



Impact of Technology on Insurance Industry

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Introduction

We are living in a hostile business environment that is perennially coupled with rapid changes in technology, which affect all aspects of our life and enabled us to devise smart solutions and multiple platforms and develop new distribution channels in our insurance industry. Further, technology works as a catalyst for revamping our approach on how we deal with a wide range of challenges such as economical, socio-political, environmental issues, new products and distribution channels.

In this context, the insurance industry is currently in a dilemma and witnessing serious challenges that are occurring due to fast pace of technology innovations. These innovations will reshape all activities of the insurance business, through the use of Internet of Things (IOT), Block chain and Artificial Intelligence (AI).¹

In the recent past, radical technological advancement has accelerated and by virtue of the new technologies, another macro trend has emerged revolutionizing lives globally. This revolution has impacted the insurance industry world-wide. The new technologies, such as the big data and the emergence of smart devices and applications, have increased the frequency and the quality of communications between people and things, social media platforms and sharing economy concepts, are transforming the ways and methods of innovation, even change the insurance business models and intensify the demand for new products and distribution channels.

Technology has enabled the insurers to obtain granular data, for risk exposures that were not covered in the past, such as ridesharing and home-sharing. Also, assist the underwriters to accurately measure these risks and provide the appropriate coverage. Moreover, create the opportunities for insurance companies to explore new distribution channels through the giant internet companies such as Google, Facebook, Apple and Amazon, also online shops and payment providers such as Amazon. These new partnerships and any other future innovations that may not yet exist will culminate how distribution channels of the future will handle delivery of insurance products. Through these partnerships, opportunities are created for the industry to access large data pools of users; and, selling insurance products to a huge customer base by devising new marketing strategies and further diversifying products and distribution methods.²

Owing to rapid technology advancement, some market commentators anticipate that the traditional insurers will be forced out of business and face the same fate as “Kodak,”³ who had

¹ Richard Miller, “*Five Tech Trends Shaping The Future of Life Insurance*,” Accenture, Last Modified 2018, Retrieved from: <https://insuranceblog.accenture.com/five-tech-trends-shaping-the-future-of-life-insurance>.

² Sandra Burmeier, Rainer Egloff, Rolf Tanner and Reto Schneider, “New Emerging Risk Insights,” Swiss Re SONAR, Retrieved from: https://media.swissre.com/documents/SwissRe_SONAR_2016.pdf.

³ David Osborne, “*The Moment it All Went Wrong for Kodak*,” The Independent, January 20, 2012, Retrieved from: <https://www.independent.co.uk/news/business/analysis-and-features/the-moment-it-all-went-wrong-for-kodak-6292212.html>.

failed to predict the future trends of their industry and consequently that led them to file bankruptcy in 2012. However, most of the incumbent insurers recognize the transformative nature of technology, and they still have time to adjust themselves to be customer centric and use the accelerated advances in technology and integrate it to their distribution channels. Further, by embracing the intelligent innovations, they will have the opportunity to reinforce their relevance to their current and future customers.⁴

Executive Summary

The insurance industry is dynamic by nature, and always responds to incremental threats and changes, and, for hundreds of years has provided excellent service to its customers. Insurance is a vehicle for assisting customers to obtain true solutions for their changing needs. Changes in technology are fact of life and bringing opportunities to improve the quality of insurance service, products and distribution methods. Accordingly, the industry has to embrace technology, by fostering research that would lead to innovating the best ways by which insurers can distribute these products/solutions because it offers a wide range of benefits to customers and society as a whole.⁵

The insurance industry has a proven record in dealing with incremental technology advancement but during the past three years the pace of radical technology that has impacted the insurance products and distribution channels due to innovations. This has drastically accelerated how consumers want their products be delivered, making insurance industry lag behind others. This has created an ambient atmosphere for some entrepreneurs, who have seized this opportunity and are offering insurance services through “InsurTech.”⁶ in the meantime others have established new startup companies, who are offering insurance products with enhanced customer service standards, at very competitive prices, whilst the same type of products provided by the incumbent insurers, are sold at higher prices. InsurTech products delivery and distribution costs are much lower than your homogeneous insurer; as they deliver everything online, and there is no paper printout and as their products are pre-packaged for mail delivery or text message delivery.

Additionally, the giant internet companies such as Google, Facebook, Apple and Amazon have inroad to insurance industry and started selling insurance products through their websites and

⁴ Darren Pain and Jonathan Anchen, “*Technology and Insurance: Themes and Challenges*,” Swiss Re Institute, June 2017, Page 28, Retrieved from: http://media.swissre.com/documents/expertise_publication_technology_and_insurance_themes_and_challenges.pdf.

⁵ Peter Miller, “*Insurance Data and Technology: Challenges and Opportunities for Our Industry*,” The Institutes, Risk & Insurance Knowledge Group, Retrieved from: <https://www.theinstitutes.org/guide/insurance-data-and-technology-challenges-and-opportunities-our-industry>.

⁶ Paul Lucas, “Is Insurtech a Threat or a Bonus for the Insurance Industry,” Insurance Business UK, October 17, 2016, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/is-insurtech-a-threat-or-a-bonus-for-the-insurance-industry-39143.aspx>.

thus making this distribution method more appealing to the younger generations. In this context some scholars believe, that collaboration with Big-Tech companies may pose a serious threat and expose the insurance companies to be diluted and controlled by these Big-Tech companies. The other contributory factor is that the millennial cohort prefers to purchase products through the internet, rather than dealing with insurance agent/broker. This makes delivery and distribution of products time-sensitive and efficient.

The insurance companies should embrace technology innovations and encourage new ideas that enhance the insurance products, services and distribution channels. Further, they have to shift into a flexible strategy, that empower them to adapt new business models, by which the insurers can deal with incremental and radical innovations, and departure from the status-quo.

Some market experts are of the view, that the biggest innovation in insurance over the next three years will not be the technology tools themselves, but in how we design them with customers, agents, employees and other human partners in mind and how these transactions will affect distribution of insurance products to the markets. The digital revolution today is an age of human empowerment, as such rapid advances has created a people-centric technology environment, where the power lies with people to shape technology as they see fit and business must adapt how they deliver to the needs of the people.

Background on Development of Technology

The history helps us to understand change and how the society we live in was emerged, also history would enable us to study the past causes, the present and predict the future.

The invention of new technology is not attributed to a single person, it is the outcome of hard efforts and work of many pioneering Scientists, Engineers and Programmers, who have developed our existing style of life and set profound platforms for future innovations. Accordingly, the history of modern technology is segregated to the following phases:

1. The first Industrial Revolution began in Britain in the 1765s after mass extraction of coal and continued until the end of 18th century at that time the coal was used as energy for trains and commercial steamships.
2. The second Industrial Revolution started in 1870 after discovering the electricity, gas and oil that resulted in a massive use of automobiles, airplanes and modern commercial ships fueled by oil.
3. The third Industrial Revolution started in 1969 with the emergence of new type of energy “nuclear energy” also the rise of telecommunications, computers and robots.
4. The fourth Industrial Revolution started at the third millennium until the present, which is featuring the emergence of internet “digitalization era”.

The fourth revolution is not based on discovery of any source of energy and may reshape the life of mankind.⁷

In the recent history the world had experienced two financial crises; the first one occurred in the 1990s with the so called IT and technology bubble, and, the second one was for the burst of property/housing bubble that occurred between 2007 and 2008.

Some commentators may argue that the story of technology that influenced the insurance industry was started in 1990s Dot-Com Bubble, when the investment in internet and technology was commenced with establishing start-up companies by enthusiastic entrepreneurs, who were looking for fast gains, rather than operating thorough feasibility studies. The market at that time was fueled by a combination of speculative investing and overabundance of venture capital. Therein the investors had started to pour money into these start-ups, hoping that they will harvest a decent profit, but, the market had started panic among investors. This led to significant losses in the stock market and capital started to dry up, consequently companies with millions of assets became worthless in a short time, and by year 2001 most of Dot-Com companies were closed forever and few had survived, such as Amazon and Google.⁸

The unseen positive impact of 1990s bubble, may illustrate that these huge amounts of investments worked as catalyst as they created a momentum and accelerated the pace of technology advancement during the last three years. However, other sectors of business such as the financial market, has received market signal in earlier stages, and accordingly embraced technology research. This enabled them to offer a wide array of products and services through FinTech such as retail banking, wealth management etc. It appears due to their timely and positive response from the Finance sector. Given that these companies got the opportunity to understand associated risk exposures attached to technology innovation earlier on, this enabled them to have deep understanding of consumer needs and design products and distribution avenues that meet their needs at lower costs. At present these companies pose a real threat as they can now beconsidered catalysts to the affordable and economically viable distribution methods for the competitive insurance products that we are now seeing.”⁹

The Problem/Task Statement

Because radical technology innovations have accelerated in the past few years, and, the insurance industry is still lagging behind other industries, some insurers do not have the ability to respond

⁷Sentryo, “The 4 Industrial Revolutions”, Published on 23 February, 2017, Retrieved from: <https://www.sentryo.net/the-4-industrial-revolutions/>.

⁸ “The First Bubble and Dot-Com Bubble”, Investopedia, Bubble, Retrieved from: <https://www.investopedia.com/terms/b/bubble.asp>.

⁹ "Property and Casualty (P&C) Insurance", (2018), Retrieved from: <http://www.cia-ica.ca/about-us/actuaries/what/pc>.

to these rapid technological advancements and needs for changing their products and distribution models. This is also due to the fact that they are influenced by their legacy systems, also by the heavy financial burden of having to change how they distribute products and services to consumers.

New technology could mean improvements of the insurers operations and services provided to customers, also new business opportunities. However, technology can be source of new risk exposures emerging from hidden liabilities as the technology is susceptible to misuse and lagging in regulations which can create potential liability for impermissible use of technology and how distribution is handled. For example, the use of drones for deliveries to deliver insurance documents could cause property damage and bodily injury thus raising liability concerns. Regulation restriction infringement by use of drones could be costly in insurer operations; furthermore, the regulations on drones are still evolving.¹⁰

The impact of technology innovations extends beyond the insurance value chain itself to the whole insurance echo-system. The combination of big data and advanced analytics is reshaping the insurance industry from underwriting, claims and marketing by inventing new products and distribution channels.

Threat from Big-Tech companies such as Google, Facebook, Apple and Amazon have broadened the scope of the insurer's problem, because these Big-Tech are currently offering insurance products through their websites, in the meantime building some experience in insurance technical aspects and the augmenting distribution channels. Since these companies have deep knowledge and experience in technology, also gained decent reputation as they have proven records of providing excellent services to their customers and have vast reach globally. They pose real threat to insurance companies, particularly because a significant segment of millennial cohort, prefer to deal with technology applications and buy insurance through the internet, rather than meeting with agents or brokers as the case of dealing with traditional Insurance models.¹¹

Emerging New Products

The technology innovations in the past few years had created a wide array of new risk exposures/products that arising from:

¹⁰ Gregory Hoeg, "New Technologies: A Double-Edged Sword for Insurance Companies," Carrier Management, September 2, 2016, Retrieved from: <https://www.carriermanagement.com/features/2016/09/02/158432.htm>.

¹¹ Darren Pain and Jonathan Anchen, "Technology and Insurance: Themes and Challenges," Swiss Re Institute, June 2017, Page 24, Retrieved from: http://media.swissre.com/documents/expertise_publication_technology_and_insurance_themes_and_challenge_s.pdf.

- Driverless cars
- Uber Share riding
- Home sharing
- Drone's Hull and Liability
- Flying Taxi
- Hyper Loop Trains and others new risk exposures

In this context, the selection of driverless car will be used as example on what coverage the automobile policy should provide:

- Comprehensive, third party, fire and theft cover
- Loss or damage caused the software operating system
- Repair or reinstall the mapping and navigation system
- Satellite failure or outage
- Failure of manufacturer's software
- Loss or damage caused by mechanical failure.¹²

The Impact of Technology on New Products

The autonomous vehicles are currently used in USA and will be on UK roads in 2020. The main challenger for autonomous vehicles is the safety.

A survey in 2008 conducted by US National Highway Traffic Safety shows that 93% of crashes were caused by human errors.

Therefore, the automated vehicle revolution is signaled to improve road safety for all users.

In the forthcoming 15 years most vehicles on roads will be autonomous driven and the expected impact on insurance industry would be outlined as follows:

- The public liability policies will be drastically increased and the burden will be borne by the manufacturers' side. Accordingly, the personal liability for human drivers will be decreased significantly.
- New insurance products will emerge such as satellite failure, malfunction of equipment and intervention of hackers.
- Road infrastructure will be changed for autonomous vehicles, which should be perfectly lined and mapped to be read easily by the auto computers.
- Legal changes in order to decide who is responsible if an accident occur while the passenger is riding the vehicle? Is it the operator of the auto company such as Uber, or

¹²Adrian Flux , "Driverless Car Insurance", Retrieved from: <https://www.adrianflux.co.uk/driverless-car-insurance/>.

passenger or the manufacturer or the software programmer? Many questions still need answers.

- The Federal Government of USA has enacted in 2017 the Self Drive Act which is limiting the role of States and could change the liability laws towards providing more protection to consumers.
- Cyber insurance will be increased drastically in order to provide coverage for all new technology innovations.¹³

The Opponents of Driverless Vehicles may argue that:

The cost or repair for driverless vehicles is very expensive and time consuming also the psychological issue as 70% of the driver's survey conducted in the UK in 2017 has shown no trust on technology and they do not prefer to ride in the autonomous/driverless cars.

The other factor is the reaction by the driverless vehicle, if the fault that cause an accident came from human drivers, as autonomous vehicle is programmed to respond to a certain action, so if the programmer omits to write a good program the accident ratio will be significantly increased.

Further, it has been noticed that technology and IT software have inherent problems, such as satellite failure and malfunctioning issues.

The Proponents of Using the Driverless Vehicles are stating that:

1. The human faults representing 93% of all car crashes and the accident ratio caused by driverless vehicles is still in the lower side.
2. The failure of software programming will be resolved by devising more accurate and smart software.
3. The satellite failure can be resolved by future technology advancement.

I am with the opinion stating that technology innovation became very fast like Tsunami and face of insurance industry will be reshaped during the forthcoming 10-15 years. Accordingly the insurance companies should embrace the radical and incremental innovations as the fifth Industrial Revolution is already around the corner and more focus would be on the Artificial Intelligence "AI" which will result a massive use of smart machines to do all complex tasks. In this context the insurance industry needs to redefine itself and be prepared for future challenges.

The Impact of Technology on Distribution Methods

The insurance industry as a whole is currently facing new challenges and especially with technological development and its impact on distribution methods. The way insurers and

¹³Wikipedia, "Self-Driving-Car-Liability", Retrieved from: <https://en.wikipedia.org/wiki/Self-driving-car-liability>.

consumers interact are changing. The industry organizations have access to substantial data which is advantageous in facilitating the industry to better understand customer's needs.¹⁴ Thus, use of digital technology is not only a new distribution channel, but simply put, it is a new way of doing business. If the industry does not modernize and conform to it, new entrants will rapidly compete in a space that has previously been dominated by big firms, which might be slow in accepting changes.

Traditional channels like agents and brokers are no longer the only way of selling insurance, alternative ways are now surging with lower costs for start-ups as they do not utilize the same expensive distribution channels as the agents and brokers. This is an advantage for the startup's customers because of the low overhead thus allowing price discount.

The digital revolution offers new opportunities for growth and changes to existing business models, and thus, it is disrupting the distribution channels set up. Digital channels are affecting all functional areas of the value chain in the insurance industry, including communication with customers, suppliers, employees.

Accordingly, the selection of distribution channels should be part of overarching marketing strategy that based on thorough study to the market conditions, efficient advertising campaign and targeting the segments of customers, who are increasing the company's revenue and profits at very competitive cost.

An additional component that the insurance industry is facing due to technology advancements is workforce replacement and attrition. Industry force is rapidly aging and insurers will find it incommensurate to fill the gaps left due to effects of attrition, especially in leadership roles. We can see this process in the insurance industry as the retirement of the older generation may cause shortage at the higher management level. The incursion of young workers remains low as the industry is not able to attract new generations of workers. Workers such as new generation who are looking for different work environment such as telecommuting, fast access to new systems and different approaches to do their job. In the interim, some University and College graduates are more interested in the tech industries with the progressive strategies to attract this new generation to work for them, the insurance industry is under a lot of pressure to reinvent itself. Insurers realize that they need to step up their game if they expect to continue in the business and due to competition from many new industry entrants such as tech start-ups; it could mean a debacle as there is the need for efficient processes to boost "customer satisfaction".¹⁵ This presents new opportunities for the brokerages and brokers because not many brokerages can

¹⁴ "How Technology is Revolutionizing Insurance Distribution: Swiss Re," Insurance Journal, May 15, 2014, Retrieved from: <https://www.insurancejournal.com/news/national/2014/05/15/329321.htm>.

¹⁵ Paul Lucas, "Insurtech a Threat or an Opportunity for Brokers," Insurance Business UK, July 20, 2016, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/insurtech-a-threat-or-an-opportunity-for-brokers-35031.aspx>.

afford these “new technologies”¹⁶, brokers can engender an association as a solution by joining forces and thus generate similar impact as insurers in combating this disruptor and add innovation to their distribution channels.

A Price Waterhouse Coopers survey found that “insurance companies will lose 20 percent of their business to stand-alone FinTech companies during the next five years. Insurers are investigating these new start-up companies in thinking that they could become part of their business; one of those is Allianz X for helping entrepreneurs grow their businesses.”¹⁷

Insurers are finding new ways to interact with the new generation. These consumers use different methods to communicate, they are able to buy products unlike the inundated methods they were used to in the past which was time consuming transaction completions. Additionally, these consumers are not as loyal to the insurers or broker as was the case in the past, unless they obtain what they are looking for and on their own time as they would otherwise move their business elsewhere. We read from Digitalist Magazine that these “three technology trends will cause a big impact on Companies: Mobility, Big Data, and Cloud Computing.”¹⁸

Contributory Factors Analysis

When computing capabilities started to proliferate in the 1990s, companies benefited from the use of technology to improve their productivity and achieve exponential growth. At that time no one from the insurance industry was engrossed in evaluating and planning for future disruptors within their risk management analysis in their business operations. The reasoning behind this is most of them would not have been caught flatfooted by the insurgency of the new disruptors that are now affecting their current distribution methods. The emergence of new technologies and easy, user-friendly platforms consign for historical distribution channels to be impacted and their need to innovate. Currently, mobile applications and technology is everywhere. This has set precedent for the insurance industry to innovate and thus accommodating their consumers to be able purchases products online and instantaneously, using cell phones, tablets and cloud-based system.¹⁹

¹⁶Ibid

¹⁷ Paul Lucas, “Is Insurtech a Threat or a Bonus for the Insurance Industry,” Insurance Business UK, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/is-insurtech-a-threat-or-a-bonus-for-the-insurance-industry-39143.aspx>.

¹⁸ Lindsey (LaManna) Makela, “Top Three Technology Trends with the Biggest Impact on Companies,” Digitalist Magazine, Retrieved from: <https://www.digitalistmag.com/innovation/2012/09/26/top-three-technology-trends-with-the-biggest-impact-on-companies-017435>.

¹⁹ Hugh Terry, “Agents of the Future: The Evolution of Distribution – McKinsey,” The Digital Insurer, January 16, 2014, Retrieved from: <https://www.the-digital-insurer.com/agents-of-the-future-the-evolution-of-distribution/>.

According to the McKenzie report, “development of technology and data analytics are plummeting the business proposition that brokers and insurers use to summarize why a consumer should buy an insurance product or use a service in their existing practice. Insurers are using technology to go directly to consumers saving cost, reducing time, and sell in great quantities without the use of intermediaries. Brokers need to find out how to obtain the same capabilities, overcome this process and revamp their capabilities by offering new ways to sell to avoid being left in the dust”.²⁰

Regulation may affect or inhibit technological innovation and changes in distribution methods due to restrictions placed by the governing bodies and because regulators are normally slow in accepting and adapting changes. Technology represents market growth in enterprises while regulations represent government and growth limitations.²¹ Regulation from governments all over the world is affecting the businesses and organizations, especially in the financing sector which includes the insurance industry.

Data capture and data analysis have improved and become more affordable due to technological innovation. On the other hand, there is a lot of regulation that will grow at the same time as innovation in Insurance which is of importance because the government could place regulatory tools over which data to use and to what degree.²²

Technology Applications

Telematics Devices:

With a large fleet of trucks and airplanes UPS were able to reduce their operational cost drastically so, by fixing the telematics devices on the motors of their trucks, they managed to reduce claims by positively influencing, the behaviour of drivers.

Exploit the opportunities for digital data generation and use the power of information to motivate changes that advance sustainability objectives. Also by the transmitting the data from the telematics devices to the central information center in their headquarters, they were able to formulate a framework can be used as a road map for their organization to achieve the increase of profitability and reduce carbon emissions via improved energy efficiency.²³

²⁰ Ibid

²¹ Jonathan, B. Wiener, “*The Regulation of Technology and the Technology of Regulation*,” Duke University School of Law, Retrieved from: https://scholarship.law.duke.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1960&context=faculty_scholarship.

²² “Innovation in Insurance: How Technology is Changing the Industry,” September, 2016, IIF, Retrieved from: https://www.iif.com/system/files/32370132_insurance_innovation_report_2016.pdf.

²³ Watson Richard and Affiliates, “Telematics at UPS: En Route to Energy Informatic”, Retrieved from: https://scholar.google.com/scholar?q=telematics+and+informatics&hl=en&as_sdt=0&as_vis=1&oi=scholart.

We shall use the USP company who are carrying shipment of mail parcels in USA and globally, as an example for the best utilization of telematics devices. A photo of telematics device is shown below.



Ambient Intelligence in the Home Environment:

Ambient intelligence is a vision of future information society, stemming from the convergence of ubiquitous communication and intelligence interfaces application; it gives real opportunity for the home owners to control their houses from remote areas. However, this technology has been developed by installing certain types of cameras and sensors connected through internet application. Also could be used to monitor the performance of employees in any given business.²⁴



Wearable Medical Devices for the Tele-Home Healthcare:

The prevalence of chronic diseases have led to a high demand for tele-home healthcare, in the broad term, the device should have minimal size and weight, functional and power autonomy, also should be easy to use and worn in comfort.

²⁴Michael Friedewald, "Perspective of Ambient Intelligence in the Home Environment", Science Direct, Published on 3rd August, 2005, Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S0736585304000590>.

The main purpose of using medical devices is for monitoring the patient's medical conditions and provide assistance when needed, also could be used as preventative tool to enhance the personal health of individuals and change their attitude towards the concept of adapting healthier practice by doing sports or walking 30 minutes a day in order to reduce the percentage of cholesterol level in the blood, or monitor the sleep apnea cases. The example of wearable is the wrist watches as shown below.²⁵



The Use of Drones in Dangerous Zone:

When the Typhoon of Gonihit Japan, causing catastrophic damage, AIG had deployed drones to rapidly assist its clients in danger zones.

²⁵Constantine Glaros and Dimitrios I. Fotiadis, "Wearable Devices in Healthcare", Springer Link, , Published on 15th July, 2015, Retrieved from: https://link.springer.com/chapter/10.1007/11311966_8.

Aftermath of the typhoon, one of AIG clients was experiencing water damage from the ceiling of their factory. In this instance the client needs to determine the cause of water leakage, but it was dangerous for anyone to venture on to the roof to perform inspection. Accordingly, AIG used the Drone to help locate the source of leakage and give the customer the financial support they needed to recover from the typhoon, photo of which is shown below.²⁶



Advantages of Technology Innovations

- Easy access to multiple Insurance Products

²⁶AIG, “Drones: A New Way to Help”, Published on 8th October, 2016, Retrieved from: <https://www.aig.com/knowledge-and-insights/k-and-i-article-drones-for-disaster-response>.

- Reduction of premiums approx. 20% less than the traditional way
- Increase the customer's awareness through comparing various products
- Emergence of new segments of consumers
- Offering higher level of transparency to customers through the use of Blockchain

Disadvantages of Technology Innovations

- The customer has to release/provide private and confidential information to insurers
- Customer still need the role of Broker/Agent in specialty business such as Aviation & Energy
- Redundancy in the Insurance workforce
- More reliance on machine such as Robot Advisors
- Technical breakdown and other IT glitches

Sustainability Issues

Whilst focusing on technology and distribution channels aspects, we should also address the sustainability issue from the corporate system perspective and not only focus on the economic performance of the organization, as Professor Dan Anderson points out the triple bottom line concept, which include the following:

- Achieve the long term economic performance.
- Reduce the negative impact on the natural and environmental resources.
- Provide support for people and social activities.

However, some opponents may argue that broadening the scope of sustainable risk management to include the social and environmental risks may create opportunity for devising new products, but the magnitude of potential claims may cause significant losses that jeopardize the organization's financial resources.²⁷

Recommendations

The insurers should be resilient to adapt and upgrade their technologies in order to keep up with the updated programs and software applications. The appropriate method of achieving this

²⁷ "How Technology is Revolutionizing Insurance Distribution: Swiss Re," Insurance Journal, May 15, 2014, Retrieved from: <https://www.insurancejournal.com/news/national/2014/05/15/329321.htm>.

sophisticated task is to assign an expert team from the executive management and liaise with the Chief Risk Officer, in order to understand and manage the associated risks and implications. The team should devise a detailed roadmap/plan and also should be empowered with a clear mandate from the CEO and the board. In the meantime insurers already have access to data, through brokerages and through their portals of how many of their clients prefer electronic dealings as opposed to client facing environment, they can tap into their current technology access to further their dealings with their clients. Disruptors really are fulcrum that must not be seen as a hardship by the insurance industry, but, instead of as an opportunity to bridge the current gap while at the same time capitalizing on building a stronger relationship with their sales channels to maximize their customer base, earnings and setting up innovative distribution channels that accommodate their customers.

Additionally, because some insurers do not have their own direct sales force as they have traditionally used agents and brokers to sell their products, technology disruptor should be seen as catalyst to strengthen their business relationship through funding for brokerages to upgrade their systems to continue servicing and distributing products through new and old means to clients for them. Partnerships mentioned would be advantageous to both parties because brokers have strong relationships with the clients and are an invaluable resource in risk management to continue safeguarding the client's financial wellbeing and ward of Liabilities that new distribution methods entail. Withal, insurers could also purchase out brokerages through mergers and acquisitions and modernize them to function as their sales force."²⁸

In this context, I can recommend the following for the incumbent insurance companies:

- Invest in startups and select the right business model in respect of the product, distribution channels, and customer services.
- Partnership with startups and run pilot projects that enhance the performance and process of their traditional business models.
- Use innovation labs and accelerators within the insurance companies in order to update their system, process, distribution, and settlement of claims.
- Sign agreements with big tech vendors, such as Google, Facebook, Apple, and Amazon in order to reach new segments of customer and promote new distribution channels.
- Working to lessen their planetary imprint through the use of technology as opposed to the current model of document printing thus impacting trees due to paper usage
- Advocating the regulators to change laws requiring paper pink card printouts to save on paper and change it to be incorporated into digital copies.

²⁸ "Intact Financial Corporation Completes Acquisition of Canadian Direct Insurance Inc.," Intact, May 1, 2015, Retrieved from: <https://www.intactfc.com/English/media/press-releases/press-release-details/2015/Intact-Financial-Corporation-completes-acquisition-of-Canadian-Direct-Insurance-Inc/default.aspx>.

Distribution methods will create chasms in the long run for the insurance industry. These chasms are opportunities for large organizations to step up and use the engendered room created by the chasms and create a new sub-industry through partnerships with the current larger non-insurance related players such as “Google”²⁹ and or a sub-industry that functions independently and finally through “partnerships”³⁰ that operate with the backing of some of the current P&C industry players.

With these new partnerships, we see the need for technology integration and thus promoting a new breed of professional brokers and agents who are not only insurance savvy but also IT knowledgeable as well. This leads to the next recommendation for organizations to help develop courses that are geared towards both the insurance industry with technological know-how. The need is there for the insurance industry to invest in programs that cater to both these two needs and one way to capture these types of employees is not only being flexible in offering free education to them, but also, offering them schedules that allow for a balanced lifestyle.

As an example, having a technologically savvy insurance employee could render an organization to allow them to work through the internet. This allows the employee to maximize their time as they can also tend to some needs such as being able to strike the balance between the job and the life style. However, this may entail more exposure to cybercrimes which could cause business interruption especially if the hack causes denial of service for the organization or virus infects the organization if the employee’s internet is breached through their home network. A truly balanced approach will be required.

I can recommend for the insurers to partner with large IT firms to counter the disruptions that technology is causing through startups. When Insurers work in a collaborative scheme with Large IT firms will not only develop programs that will counter these new start-ups but also protect them from the adverse business environment being engendered by these start-ups.

As I have seen in the past, mergers and acquisitions are a way that some organizations have proliferated”³¹, similarly, it is advisable for insurers to partner through mergers with large IT firms and acquire these new startups to allow for integration into their business models. Additionally, recommended mergers and ways in which the industry is to distribute its products in the insurance industry, will potentially create a broader regulatory environment by partnering with IT firms and these new entrants.

²⁹ Marty Agather, “*Google Rises from its Insurance Ashes*,” Agency Nation Newsletter, January 16, 2018, Retrieved from: <https://www.agencynation.com/google-rises-insurance/>.

³⁰ “*Exclusive Partnership will Extend MGA’s Cyber Offerings*,” Canadian Underwriter, November 22, 2018, (Cited in Advantage Daily: Canadian Headlines, Insurance Institute of Canada), Retrieved from: <https://www.insuranceinstitute.ca/en/cipsociety/Articles/Items/2018/11/22/Exclusive-partnership-will-extend-MGAs-cyber-offerings>.

³¹ “Intact Financial Annual Report 2017,” Intact, May 1, 2015, Retrieved from: https://s1.q4cdn.com/321139868/files/doc_financials/oar/2017/en/financial-review.html.

Implementation of the Recommendations

An expert team from the executive management, in liaison with the Chief Risk Officer, will continue to be used as a tool to carry out the implementation of technology changes program within the organizations. The detailed plan should cater for changing organizational business, changing regulatory environment and finally distribution methods undertaken in service and product delivery to consumers. Some organizations might implement a full range risk management department or compartmentalized systems to oversee specific units in the organizations toward off exposure. Exposure to liability for insurers having to pay all liability losses due to the products being sold over the new app channels could prove costly because consumers may not fully understand what they are purchasing. Brokerages can maximize on this opportunity through partnerships with larger insurers and become the risk management experts that those clients who purchase their services through the apps can turn to expert opinions.

As previously touched upon, the insurance industry will probably benefit if there are few regulations and regulatory hurdles to jump through resulting in a truly competitive market. These new partnerships recommended above and with newly enacted laws will create a more cumbersome to do business in our ever-growing market conditions such as “protectionism”³² by regulators and thus keeping the market as is for the foreseeable future. New regulation will potentially mandate these new entrants to adhere to the same regulatory requirements faced by other insurers which may push the new entrants out such as meeting the “Minimum Capital Test (MCT)”³³ as mandated through the regulators³⁴ depending on how their operations are run. Existing businesses will be able to counter these new regulations as they already have the framework and knowledge to deal with these requirements while adhering to requirements or privacy protection of consumers for the new distribution systems.

Problems Hindering Implementation

- Shortage in budget and financial constraints
- The pace of regulations that are normally slower than the pace technology advancements

³² Tom Blackwell, “Populism and Protectionism Holding Back Canada's Growth, EDC Warns,” Financial Post, October 18, 2018, Retrieved from: <https://business.financialpost.com/news/populism-and-protectionism-holding-back-canadas-growth-edc>.

³³ “Minimum Capital Test for Federally Regulated Property and Casualty Insurance Companies,” Office of the Superintendent of Financial Institutions, June 27, 2018, Retrieved from: <http://www.osfi-bsif.gc.ca/Eng/fi-if/rg-ro/gdn-ort/g1-ld/Pages/mct2018.aspx>.

³⁴ “About OSFI,” Office of the Superintendent of Financial Institutions, September 14, 2015, Retrieved from: <http://www.osfi-bsif.gc.ca/eng/osfi-bsif/faq/Pages/abt-apr.aspx>.

- Some Insurers are lacking the leadership and their management efficiency is below the standards
- The negative performance of economy in case of recessions
- Business environment and political instability

Conclusion

In conclusion, technology innovations are here to stay, and, the industry is poised to affect beneficial means by which it will cater to the challenging times ahead while it continues to do business. Majority of the insurers in the industry will continue to implement new technologies in their mix to remain competitive while distributing it through new and old means. However, the Brokerages business may shrink in the near future for certain classes of insurance business, such as Motor, Property and liability, Medical, Life and personal Accident insurance, as the technology innovations will create direct platform to approach the insurance companies. Accordingly, the Broker's role will be limited to do specific classes of business, such as Aviation, Energy, Marine and Aerospace Insurance, because these classes of business require qualified technical skills, also will be difficult to sell such products online. Further, the Brokers may focus in providing risk management advices to their customers and make sure that risk profiles are matched and placed in their intended risk markets. Regulators will continue to play catch-up and this factor may become a challenge for new entrants as laws will probably make it hard for them to meet MCT's and thus may not be able to operate in the industry for long. Mergers and acquisitions may go through thorough valuations and new regulatory mandates could see larger insurance firms denied mergers by government bodies due to need for there to be a clear line of where one organization starts and where the other ends such as large IT firms and insurers.

In closing, mentorship, apprenticeship and training must be utilized for the purpose of rejuvenating the workforce after the old generation exit and insurers should embrace the radical and incremental technology innovations to enhance their insurance products and explore new distribution channels in order to be able to survive and overcome the future challenges.

The Status of Global Insurance Markets

The global economy improved slightly in 2017 and the gross domestic product (GDP) has been increased by 3.3% in Europe and North America except for the UK. In China economy still performing robust growth and the inflation began to rise in advanced markets.

The insurance premiums have been increased by 2.8% for non-life insurance and 0.5% for life insurance in 2017 but profitability for life and non-life continues to be under pressure.

The global insurance for 2018 has been increased by approximately 3% to stand at USD 5 trillion and the projection for 2019 show that emerging markets in China India and Latin America will continue to grow up to 7%.

Total premiums for 2017 were USD 4.892 trillion segregated as follows:

- Non-life premium: USD 2.234 trillion
- Life premium: USD 2.658trillion

Top Ten Worldwide Written Premiums in 2017

(US\$ millions)

Rank	Country	Life Premiums	Nonlife Premiums	Total premiums		
				Amount	Percent change from prior year	Percent of total world premiums
1	United States	\$546,800	\$830,315	\$1,377,114	-0.1%	28.15%
2	P.R. China	317,570	223,876	541,466	16.2	11.07
3	Japan	307,232	114,818	422,050	-6.5	8.63
4	United Kingdom	189,833	93,499	283,331	-2.6	5.79
5	France	153,520	88,083	241,603	1.8	4.94
6	Germany	96,973	126,005	222,978	3.8	4.56
7	South Korea	102,839	78,378	181,218	2.4	3.70
8	Italy	113,947	41,562	155,509	-2.6	3.18
9	Canada	51,592	67,927	119,520	5.5	2.44
10	Taiwan	98,602	18,873	117,474	15.8	2.40

Source: Swiss Re, Sigma, No. 3/2018.

The Top Ten Countries written premiums in 2017 are mentioned in the above table and the top three countries were USA, China and Japan who had written approximately 40% of the total global premiums for life and non-life insurance business.³⁵

³⁵Swiss Re-Sigma 3, 2018, Retrieved from: <http://www.iii.org/publications/insurance-handbook/economic-and-financial-data/world-insurance-marketplace>.

Top Ten Arab Countries Written Premiums in 2017

(US\$ millions)

Rank	Country	Life Premiums	Non-life Premiums	Amount	Real change (in %) 2017	Real change (in %) 2016
1	UAE	3,133	10,388	13,521	1.7	3.0
2	Saudi Arabia	283	9,434	9,717	-0.7	1.7
3	Morocco	1,523	2,195	3,718	4.1	1.1
4	Lebanon	505	1,130	1,635	1.8	2.0
5	Egypt	761	826	1,587	4.2	4.3
6	Algeria	117	1,099	1,216	2.3	3.3
7	Oman	161	1,053	1,214	0.2	5.4
8	Jordan	108	746	854	2.2	2.0
9	Kuwait	153	668	821	-1.7	3.5
10	Tunisia	166	647	813	2.0	1.2
Total Premiums		6,910	28,186	35,096		

Source: Swiss Re, Sigma, No. 3/2018.

The above table will show the Top Ten Arab Countries written premium amounting to USD 35.096 billion, which is much lower than the total written premiums in a small country, such as Taiwan, who had written USD 117.747 billion in 2017.

In view of the above, the insurance sector has shown poor performance in Arab Countries, and need enormous efforts to be in line with the international standards, in this context the insurance sector should work as enabler, in order to play a critical role in the financial and economic development of Arab Countries. However, the insurance sector is growing slowly in Arab Countries due to the following factors:

1. Market structure and fragmentation that hinder building and adequate risk pool.

2. Lack of development of financial sector.
3. Lack of qualified insurance leadership and visionary professional.
4. Cultural and moral aspects.
5. Immaturity of regulations.
6. Lack of transparency and trust from the general public.

Roadmap for Developing the Insurance Sector in Arab Countries

1. Introducing additional compulsory insurance that generate more increase of premiums, such as health insurance for expatriates and workmen compensation.
2. Increasing the awareness of insurance business and generate more trust in the sector.
3. Reducing the role of the state involvement in the insurance sector.
4. Raise the minimum capital amount required for new entrants.
5. More consolidation with the industry in order to remove the small companies who are generating losses and hinder the future industry developments.
6. More independence for insurance sector in order to manage the future growth.
7. Developing human capital and invest in creating technical experts in the underwriting and future planning.
8. Liaise with the international insurance/reinsurance companies for exchange of experience.
9. Promote the concept of risk management across the industry.
10. Foster and embrace the technology innovations.
11. Develop Takaful insurance in order to target new segments of consumers.³⁶

The progress of Insurance development among Arab Countries is varying from country to another, and during the past three years the Arab Gulf Countries, particularly United Arab Emirates and Saudi Arabia, had witnessed drastically changes in order to update their insurance industry to be aligned with the international industry standards. Accordingly, they introduced additional compulsory insurance that generate more increase of premiumssuch as health insurance for expatriates and workmen compensation for new construction projects. Also raise the minimum capital amount required for new entrantsand promote the concept of risk management across the industry, furthermore, promote the technology innovations including the application of Artificial Intelligence. In other Arab countries the pace of progress was in slow motion. However, the status of the insurance industry in Jordan is close to the status of Arab Gulf Countries insurance markets, but the volume of total written premium and the market size

³⁶Rodney Lester, "The Insurance Sector in the Middle East and North Africa: Challenges and Development Agenda", The World Bank, November, 2010, Retrieved from: http://siteresources.worldbank.org/INTMNAREGTOPPOVRED/Resources/MENAFflagshipInsurance12_20_10.pdf.

are smaller in Jordan. This may be attributed to various factors and shall discuss this matter and try to explore the appropriate solutions that would be implemented in the future.

Suggested Solutions for the Insurance Industry in Jordan

There is no doubt that Jordan Insurance Federation in liaison with the Insurance Regulators are carrying out tremendous efforts in order to move the insurance industry forward. In this context they have achieved many things. By fostering the technology innovation they were able to enhance the image and industry reputation among the public. Furthermore, successfully manage and complete unifying the third party motor insurance liability policies for insured persons, also transmitting electronic copy of the renewal of motor insurance policies directly to traffic departments, also working toward enacting new regulations that create new types of products and enhancing the medical insurance products and services to customer.

Owing to the fact, the maturity and size of insurance market is playing a vital role in determining the pace of progress for embracing the technology innovations. In this context the applications of technology innovation in North America may be faster and rapidly change the insurance industry during the following 10 years. However, there is always margin for future development and the pace of progress may be slower in Jordan and take more time, as the priority is to achieve harmony in regulations and heavily invest in the economy infrastructure, which may require major reform. Accordingly I would suggest the following:

The first phase we should focus on enacting matured regulations that establish a strong platform to develop the industry forward, also devise a long term vision, with detailed roadmap for implementation process and set-up the goals and objectives to be achieved in the future i.e. for short term, medium term and long term.

For the purpose of successfully achieving the projected development and progress, we should also focus on acquiring the know-how and building skilled professional leaders who have the capability of advancing forward the insurance industry in Jordan.

The second phase is to work towards implementing the technology innovations in certain classes of insurance business, because the insurance market in Jordan is not writing high volume of aviation business, aerospace, energy and marine policies. Therefore, I recommend starting implementing the automation for simple insurance products such as:

- Motor vehicle insurance

- Property all risks
- Life and personal accident
- Medical insurance

The reason for selecting the above policies is that the insurance market in Jordan is relatively small i.e. the total written premiums for 2017 was approximately JD 600 million and the margin of profit is relatively slim. Accordingly, the cost of writing automated programs for the above mentioned classes of business will be affordable and most insurance companies are in the position to foster these technology innovations. However, there is always margin for development, so in the future we can automate other sophisticated classes of insurance business based on the customer's needs and economy performance.

Bibliography

1. Richard Miller, “Five Tech Trends Shaping The Future of Life Insurance”, Accenture, Last Modified 2018, Retrieved from: <https://insuranceblog.accenture.com/five-tech-trends-shaping-the-future-of-life-insurance>
2. Sandra Burmeier, Rainer Egloff, Rolf Tanner and Reto Schneider, “New Emerging Risk Insights”, Swiss Re SONAR, Retrieved from: https://media.swissre.com/documents/SwissRe_SONAR_2016.pdf
3. David Osborne, “The Moment it All Went Wrong for Kodak”, The Independent, January 20, 2012, Retrieved from: <https://www.independent.co.uk/news/business/analysis-and-features/the-moment-it-all-went-wrong-for-kodak-6292212.html>
4. Darren Pain and Jonathan Anchen, “Technology and Insurance: Themes and Challenges”, Swiss Re Institute, June 2017, Page 28, Retrieved from: http://media.swissre.com/documents/expertise_publication_technology_and_insurance_the_mes_and_challenges.pdf
5. Peter Miller, “Insurance Data and Technology: Challenges and Opportunities for Our Industry”, The Institutes, Risk & Insurance Knowledge Group, Retrieved from: <https://www.theinstitutes.org/guide/insurance-data-and-technology-challenges-and-opportunities-our-industry>
6. Paul Lucas, “Is Insurtech a Threat or a Bonus for the Insurance Industry”, Insurance Business UK, October 17, 2016, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/is-insurtech-a-threat-or-a-bonus-for-the-insurance-industry-39143.aspx>
7. Sentryo, “The 4 Industrial Revolutions”, Published on 23 February, 2017, Retrieved from: <https://www.sentryo.net/the-4-industrial-revolutions/>
8. “The First Bubble and Dot-Com Bubble”, Investopedia, Bubble, Retrieved from: <https://www.investopedia.com/terms/b/bubble.asp>
9. “Property and Casualty (P&C) Insurance”, (2018), Retrieved from: <http://www.cia-ica.ca/about-us/actuaries/what/pc>
10. Gregory Hoeg, “New Technologies: A Double-Edged Sword for Insurance Companies”, Carrier Management, September 2, 2016, Retrieved from: <https://www.carriermanagement.com/features/2016/09/02/158432.htm>
11. Darren Pain and Jonathan Anchen, “Technology and Insurance: Themes and Challenges”, Swiss Re Institute, June 2017, Page 24, Retrieved from: http://media.swissre.com/documents/expertise_publication_technology_and_insurance_the_mes_and_challenges.pdf
12. Adrian Flux , “Driverless Car Insurance”, Retrieved from: <https://www.adrianflux.co.uk/driverless-car-insurance/>

13. Wikipedia, “Self-Driving-Car-Liability”, Retrieved from:
<https://en.wikipedia.org/wiki/Self-driving-car-liability>
14. “How Technology is Revolutionizing Insurance Distribution: Swiss Re”, Insurance Journal, May 15, 2014, Retrieved from:
<https://www.insurancejournal.com/news/national/2014/05/15/329321.htm>
15. Paul Lucas, “Insurtech a Threat or an Opportunity for Brokers”, Insurance Business UK, July 20, 2016, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/insurtech-a-threat-or-an-opportunity-for-brokers-35031.aspx>
16. Ibid
17. Paul Lucas, “Is Insurtech a Threat or a Bonus for the Insurance Industry”, Insurance Business UK, Retrieved from: <https://www.insurancebusinessmag.com/uk/news/breaking-news/is-insurtech-a-threat-or-a-bonus-for-the-insurance-industry-39143.aspx>
18. Lindsey (LaManna) Makela, “Top Three Technology Trends with the Biggest Impact on Companies”, Digitalist Magazine, Retrieved from:
<https://www.digitalistmag.com/innovation/2012/09/26/top-three-technology-trends-with-the-biggest-impact-on-companies-017435>
19. Hugh Terry, “Agents of the Future: The Evolution of Distribution – McKinsey”, The Digital Insurer, January 16, 2014, Retrieved from: <https://www.the-digital-insurer.com/agents-of-the-future-the-evolution-of-distribution/>
20. Ibid
21. Jonathan, B. Wiener, “The Regulation of Technology and the Technology of Regulation”, Duke University School of Law, Retrieved from:
https://scholarship.law.duke.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1960&context=faculty_scholarship
22. “Innovation in Insurance: How Technology is Changing the Industry”, September, 2016, IIF, Retrieved from:
https://www.iif.com/system/files/32370132_insurance_innovation_report_2016.pdf
23. Watson Richard and Affiliates, “Telematics at UPS: En Route to Energy Informatic”, Retrieved from:
https://scholar.google.com/scholar?q=telematics+and+informatics&hl=en&as_sdt=0&as_vis=1&oi=scholart
24. Michael Friedewald, “Perspective of Ambient Intelligence in the Home Environment”, Science Direct, Published on 3rd August, 2005, Retrieved from:
<https://www.sciencedirect.com/science/article/abs/pii/S0736585304000590>
25. Constantine Glaros and Dimitrios I. Fotiadis, “Wearable Devices in Healthcare”, Springer Link, , Published on 15th July, 2015, Retrieved from:
https://link.springer.com/chapter/10.1007/11311966_8
26. AIG, “Drones: A New Way to Help”, Published on 8th October, 2016, Retrieved from:
<https://www.aig.com/knowledge-and-insights/k-and-i-article-drones-for-disaster-response>

27. “How Technology is Revolutionizing Insurance Distribution: Swiss Re”, Insurance Journal, May 15, 2014, Retrieved from:
<https://www.insurancejournal.com/news/national/2014/05/15/329321.htm>
28. “Intact Financial Corporation Completes Acquisition of Canadian Direct Insurance Inc.”, Intact, May 1, 2015, Retrieved from: <https://www.intactfc.com/English/media/press-releases/press-release-details/2015/Intact-Financial-Corporation-completes-acquisition-of-Canadian-Direct-Insurance-Inc/default.aspx>
29. Marty Agather, “Google Rises from its Insurance Ashes”, Agency Nation Newsletter, January 16, 2018, Retrieved from: <https://www.agencynation.com/google-rises-insurance/>
30. “Exclusive Partnership will Extend MGA’s Cyber Offerings”, Canadian Underwriter, November 22, 2018, (Cited in Advantage Daily: Canadian Headlines, Insurance Institute of Canada), Retrieved from:
<https://www.insuranceinstitute.ca/en/cipsociety/Articles/Items/2018/11/22/Exclusive-partnership-will-extend-MGAs-cyber-offerings>
31. “Intact Financial Annual Report 2017”, Intact, May 1, 2015, Retrieved from:
https://s1.q4cdn.com/321139868/files/doc_financials/oar/2017/en/financial-review.html
32. Tom Blackwell, “Populism and Protectionism Holding Back Canada's Growth, EDC Warns”, Financial Post, October 18, 2018, Retrieved from:
<https://business.financialpost.com/news/populism-and-protectionism-holding-back-canadas-growth-edc>
33. “Minimum Capital Test for Federally Regulated Property and Casualty Insurance Companies”, Office of the Superintendent of Financial Institutions, June 27, 2018, Retrieved from: <http://www.osfi-bsif.gc.ca/Eng/fi-if/rg-ro/gdn-ort/gl-ld/Pages/mct2018.aspx>
34. “About OSFI”, Office of the Superintendent of Financial Institutions, September 14, 2015, Retrieved from: <http://www.osfi-bsif.gc.ca/eng/osfi-bsif/faq/Pages/abt-apr.aspx>.
35. Swiss Re-Sigma 3, 2018, Retrieved from: <http://www.iii.org/publications/insurance-handbook/economic-and-financial-data/world-insurance-marketplace>
36. Rodney Lester, “The Insurance Sector in the Middle East and North Africa: Challenges and Development Agenda”, The World Bank, November, 2010, Retrieved from:
http://siteresources.worldbank.org/INTMNAREGTOPPOVRED/Resources/MENAFIflagshipInsurance12_20_10.pdf