

Artificial Intelligence and its Impact on the Jordanian Insurance Sector

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Abstract: This study aimed to highlight the importance of Artificial Intelligence (AI) to the Insurance sector. A sample of (11) Jordanian Insurance company where under investigated. The study revealed that; there is a positive relation between (AI) and the development of Jordanian Insurance sector. Using (AI) in the sample companies led to improvement of work processes, and increase their profits, and there for on their investments. Also, led to reduce on the operational time, and speed up their operations.

Keywords: artificial intelligence, insurance, Jordan.

1 Introduction

The world stands on the edge of the technological revolution that will fundamentally change the way we live, work, and communicate. This transformation will be unlike anything humankind has experienced before, the reason go back for something called Fourth Industrial Revolution. The First Industrial Revolution, between 18th and 19th centuries used water and steam power to mechanize production. The Second Industrial Revolution came out roughly one century later, characterized by mass production in new industries like: steel, oil, and electricity; leading to innovations such as the telephone, the light bulb and the internal combustion engine. The use of electronics and information technology in order to automate production marked the Third Industrial Revolution. This is also referred to as the "Digital Revolution".

Now a Fourth Industrial Revolution has been built on the last revolution which is the digital revolution and is entitled by emerging technologies, including energy storage, robotics, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, and artificial intelligence. Artificial intelligence (AI) enhances productivity and innovation around the world. Artificial intelligence's effect will be widespread, because it can be applied to almost any activity that involves information and communication technologies, such as insurance sector.

2 Research Objectives

The target of this study is: Identify the dimensions of artificial intelligence, its advantages and how to benefit from it to develop the insurance sector.

3 Research Significance

The importance of this study comes from the great assistance that AI provides to insurance companies, Brokers and insurance policyholders, through increasing efficiency, effectiveness, speed and volume of information exchange. AI Especially can provide solutions to most of the problems facing the sector, in terms of compensation or set-off between companies. AI helps to assess risk in a precise way, as well as prevention of damage and settlement of claims in a faster way. To clarify more, an insurance company can settle its claims within several seconds.

Thus artificial intelligence helps insurance industry to save money and even generate more revenues as it gives customers what they want exactly when they want it.

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4 Literature Review

The National Association of Insurance Commissioners (NAIC) in the USA has also developed a monitoring system called the Insurance Regulatory Information System (IRIS). This system was originally designed by McKinsey and Company, ostensibly to provide an early. The neural network (Artificial Intelligence) method used in this study shows significant promise for providing a useful early warning signals for use by insurance regulators, and clearly dominates the current IRIS system for solvency monitoring and early warning promulgated by the National Association of Insurance Commissioners of the USA. It also out-performs private monitoring agency's rating method. (Brockett, Cooper, Golden & Xia, 1997).

The Impacts of Robotics, Artificial Intelligence On Business and Economics is aiming to address and discusses the future of robots, mechatronics and artificial intelligence in different perspectives.

Regarding to business and economics will face serious dangers, hits, change, exposures as well as opportunities and gains with the improvements in Artificial Intelligence and Robotics. One simple example can explain the degree of these impacts: Should we continue to make provisions for severance pay of the company's staff or should we calculate reserve for depreciation / amortization of robots in the company? The "Industrial Age" has been started by the industrial revolution and mechanization primarily in UK and by car makers (McKenzie, 2015).

Robotics and Artificial Intelligence will open new pages in the economics and business which are also bringing new life style and sociological side effects. Roubini and Stiglitz mentioned about the possible results and impacts of these effects in their articles (Roubini 2014; Stiglitz 2014), together with many discussions held in the last World Economic Forum 2015 (WEF, 2015) and papers, news are newly started to be issued on the same topics. One of the clear impacts will be the increase of jobless ratio in the economy. Regarding this first effect on the business side will also be on the hiring or buying new robots which most probably have an artificial intelligence comparing with its first movers.

As a summary, the current impacts and the expected disruptive changes of the artificial intelligence and robotics on the economics and business would be in the near future as: The production, communication, marketing and staff costs as well as funding and capital costs by calculating real-time / on-line the effect of the value proposition and offers to customers on the balance sheet and income statement and maximizing sales and delivery hours by robotics in the distribution channels, the companies will be able to manage profitability and risks more efficiently. (Dirican,2015).

Risk Determined of Motor Own Damage Insurance by Policies Using Artificial Intelligence study aimed a model development to do customers risk analysis for insurance companies. Artificial neural network was used for this risk analysis by determining the 167 policy data of an insurance company in Turkey. Neural network was used nearly 126 for the training and 41 for the testing of a total 167 policies. As the input of neural networks, 12 parameters were used related to driver and vehicle, the estimate gross premiums as an output parameter. Our model calculated with 93% accuracy for education when calculating with 92% accuracy for testing on gross premiums cost of the policy by using the Matlab Toolbox.

These results have shown that developed system can be used to calculate the amount of gross premiums of insurance policies and to analyses the customers. The model for price calculations based on three components: a fair premium; price loadings reflecting general expenses and solvency requirements; and profit. The first two components were typically evaluated on a yearly basis, while the third was viewed from a longer perspective.

By using neural networks, more complex tasks can be learned from examples than by using conventional statistical techniques. (Yelken, Gulbandilar and others, 2015).

Artificial Intelligence and Robotics and their impact on the Workplace the Global Employment Institute (GEI) was formed in early 2010 for the purpose of developing a global and strategic approach to the main legal issues regarding human resources. This year, the advisory board presents its first report on 'Artificial Intelligence and Robotics and Their impact on the Workplace'. Artificial Intelligence (AI) will have a fundamental impact on the global labor market in the next few years. Such as the impact on working time, remuneration and on the working environment, new forms of employment and the impact on labor relations. There are two kinds of Artificial intelligence:

- Weak artificial intelligence: The computer is merely an instrument for investigating cognitive processes – the computer simulates intelligence.
- Strong artificial intelligence: The processes in the computer are intellectual, self-learning processes. Computers can 'understand' by means of the right software/programming and are able to optimise their own behavior on the basis of their former behavior and their experience. (Wisskirchen, Biacabe and others, 2017).

Using Artificial Intelligence to create value in insurance Recent technological and digital developments have opened new avenues for customer data utilization in insurance services. One form of this data transformation is automated Chatbots that provide convenient access to data leveraged through a discussion-like interface. The purpose of this paper is to uncover how insurance Chatbots support customers' value creation. Three complementary theoretical perspectives – artificial intelligence, service logic, and reverse use of customer data – are briefly discussed and integrated into a conceptual framework. Chatbots represent a new type of interaction through which companies can influence customers value creation by providing them with additional resources.

Automated Chatbots provide convenient access to data leveraged through a discussion like interface. Chatbots can be seen as tool to enter a space that has not been accessible for companies earlier. The use of AI and reverse use of data offer an unlimited opportunity to serve the customer within their own process compared to the current state with limited capabilities of humans as agents. (Riikinen, Saarijärvi, 2017).

Artificial Intelligence and Health Insurance this study said that artificial Intelligence is the process of designing machines that have the ability to think on their own and do not require human command to work. Artificial Intelligence is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

The general benefit from AI that its replicates decisions and actions of humans without human shortcomings, such as fatigue, emotion and limited time. Hospital claims management is another area that stands to benefit. a certain percentage of all claims received are incorrect. Reliably identifying and correcting these incorrect claims would save a lot of time, money, and effort of all stakeholder's/ health insurers and insurance providing agencies. With the help of Artificial intelligence, Insurance service providers can achieve this objective. When it comes to the applications of Artificial intelligence. By making sense of the data available, artificial Intelligence and machine learning can help answer a lot of questions in healthcare and health insurance. (Nangla , 2018).

Artificial Intelligence as a Growth Engine for Health Care Startups: Emerging Business Models the future of health care may change dramatically as entrepreneurs offer solutions that change how we prevent, diagnose, and cure health conditions, using artificial intelligence (AI).

This article reviewed the deployment of AI in the health care sector using a data set drawn from 30 health care startups around the world. Over three years, they have explored the question, "How do entrepreneurs in health tech develop business opportunities and capture these opportunities with innovative and technologically driven business models"?

They started by reviewing several academic and practitioner-oriented studies into health tech in general and observing closely three AI driven health care startups. The first uses AI in the creation of a marketplace connecting providers and patients. The second is a company operating in the digital health space. The third is developing a smart pillow solution for the detection of sleeping disorders. In industries like health care, the introduction of innovative, AI-powered technologies has been lowering costs, hastening drug discovery, and improving health outcomes. (Garbuio, Lin 2018). Will Insurance Claims go Digital in 2019? Today, artificial intelligence (AI) and automation technologies such as robotic processing automation (RPA) are the darlings of investors and businesses alike. AI investments have increased more than five-fold since 2000, according to a Stanford University study, and International Data Corporation reports a 54.2% boost in spending from 2017 to 2018. Significantly, insurers are leading the charge.

According to a 2018 World Insurance Report survey, 80% of insurers are investing or plan to invest in AI and RPA technologies in the next three years.

According to The State of Artificial Intelligence in 2018, new graphics processing units (GPUs) have made computers fast enough to train neural networks, which will allow insurer systems to "see" property damage and determine damage amounts. This visual aspect of claims analysis is increasingly aided by another new technology coming into play: remote aerial imagery. In addition to finding claims that qualify for instant settlement, intelligent systems can deploy network link analysis to better uncover suspicious claims that may warrant investigation. (Rocca, 2018)Online insurance claims: when more than trust matters.

The purpose of this paper is to develop and test a theoretical framework explaining the adoption of online insurance claims characterized by infrequent interactions, inherent complexity and risk. It extends the technology acceptance model to include knowledge-related and trust related beliefs. The framework is tested with structural equation modeling

using data from a survey of 292 customers who made online insurance claims. Findings are further explained through 30 telephone interviews conducted with online and offline claimants. Previous research in financial services has shown trust to be equally or more important than perceived usefulness and perceived ease of use in forming attitudes towards adopting online insurance applications. The findings of this paper contradict this by showing, at best, a weak relationship between trusting attitude and intention to use the online service. Trust is somewhat meaningful; however, perceived ease of use, perceived usefulness and technology attitude are substantially more important in an online insurance claims setting. (Persson , Gidhagen and others, 2018).

5 Research hypotheses

The main hypothesis:

H0: There is a positive correlation between using artificial intelligence and improving insurance sector And derived the following hypotheses assumption:

H1: Using AI will lead to increase the revenues of insurance companies.

H2: The investment rate level for insurance companies will increase through using AI.

H3: There is a positive relationship between using AI in the insurance sector and the speed of its operations.

6 Methodologies

< Population : The population contains the 23 Jordanian organization in the insurance sector.

< sample : The study considers the (11) company from the population.

< Data Collection : To achieve the goal of this study , primary data is collected by the researcher through a questionnaire, as well as. Secondary data for 11 insurance companies from the official records of Amman stock exchange (ASE).

7 Data Analysis

The following statistical treatments through statistical software packages (SPSS) were used:

- Frequencies and percent's for demographic information
- Means and standard deviation for study field
- To test validity of Hypotheses correlation, and multiple regression test were applied.

8 Sample of the Study:

It consisted of (160) Top and middle managers choose randomly from (11) insurance company. Table (1) shows the distribution of individuals according to their companies.

Table 1: Frequency and percentage of the sample according to company (n=160).

Name of the company	Frequency	Percentage
Philadelphia Insurance Company	10	6.3
Middle East Insurance	10	6.3
Gulf Insurance Group	20	12.5

United Insurance	10	6.3
National Insurance	10	6.3
Holy Land Company	10	6.3
Lighthouse Insurance	10	6.3
Arab Guarantors	20	12.5
Arab European	30	18.8
Arab International Union	20	12.5
Islamic Insurance	10	6.3
Total	160	100.0

Reliability Test : The total Cronbach alpha coefficient was applied for Artificial intelligence and reached (0.78), which is a high coefficient to apply the study purposes.

Scale:

questionnaire consists of (14) questions, where the researchers used Likert scale to include three some in order to gauge the views of the study sample members, was given agree (3), indifferent (2), Disagree (1), and by setting signal (\surd) in front of the answer, which reflect the degree of consent, it has also been relying on the following classification of the rule on the averages as follows:

- Less than the 1.66 Low.
- From 1.67 to 2.33 Medium
- More than the 2.34 High

9 The findings

This part presents the findings of the study which aims to investigate "How Artificial Intelligence (AI) affect performance of insurance companies".

Table 2: Means and standard deviation for Artificial intelligence (n= 160).

No	Items	Mean	Standard Deviation	Rank	Agreement Degree
1	Artificial Intelligence performed the same role as an employee	2.00	1.03	13	Medium
2	Fewer staff since the use of artificial intelligence	2.56	0.73	7	High
3	Artificial intelligence leads to reduce the company's costs	2.63	0.50	5	High
4	Artificial intelligence make the services more efficient and effective	3.00	0.00	1	High
5	The use of artificial intelligence increases the number of customers	2.44	0.63	9	High
6	Having artificial intelligence make the process of gathering customer information smoother	2.81	0.54	4	High

7	After artificial intelligence, the detection rate of frauds increased	2.44	0.73	10	High
8	Artificial intelligence has reduced time and effort, especially for routine tasks	2.94	0.25	2	High
9	The insurance sector become more fair and secure after artificial intelligence entered the sector	2.25	0.77	11	Medium
10	Artificial intelligence has helped increase customer satisfaction	2.50	0.63	8	High
11	Artificial intelligence can provide solutions in terms of compensation or clearing between companies	2.63	0.50	6	High
12	Artificial intelligence helps to assess risk in a precise way	2.19	0.83	12	Medium
13	There are complaints by customers against the use of artificial intelligence	1.69	0.70	14	Medium
14	I think artificial intelligence is good for the insurance sector	2.94	0.25	3	High
Average Mean		2.50	0.26		High

Table (2) shows that the highest means reached (3.00) out of (3) for item (4) "Artificial intelligence make the services more efficient and effective" by high agreement degree, and the second rank was for item (8) "Artificial intelligence has reduced time and effort, especially for routine tasks" and item (14) "I think artificial intelligence is good for the insurance sector" by high agreement degree and means (2.94), and the lowest means was (1.96) for items (9) "The insurance sector become more fair and secure after artificial intelligence entered the sector", and means reached (2.50) for Artificial intelligence as hole.

10 Research Hypotheses

Is there a correlation at level of significance ($\alpha \leq 0.05$) between the level of job performance and profit, investment, proficiency in insurance companies? To test this Hypothesis correlation coefficient, and multiple regression test were applied between job performance and profit, investment, proficiency in insurance companies, as following:

Table 3: Correlation coefficients between job performance and profit, investment, proficiency in insurance companies .

		profit	investment	proficiency
job performance	Pearson Correlation	.737**	.604*	.894**
	Sig. (2-tailed)	.001	.013	.000
	N	16	16	16

Table (3) shows that:

There are strong positive relationship between job performance and profit in insurance companies, person correlation was (.737), by sig (.001). Also, there are strong positive relationship between job performance and investment in insurance companies, person correlation was (.604), by sig (.013). Moreover, there are strong positive relationship between job performance and proficiency in insurance companies, person correlation was (.894), by sig (.000).

Table 4: the results of multiple regression to detect the effect of job performance on variables (profit, investment, proficiency) in insurance companies.

Independent variables	value t	Sig. t	Beta	R	R ²	F value	Sig. F	Durbin-Watson
profit	.904	.384	.120	.964a	.929	52.163	.000a	1.793
investment	4.309	.001	.418					
proficiency	7.558	.000	.855					

Dependent variable: job performance

Table (4) shows that: There are statistical significant relationship between dependent variable job performance and independent variables (profit, investment, proficiency in insurance companies), where F value was (52.163) bySig. (0.00). And, the value of R (0.964a) represents the correlation coefficient between dependent variable job performance and independent variables (profit, investment, proficiency in insurance companies).

The value of R² (0.929) predicted the explanation of differences in the dependent variable job performance about the change in (profit, investment, proficiency) in insurance companies. For, profit variable, t value reached (.904) by sig (.384), with explanation ratio (12%). And, for investment variable, t value reached (4.309) by sig (.001), With explanation ratio (41.8%). Also, for proficiency variable, t value reached (7.558) by sig (.000), with explanation ratio (85.5%).

11 Conclusions

The main results showed that, there a positive statistical relationship between using Artificial Intelligence and the development and the improvement in the Jordanian insurance sector, this result came compatible with the high level of awareness of the Jordanian managers in the insurance companies about the applications and consequences of the Artificial Intelligence in their companies.

The results demonstrated that; there is a positive relation between using (AI) and the Jordanian insurance companies revenues according to their managers, the managers believe that, using (AI) in their companies led to, improve work processes and reduces operational costs. Also, using (AI) led to increase on investment level for the Jordanian insurance companies due to improvements on their profits. Moreover, using (AI) in Jordanian insurance companies led to time saving in their operations and speed the processes.

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