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Adoption of Insurtech-Enabled Health Insurance: An Empirical Study

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ABSTRACT

Today the health insurance market is changing due to Insurtech integration. By examining the Insurtech-based platform adoption predictors, this paper will present the main drivers of using the Insurtech-based platform based on both demographic (age, income, education), technological (trust, digital experience), and behavioral variables. It also recognises dominant barriers in regard to data privacy, platform issues, and regulatory problems. The study applying descriptive statistics, Chi-Squared tests and the Garrett ranking method away using only secondary data and surveys indicates the crucial role of the demographics, trust, security, and previous digital experiences on the adoption behavior. The results can be of great importance to the insurers and policymakers to help them avail health insurance in a more accessible, affordable, and efficient manner by utilizing the power of technology.

Keywords: *Insurtech; Health insurance; Consumer behaviour; Technological innovation; Digital adoption.*

1.0 Introduction

Insurtech has brought tremendous change in the operation of different industries but one of the most affected industry is the field of health insurance. Conventionally, health insurance is known to be complex and inefficient. Nevertheless, Insurtech is expected to make things easier as well as enhance customer relationships and provide better solutions to the insurance companies and their customers. Insurtech is ushering in a tsunami of change, where in combination with technologies, which include artificial intelligence (AI), machine learning, blockchain, and telemedicine, the industry will be able to provide personalized

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plans, as well as to reduce fraud and offer customer support. Even though Insurtech is prospective, its implementation in the case of health insurance is uneven when it comes to various territories. There are a number of factors that impact on this variation which include regulatory challenges, technological readiness and cultural factors. This research proposes to examine the magnets or repellents towards the use of Insurtech in the health insurance sector. It is tentatively proposed that by analyzing consumer and insurer points of view, the research will identify the main obstacles and incentives to the realisation of Insurtech solutions. The results will prove to be very useful in depicting the dynamic characteristics associated with the health insurance sector and give a better meaning of what Insurtech role will play in the sector in future.

2.0 Literature Review

Health insurance Business is being transformed drastically due to the effects of technological changes and Insurtech forms a big part of this revolution. Insurtech is optimising business processes and customer systems through the use of technology tools and solutions like AI, machine learning, big data, and blockchain (Baker & Choi, 2022). Along with it, AI has done a significant amount of progress towards simplifying the claims processing, underwriting, and fraud detection (Johnson & Li, 2023).

Insurtech integration will provide such opportunity to abandon traditional systems and implement more individual and versatile solutions, that will become relevant to consumer needs (Joubert & Singh, 2020). One of the elements playing a certain role in the adoption of Insurtech is the incentive to cut down on expenditures, offer more client-centric schemes, and remain competitive (Zhang *et al.*, 2019). Given the shift to the data-driven climate in the industry, more and more insurers are resorting to the use of technology in analyzing health outcomes and managing risks (Lin & Zhang, 2020).

Increased consumer demand in digital services also means that insurers have to innovate and make mobile apps and digital platforms (Nguyen *et al.*, 2021). Nevertheless, there are a number of challenges which pave the way to general adoption of Insurtech in health insurance. One of the key impediments is linked to regulation of data privacy and security, especially when dealing with sensitive health data (Smith, 2020). Another critical challenge is the intertwining of traditional systems with new technologies, and mayhem to deploy the same, which is quite expensive (Morris & Thompson, 2021).

Furthermore, conventional carriers would be at liberty to request to continue with their established workflows, therefore, finding it hard to shift towards a digital marketplace (Smith & Wilson, 2021). Nevertheless, the advantages of embracing the use of Insurtech are evident. It helps insurances to come up with evidence-based decisions, providing more precise risk analysis and individual health plans (Gonzalez & Ivanov, 2022).

Moreover, digital channels enhance the rate of claims' processing and customer support, which results in increased satisfaction (Zhang *et al.*, 2019). Also, Insurtech will help minimize the operations expenses through the automation of many processes and implementation of AI instruments in the detection of frauds (Baker & Choi, 2022). Insurtech is being adopted differently in different countries, which depends on the respective regulatory frameworks and where the market is. To give some examples, the United States has been among the early adopters of telemedicine models and AI-driven insurance schemes, whereas the European countries prioritize regulatory compliance and blockchain adoption as a tool of transparent data management (Gonzalez & Ivanov, 2022).

Trust of citizens Consumer trust is essential in adoption of Insurtech since people are more willing to use digital health insurance services when they perceive a high level of protection of their personal data (Nguyen *et al.*, 2021). The digital literacy of consumers has some effect on the willingness of customers to use such solutions as well (Smith, 2020). When looking at the future of Insurtech in health insurance, it looks promising, and it will prioritize the customer experience where the interaction is seamless, and the use of AI is expanded, and integration of health data is improved. Another challenge that policymakers will have to overcome to enable additional growth concerns the regulation of the industry specifically as far as the data privacy and security is concerned (Smith, 2020).

3.0 Research Gap

This paper addresses some significant missing value in the studies aimed at understanding the adoption of Insurtech in health insurance. It examines the role of demographic forces, such as age, education in influencing the use of such platforms, which has not been done on a large scale. It also prioritizes the major obstacles encountered by the users including complexity, cost, and awareness. The study is carried out on user satisfaction, to be more specific, platform ease of use, trust, and customer support. It also investigates the issue of security that has never been researched with great understanding in the past.

4.0 Significant of this Study

The research is pertinent because it solves research gaps by determining how demographic factors, such as age, income, and education, affect Insurtech-enabled health insurance platforms. It also looks into the main influences to consumer decisions which include convenience, trust and affordability. Adoption can be boosted by using Garrett Ranking to address the barriers to deliver actionable solutions. The results have great recommendations to the insurers and policy makers. All in all, this study will help to better comprehend the Insurtech adoption and has practical implications that the stakeholders of the industry would be able to get.

5.0 Objective of the Study

- Investigate the correlation between the demographical aspects and the implementation of the Insurtech health insurance platform.
- Conduct a research study of the major determinants of the adoption of health insurance platforms enabled by Insurtech by consumers.
- Identify all challenges and barriers which prevent the implementation of Insurtech-enabled health insurance solutions.

6.0 Hypotheses

- *Hypothesis 1 (H01):* Gender is independent of adopting Insurtech health insurance platforms.
- *Hypothesis 2 (H02):* The occupation and Insurtech health insurance platform adoption is not related.
- *Hypothesis 3 (H03):* There was no relationship between age and adoption of Insurtech health insurance platforms.
- *Hypothesis 4 (H04):* There is no correlation between the level of education and the uptake of Insurtech health insurance platforms.
- *Hypothesis 5(H05):* Income level and the use of Insurtech health insurance platforms are not associated.

7.0 Research Methodology

This study explores the adoption of Insurtech health insurance platforms using a quantitative approach.

7.1 Research design

A descriptive research design is employed to identify patterns, relationships, and trends within the data.

7.2 Population and sample

The study targets health insurance holders familiar with or interested in Insurtech platforms.

7.3 Data collection methods

1. Secondary Data: Existing reports and studies on health insurance and Insurtech adoption are analyzed.

2. Survey Questionnaire: A structured survey collects data on demographics, perceptions, and challenges related to Insurtech adoption.

7.4 Data analysis methods

1. *Descriptive statistics:* Demographics and the behaviour of adoption are described.
2. *Chi-square test:* The connection between demographics (age, income, education) and the likelihood of adopting is determined.
3. *Garretts ranking:* The insurance holders are ranked on the influential challenges they encounter.

7.5 Limitations

1. *Sample bias:* The sample will not give representation to all demography.
2. *Restricted factors:* The research concentrates primarily on age, education and pricing.
3. *Self-reported data:* There might be bias or inaccuracy in the answers of the respondents.
4. *Short-term orientation:* The research fails to follow up the opinions or the change in technology over time

8.0 Data Analysis and Interpretation

The demographic profile of the respondents, including gender, age, annual household income, educational qualification, and occupation, is presented in Table 1.

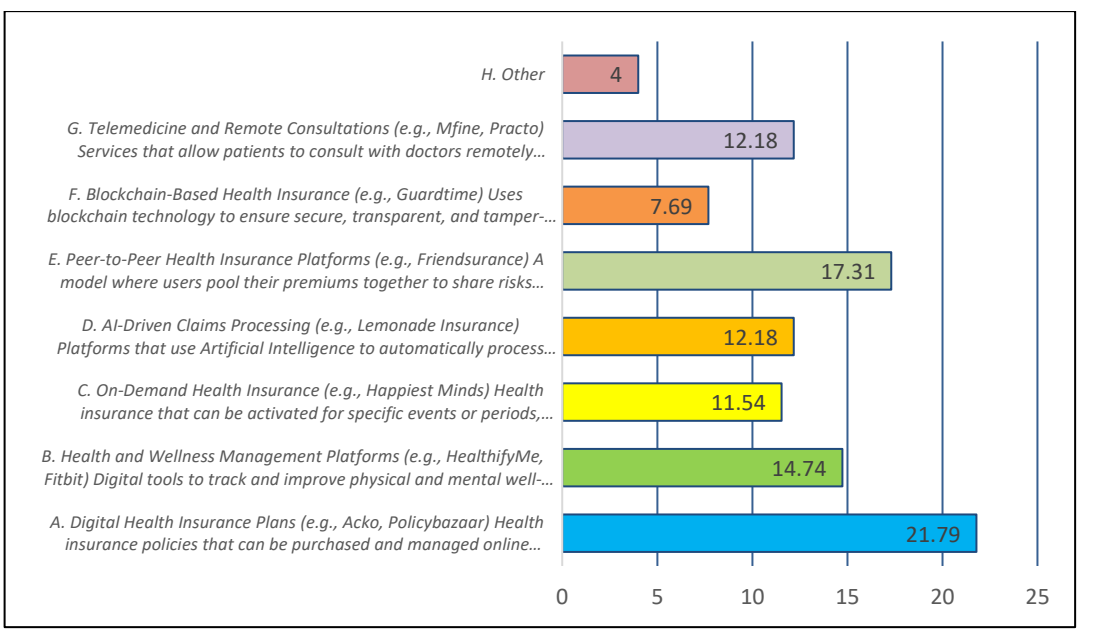
Table 1: Profile of Respondents

	Demographic Factor	Frequency	Percent	Cumulative Percent
Gender	A. Male	58	56.9	56.9
	B. Female	44	43.1	100.0
	Total	102	100.0	
Age	B. 18-24	24	23.5	23.5
	C. 25-34	30	29.4	52.9
	D. 35-44	36	35.3	88.2
	E. 45-54	8	7.8	96.1
	F. 55+	4	3.9	100.0
	Total	102	100.0	
Annual household income	A. Below ₹3,00,000	20	19.6	19.6
	B. ₹3,00,000 – ₹6,00,000	24	23.5	43.1
	C. ₹6,00,000 – ₹12,00,000	34	33.3	76.5
	D. Above ₹12,00,000	24	23.5	100.0
	Total	102	100.0	

Highest level of qualification	A. SSLC (Secondary School Leaving Certificate)	14	13.7	13.7
	B. PUC (Pre-University Course)	8	7.8	21.6
	C. Bachelor's Degree Undergraduate)	16	15.7	37.3
	D. Postgraduate Degree	46	45.1	82.4
	E. Doctorate	14	13.7	96.1
	F. Diploma	2	2.0	98.0
	G. Other	2	2.0	100.0
	Total	102	100.0	
Occupation	A. Employed (Private Sector)	26	25.5	25.5
	B. Employed (Government Employee)	36	35.3	60.8
	C. Self-employed	20	19.6	80.4
	D. Retired	2	2.0	82.4
	E. House Wife	8	7.8	90.2
	F. Unemployed	4	3.9	94.1
	G. Other	6	5.9	100.0
	Total	102	100.0	

Source: Primary Data Collection (Survey)

Figure 1: Consumer Adoption and Preferences for Insurtech Platforms in Health Insurance



Sources: Survey Report

The demographic characteristics of the respondents can be evaluated by the fact that males are represented at a higher rate since 56.9 of the sample population is male whereas 43.1 of the sample represented female. Regarding age, the largest sample (64.7 percent) will be confined to the age bracket 25-44 years with 29.4 percent in the 25-34 years age bracket and 35.3 percent in 35-44 years age bracket. Income distribution of the respondents shows a relatively rich population with 56.9 percent of them earning higher than 600000 per year. Education level of the respondents indicates that they are highly educational with 45.1 percent having Postgraduate Degree. Occupation distribution shows that a larger proportion of the respondents belong to employment in areas that are stable since 35.3 percent were employed in the government sector, 25.5 percent worked in the private sector and 19.6 percent were self employed.

Figure 1 illustrates the consumer adoption and preferences for various Insurtech platforms in health insurance. The distribution of awareness and usage across different platform types is as follows:

1. The most popular are Digital Health Insurance Plans (21.79 percent of the people either used or know about such services). These websites make it accessible to purchase and control health insurance online without the intermediary, which makes it simple.
2. The next option is the Health and Wellness Management Platforms (e.g., HealthifyMe, Fitbit) with 14.74% of awareness or usage. These applications assist users in optical monitoring the health state of their bodies as well as minds and they are commonly integrated with fitness equipment to measure and manage well-being.
3. Peers-to-Peers Health Insurance (e.g. Friendsurance) is fairly popular, too and 17.31 percent of the population fell in this category. Using this model, the users are able to share risks and potentially obtain refunds by pooling their finances, forming a community-based system of insurance.
4. Less familiar was AI-Driven Claims Processing (e.g., Lemonade Insurance) with 12.18 percent of people either aware of them or utilising them. These are websites that apply artificial intelligence to accelerate processing claims, thus making insurance faster.
5. e.g. Telemedicine and Remote Consultations (e.g. Mfine, Practo) have the awareness or usage of 12.18 percentage. With the help of these services, individuals can receive services to communicate with doctors online, which became particularly crucial in the course of the COVID-19 pandemic.
6. On-Demand Health insurance (e.g., Happiest Minds) has less recognition as it was familiar to only 11.54 percent. This form of insurance gives individuals an option to insure an event or a duration, yet it is not very popular at this moment.
7. The less known is Blockchain-Based Health Insurance (Guardtime was an example), with only 7.69 percent awareness or usage. This kind employs the use of blockchain to conduct

secure and transparent insurance deals although it has not been spread as fast as the other types of Insurtech.

Table 2 presents the Chi-Square and Fisher's Exact Test results for associations between demographic factors (gender, occupation, age, education level, and income) and the adoption of Insurtech health insurance platforms.

Table 2: Chi-Square and Fisher's Exact Test Results for Associations between Demographic Factors and the Adoption of Insurtech Health Insurance Platforms

Hypothesis		
H_{01}: No association between gender and the adoption of Insurtech health insurance platforms.	1. Chi-Square Value: 1.859 2. Degrees of Freedom (df): 2 3. Asymptotic Significance (2-sided): 0.39	The p-value of 0.395 exceeds the significance level of 0.05 helping us to make no assumption that the null hypothesis fails. It shows that there does not appear to have any statistically significant correlations between gender and adopting Insurtech in the health insurance market.
H_{02}: No association between occupation and the adoption of Insurtech health insurance platforms.	1. Chi-Square Value: 16.889 2. Degrees of Freedom (df): 12 3. Asymptotic Significance (2-sided): 0.154	The p-value equal 0.154 is bigger than 0.05 and this leads to the fact that we cannot reject the null hypothesis. So, the correlation between occupation and the willingness to adopt Insurtech health insurance platforms is insignificant.
H_{03}: No association between age and the adoption of Insurtech health insurance platforms.	1. Chi-Square Value: 18.333 2. Degrees of Freedom (df): 8 3. Asymptotic Significance (2-sided): 0.019 4. Exact Significance (2-sided): 0.019	The p-value 0.019 is lower than 0.05 and we reject the null hypothesis. It implies that there is a statistically significant correlation between ages and Insurtech health insurance platform adoption.
H_{04}: No association between education level and the adoption of Insurtech health insurance platforms.	1. Fisher's Exact Test Value: 34.782 2. Exact Significance (2-sided): 0.000	The p-value 0.000 is less than 0.05 hence we reject the null hypothesis. Thus, the highest level of correlation between the adopted Insurtech health insurance platforms exists with the education level, which is implied by the Fisher Exact Test.
H_{05}: No association between income level and the adoption of Insurtech health insurance platforms.	1. Chi-Square Value: 6.715 2. Degrees of Freedom (df): 6 3. Asymptotic Significance (2-sided): 0.348	The p-value, which equals 0.348, is higher than 0.05, which means that we do not reject the null hypothesis. This implies that the level of income and adoption of Insurtech health insurance platforms do not have statistically significant relation.

Source: Results generated using SPSS

1. *Perceived ease of use:* Participants give an average rating of 3.02 on the ease of use in the platform. There is a slight differentiation on the responses as shown through the standard deviation of 0.79 which implies that some individuals find it easy to use as compared to others.
2. *Perceived usefulness:* The overall rating of the platform perceived by the participants as useful is 3.09. Nevertheless, people vary when it comes to usefulness attendance with the standard deviation of 0.78, and it indicates that usefulness is not perceived on the same level by users.
3. *Trust and security:* The platform is regarded as quite trustful and secure, of average scores 3.01. The second value (standard deviation of 0.78) is moderate and reveals that not all sample participants feel as secure as others do.
4. *Cost-effectiveness:* Respondents are not convinced that the platform is cost-effective, by an average of 2.97 that is almost in the middle (indifferent). The large standard deviation of 0.81 indicates a great deviation of views on this matter as some people think it is more cost-effective than others.
5. *Customer support:* Customer support of the platform is regarded as neutral with the mean of 3.00 which represents neither very positive nor negative orientation. Such standard deviation of 0.77 means that there is a general impression about the issue of customer support that is shared by the population.

The above perceptions are further corroborated by the descriptive statistics summarised in Table 3 below.

Table 3: Descriptive Statistics Analysis and Interpretation

	N	Mean	Std. Deviation
1. Perceived Ease of Use	102	3.0235	0.78868
2. Perceived Usefulness	102	3.0941	0.77521
3. Trust and Security	102	3.0118	0.78239
4. Cost-Effectiveness	102	2.9686	0.81020
5. Customer Support	102	3.0000	0.77178
Valid N (listwise)	102		

Source: Results generated using SPSS

9.0 Garrett's Ranking of Challenges to Adopting Insurtech in Health Insurance

In order to determine the level of factor hinder / challenges to adopt Insurtech, the ranking method developed by Garrett was embraced. The respondents of this sample were required to rate the following challenging factors on scale 1-5, where 1 is given to most significance challenges, and 5 is least most significance challenges to adopted Insurtech.

The order of priority as given by the sample respondents were changed into percentage position by using following formula Percent position (P) = 100 (R_{ij} - 0.5)/ N_j

where, R_{ij} is the rank given for the i^{th} factor by the j^{th} respondent; N_j Number of factor ranked by jth respondent.

The computed percent positions were then converted to Garrett scores using standard Garrett's conversion table. Table 4 presents the Garrett scores corresponding to each rank position used in this analysis.

Table 4: Garrett's Ranking of Challenges to Adopting Insurtech in Health Insurance

Rank	Formula	Percent	Garret Score
I	100(1-.05)5	10	75
II	100(2-.05)5	30	60
III	100(3-.05)5	50	50
IV	100(4-.05)5	70	40
V	100(5-.05)5	90	24

Source: Results generated using SPSS

Based on the Garrett scores derived from Table 4, the mean scores and final rankings of the Insurtech adoption barriers were computed. Table 5 presents the percent position and Garrett scores for ranking Insurtech adoption barriers.

Table 5: Percent Position and Garrett Scores for Ranking Insurtech Adoption Barriers

Factors	Mean Score	Rank
Lack of awareness about Insurtech	51.47	II
Complexity in using technology for insurance activity	56.16	I
High cost of Insurtech solutions (service charges, GST and Hidden Charges	47.96	IV
Limited time to understand rules and regulations	49.55	III
Preference for traditional insurance models	43.86	V

Source: Results generated using SPSS

9.1 Summary of priority ranking

Garrett Ranking Technique has given an organized approach to identify barriers and rank the barriers to the adoption of the Insurtech in the field of health insurance. The main priorities must aim at making technology simpler, building awareness, and reform of the regulations, whereas dealing with costs and a change in cultural preferences will assist in

enhancing the rate of adoption in the long term. Prioritizing these efforts will help the stakeholders to introduce a valuable change and speed up the process of Insurtech integration into the health insurance.

10.0 Suggestions

1. *Build trust and security:* The important thing is to make sure that the users believe that their information will not be misused thus more people will embrace the Insurtech platforms.
2. *Easy platforms:* It should simplify platforms to be easy to use and user friendly in order to have a wider audience.
3. *Provide clear pricing:* Insurtech provider needs to provide its product at transparent and competitive prices to enhance perception of cost-effectiveness.
4. *Improve customer service:* Customer service should be effective, professional and directly accessible by users to improve their satisfaction.
5. *Tackle data privacy issues:* Data privacy should be addressed and all consumers should have confidence that their personal and health data is safe.
6. *Simplify the regulatory process:* On the one hand, regulators ought to draft legislation that encourages innovation but on the other hand safeguards consumers.

11.0 Conclusion

To sum up, Insurtech can significantly transform the health insurance sector, but numerous issues need to be overcome, so that it becomes commonly implemented. Trust and security, simplification of the platforms, and more obvious, competitive pricing should be created in order to present more customers. The user confidence will also be boosted through upgrading customer assistance and data privacy and complex platform claims. Also there needs to be regulations that address these new technologies and protect the consumers. Investing in these major factors, insurance providers can ensure that digital health insurance is more attractive and adopted to become successful in the long run.

12.0 Future Scope

Greater studies are required to know how the Insurtech impacts human beings with disabilities and marginalized groups. We ought to as well consider how new technologies such as quaternate computing and virtual former can enhance Insurtech. It is as well relevant to compare the Insurtech usage in both different countries and how culture differences affect its usage. There should also be the consideration of new models of insurance such as peer-to-

peer insurance. Lastly, we must examine the effects of Insurtech on healthcare and insurance sector long-term. This will make us know about the possible advantages and difficulties of Insurtech.

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