team collectively decides on key issues throughout sales and servicing, such as allowing in new members, setting rules and approving claims. See Box 4 on the next page for a company focus on TongJuBao.

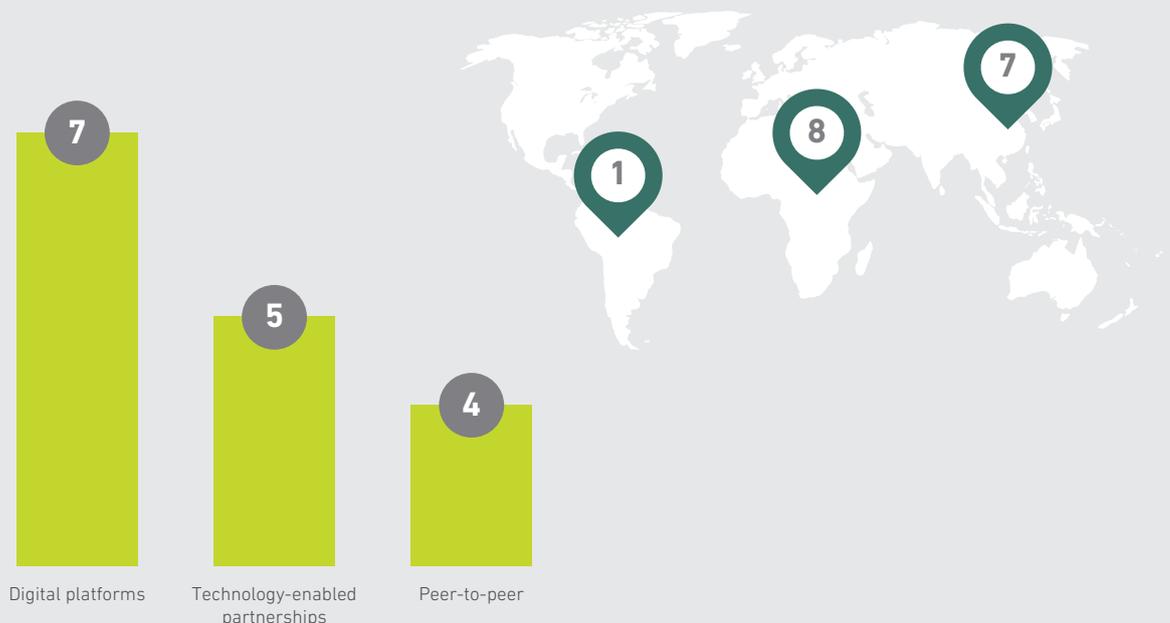


Figure 6: InsurTech categories addressing challenge 3

Source: Authors' own

Box 4. Company focus: TongJuBao

TongJuBao is a Chinese insurance start-up founded in 2014 and provides a peer-to-peer platform to Chinese groups or communities to protect one another against social risks. TongJuBao separates the underwriting from the claims process and does not work with an underlying insurance carrier. With the help of digital technology, TongJuBao designed a mutualisation model where each community member shares the risk and the reward. The platform enables individuals to sign up into 'communities' if they face social risks such as marriage breakdown, child abduction or income loss, which are not typically covered by traditional insurers. Tongjubao assists with connecting the group members through the platform based on similar cultural and social risks. All members contribute to a community fund; and, if an individual needs to make a claim, the funds will be drawn from the community pool to cover the loss. If claims within the insurance coverage period were small or if there were no claims at all, the members within the group receive up to 75% of their premium contributions back. TongJuBao provides technical support as well as administration and claims management services.

Source: TongJuBao (2017)

Product design through the bundling of services beyond insurance. Digital platforms and technology-enabled partnerships are responding to the need for tailored product design largely in the healthcare field. Instead of offering an isolated insurance product, a range of financial services is bundled with the insurance cover. For example, GOQii in India offers a smartphone application linked to a watch wearable, which serves as a personal health and fitness dashboard. Based on the data, a coach interacts with consumers via phone or online chats to achieve personal health goals. Insurance companies are using the data to extend life insurance products.

Box 5. Company focus: Hello Doctor

Kenya's Hello Doctor, together with CBA and Cannon Assurance, offers a health solution package to Safaricom's M-Pesa customers called Semadoc. It is a subscription service delivered via mobile phone, which aims at offering a comprehensive set of tools that are not limited to insurance to manage health risk remotely. A hospital cover underwritten by Cannon Assurance is complemented by 24-hour access to doctors via text or call (one-hour response time) to receive medicine prescriptions over the phone. Twice a day, customers receive health tips by text message. Through M-Pesa, a health account is opened when individuals subscribe to Semadoc. The account is used for health-related savings to pay a monthly Semadoc subscription fee and to make payments at health facilities. Furthermore, Semadoc subscribers can apply for health loans, which have favourable repayment terms and which are paid to a health facility directly. The hospital cover is provided on a digital interface via mobile phones and includes the benefit information as well as the terms and conditions of the cover.

Source: Hello Doctor Kenya (2017)

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4.4 Consumers inexperienced with formal financial services

A total of 14 initiatives, mostly from Asia, are tackling the issue of inexperienced consumers (see Figure 7). Digital platforms have increased the information available at a consumer's fingertips but are providers designing these interactions to support consumers that have little to no experience with financial services? The answer is that only a few initiatives are doing so (11 initiatives). Beyond this, there is limited evidence of the use of new data and analytics (one initiative) and technology-enabled partnerships (two initiatives) to respond to consumer needs.

Remote and personalised support to inexperienced consumers.

Broker services delivered on digital platforms accessible via mobile phones, tablets and laptops or PCs overcome the first hurdle of access for many consumers. This remote access is vital in providing information previously inaccessible for many (see digital brokers covered in challenge 2), as well as support to use that information in decision-making. Providers, like **RenRenBx** (China), go a step further by personalising their offer through the provision of detailed Q&A pages, chat boxes and claims support where an individual can access in-person advice remotely. Interactive advice is provided both through humans on the other end of chat bots and robo-advice. In one technology-enabled partnership (**Bima and Tigo**, Senegal), consumers can opt into a policy for a limited amount of time at no cost to pilot insurance for the first time. It comes with extensive information accessible via USSD on mobile phones. In the health space, some initiatives tie policies to medical information or phone hotlines that are available 24 hours. This increases the access to remote services and assists with the understanding of how to use the medical insurance offering (e.g. **Hello Doctor**, Kenya).

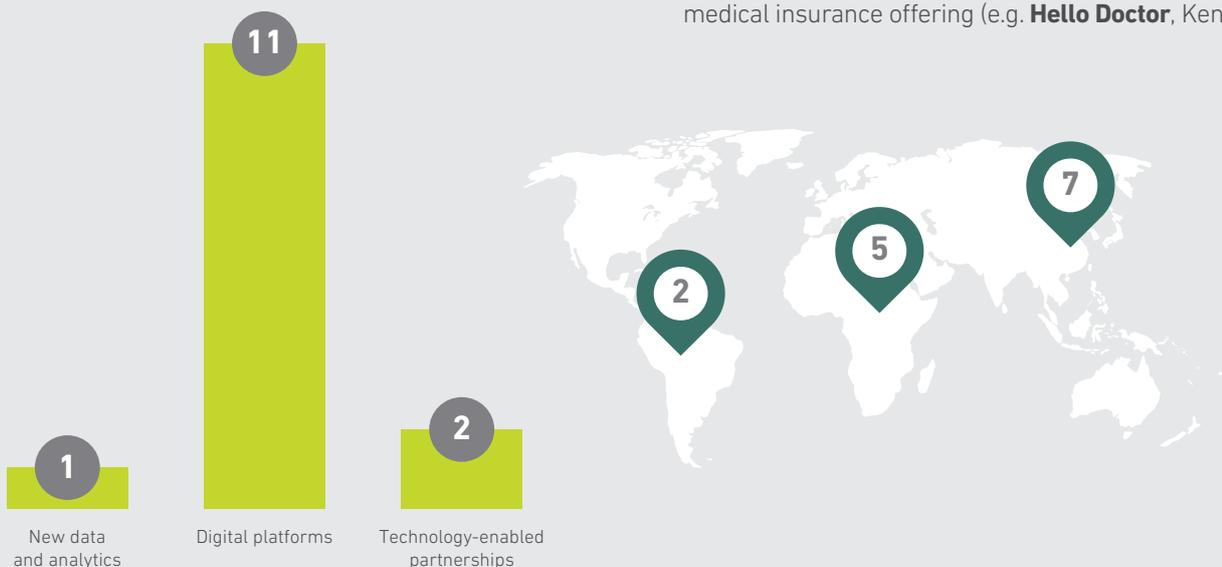


Figure 7: InsurTech categories addressing challenge 4

Source: Authors' own

Box 6. Company focus: Easypolicy

Easypolicy was founded in 2011 in India and provides an insurance comparison platform. It seeks to simplify advice and to educate consumers around insurance. The platform can be accessed through the web, or consumers can download a smartphone application. Easypolicy holds information on life, automotive, health and retirement policies from insurers across India, and the information is regularly updated. Consumers enter their details on the platform, which is analysed in real time; and the most relevant quotes are fetched from the database. They offer advanced search, comparison and filter functions to empower customers to make informed decisions. In cases where a consumer is unsure, a chatbot called RealAdvice enables an individual to get more information 24 hours a day and to assist with the navigation of the quotes. Tools and calculators assist along the process. Call centre agents complement the sales process in case more support is needed.

Source: Easypolicy (2017)

Iconify' interaction to overcome literacy

barriers. Only one initiative explicitly tackles the challenge of illiterate consumers. A South African TSP (the Stock Shop Academy) has started to develop websites and mobile applications that use icons to guide an inexperienced user through an insurance process. This includes sales, premium payment and claims.

Monitor and respond to consumers in

real time. One initiative is looking beyond designing communication. It uses data analytics to identify when it should prompt the consumer to interact with insurance or linked benefits. Change in mobility, sleep patterns or social behaviour triggers an automatic mental wellness alert, which includes information on how to deal with the health risk (Touchkin, India, see Box 7 below).

Box 7. Company focus: Touchkin

Touchkin, founded in 2015, is an Indian predictive care start-up using AI chatbots and machine learning for behavioural health support. Its machine learning platform identifies potential health issues through sensors on smartphones collecting data on physical activity, communication and sleep patterns. If there is unusual activity, a health alert is automatically triggered and the person is advised to seek health. For example, reduced physical activity combined with changes in call patterns (more missed calls, shorter calls) may imply social isolation, which in turn is a symptom of depression. The trigger can also be sent to loved ones. The application on the smartphone is free of charge and runs in the background, requiring no input or behaviour change from the consumer. Touchkin is still in the start-up phase but is partnering with insurance companies to monitor consumers remotely and to trigger real-time support mechanisms.

Source: Touchkin (2017)

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4.5 Constrained business models

Sixty-four initiatives are addressing the issue of costly business models evenly spread across the continents (see Figure 8). A rising number of TSPs have developed digital platforms (41 initiatives) for insurers to streamline the product lifecycle to reduce costs and enhance the viability of their business models. Insurers are also innovating to be able to reach a lower-income market, such as through IBI (15 initiatives) and P2P models (4 initiatives).

Leveraging digital infrastructure can reduce marginal cost of insurance delivery.

Insurers or TSPs leverage a consumer's access to mobile phones, tablets and laptops or PCs to extend services digitally (see Section 2). Examples include digital payment channels and wallets (e.g. **Remedinet Technologies**, India; **Bim Apeseg**, Peru) or digital servicing (e.g. **Hejin**, China); **Saldo** (Mexico) is the only digital platform to our knowledge to use blockchain to verify transactions and to reduce consumer fraud. Further, IBI providers leverage satellite data to enable the provision of agricultural insurance at scale (e.g. **Afrisure**, Zimbabwe). These are examples of making use of infrastructure that already exists and/or is paid for by another entity to reduce the cost of doing business.

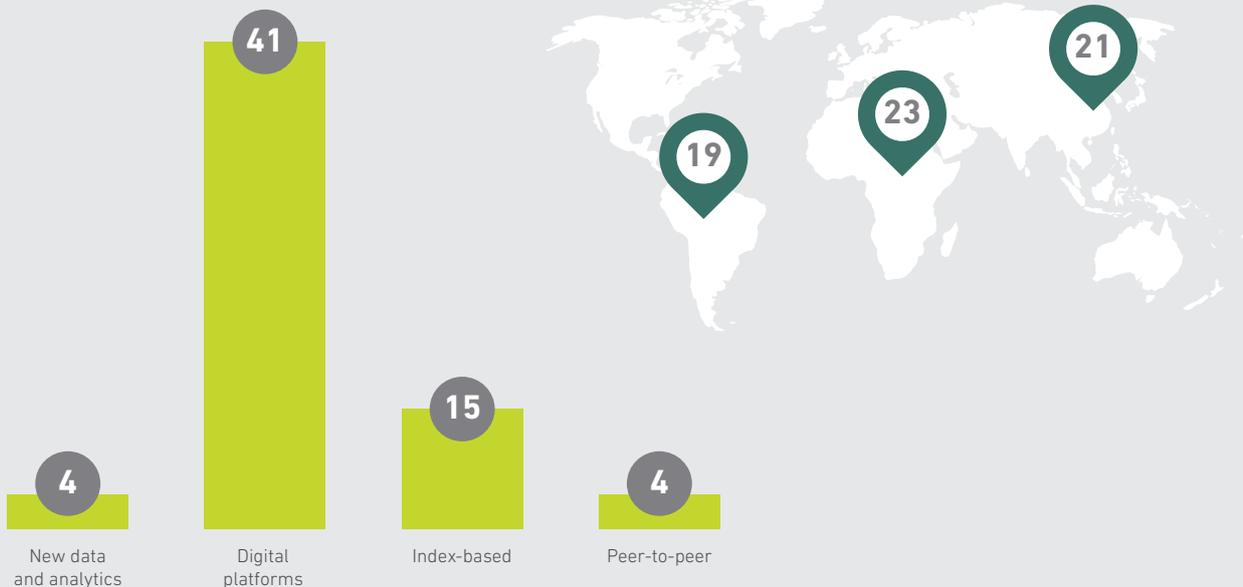


Figure 8: InsurTech categories addressing challenge 5

Source: Authors' own

Digital data and automation allows for more cost-effective outsourcing arrangements.

A wide range of digital platforms and new data and analytics initiatives have introduced cost saving and efficiency enhancements through integrating the entire product lifecycle from sales to servicing, premium payment and claims management. Furthermore, beyond the integration, these services are innovating available functions along the value chain. Examples include solutions to innovate the distribution process by reducing the need for human involvement and to automate links along the product lifecycle (e.g. **dotXML**, South Africa (see box below); **ClaimSync**, Ghana; **General Claims**, Venezuela). Data is often stored on internet cloud systems, which are easily accessible remotely. Analytics reports can be customised and fed back into product design and servicing elements. Premium payments are registered and claims pay-outs are triggered automatically. Insurers can pay as they use the service (for example, a fee based on the number of insurance policies) or for a certain period. This approach is solely enabled by the advances in digital programming and the possibility to customise these systems to individual insurers' needs.

New business model approaches could allow for lower cost delivery.

IBI and P2P models have leveraged technology to change a traditional approach to doing business, and in doing so state they have reduced their costs. Traditional agriculture insurance involves costly assessments of the underlying assets to conclude the insurance contract. In the IBI model, the need for these assessments is removed through changing the entry point for how insurance cover is assessed – linked to broader geographic areas, rather than an individual farm. In a similar vein, P2P platforms have cut out the need for an extended value chain through handling many elements of delivery within their groups and therefore reduced the cost added by third parties.

Box 8. Company focus: dotXML

South Africa's dotXML is a TSP founded over 30 years ago, which provides end-to-end software solutions to insurance companies. dotXML has developed a digital transaction engine aimed at reducing servicing costs for insurers through the collection and allocation of premium payments while being able to process a high volume of policies. It is a cloud-based system, which manages all components of the insurance product lifecycle. Although designed as an end-to-end solution, its elements are easily integrated with existing external business systems to accommodate legacy systems in place. Insurers can decide which elements of their product lifecycle they want to digitise using dotXML's technology according to their needs. For example, insurers can choose to only adopt dotXML's individualised reporting system, which creates weekly/monthly/quarterly reports on performance based on the insurer's parameters.

05 Concluding remarks

This review highlights how technology in the emerging and developing world is applied in a variety of ways to the delivery of insurance. These applications show varying degrees of promise in addressing the challenges faced in delivering value-adding risk protection to low-income individuals (see Section 4).

It is worth reflecting that most initiatives identified in Section 3 have only been operational for a couple of years or less and have not yet found broad application in the insurance sector. The well-established initiatives, such as insurance companies partnering with MNOs, constitute almost a third of initiatives identified and have successfully addressed challenges in accessing consumers. Newer technologies (such as AI, P2P and blockchain) form part of a significantly smaller group of initiatives identified, suggesting that their contribution to addressing delivery challenges is still largely untested.

As the application of technology in insurance delivery continues to evolve, those interested in the ability of these initiatives to resolve the barriers to delivery should focus on the following:

New business models that allow for product innovation. The reduction in operating cost for existing insurance delivery and the emergence of new business models allow insurers to address new risk categories. For example, P2P providers (four initiatives) allow for new products between customers with similar risk profiles, while TSPs (32 initiatives) allow for lower-cost product development and delivery. Demand-based insurance (three initiatives) within this review was limited to the automotive space but (along with P2P) remains a promising technology application to improve the alignment of risk provision with customers' needs. These new business models allow for a different approach to insurance that enables this alignment.

Technology applications that bridge experience levels.

Our review identified only 14 initiatives that address the challenges of insurance delivery to inexperienced or illiterate consumers. The bulk of these initiatives are digital platforms (11 initiatives) that help consumers compare insurance policies. Only five initiatives guide unfamiliar consumers through the sales and claims process, and the review did not identify insurers using chatbots or robo-advice¹². The review did, however, identify initiatives that removed the need to engage with extensive information at selected points, such as index-based insurance (15 initiatives) where claims and payments are automatically triggered without active participation from customers. Reducing the cost of providing information to the customer, innovating on how communication takes place (e.g. using graphics instead of words) and reducing the complexity of the products themselves are promising areas where the application of existing technologies could further enhance insurance delivery.

Technology solutions that allow for lower-cost data analytics.

Large volumes of data are collected through sensors in cars, wearables, weather stations and satellites (32 initiatives). Furthermore, partners to InsurTech providers often have volumes of data on client behaviour that could be leveraged for insurance, such as mobile phone or mobile money use.

However, despite the existence of large datasets, there are relatively few analytics software providers (four initiatives) that provide the ability to analyse these datasets. The application of technology to reduce the cost of analysis of new and alternative datasets should remain a focus area within future work.

Technology that lowers the cost of doing business.

The review identified 64 initiatives that aim to reduce the operational cost of delivering insurance. TSPs have developed digital platforms for insurers to streamline the product lifecycle to reduce costs and enhance the viability of their business models, whilst insurers have innovated on their model of delivery to reduce the cost of reaching the market (IBI and P2P models). Unlocking constrained business models is a key challenge to doing business in the microinsurance market and an area in which technology should be explored for further gains.

To access the database of **InsurTech initiatives** identified in this and subsequent reviews, visit cenfri.org/insurtech.

As the landscape and database evolves, updates to the views expressed in this document will be provided at cenfri.org/blog.

¹² A chatbot, short for 'chatter robot', is a type of conversational agent. It is a computer programme designed to simulate an intelligent conversation with one or more human users via auditory or textual methods (PSAdvisory, 2016). Robo-advice refers to replacing face-to-face advice with online, automated guidance based on algorithms that react to information provided by the customer (Business Insider, 2016).

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