Risk Management Framework for Insurance Industry

Dr. Srinivas Gumparthi
SSN School of Management

Dr.Bhargavi Rentachintala
SCOPE, VIT University

Pavithra Krishnamachari
SSN School of Management

Dr.Aabha Sunilkumar Singhvi
GRIMS ROFEL

Abstract

The concept of insurance is built around risk-financing. However, the insurers are prone to multifarious risks themselves, which emerge and evolve overtime. It has therefore become vital to identify such risks, their intensity, the key impact areas and the necessary precautions that must be in place to mitigate them. This paper attempts to break down the insurance process into different stages to detect the risks and understand their intensity using a 5x5 Risk matrix. The Risk matrix uses probability and severity criteria to classify risks into low, moderate, high and extreme risk areas. The severity criteria was based on assumptions about whether the parameter under consideration had insignificant, minor, moderate, major or severe impact on the business. The probabilities were assigned based on customer responses to the survey and were classified into rare, unlikely, possible, likely and almost certain based on percentage responses. If further understanding was required beyond the risk matrix then **Chi-square tests of association** (confidence level 95% and significance level 5%) was performed to indicate if the variables had any association between them so that they can be predicted in advance. Lack of association indicated that uncertainties were high due to risks. The descriptive research design and simple random sampling method were used to collect data from a total of 79 respondents from Chennai and Bangalore cities. The primary data was collected through closed ended questionnaire and secondary data was also utilized. Descriptive and Inferential statistics methods using SPSS were employed and the data collection period was from 15th April to 30th April 2020. The research identified the presence of Business Risk, Communication Risk, Actuarial Risk, Reinsurance Risk, Liquidity Risk, Legal Risk, Operational Risk and Environmental Risk. The factors creating the risks in different stages of the insurance process was identified along with the areas they impact and the scale of impact. Suggestive measures to mitigate them was proposed to counter the risks. There can be no solution that will be effective permanently. It is therefore recommended that

risk monitoring committees perform regular assessments annually and design and modify mitigative measures appropriate to their needs.

INTRODUCTION

Risk refers to an event or condition, which if occurs, would have an undefined or unknown impact on achievement of objective. Numerous risks arise in the insurance business and evolve overtime making it difficult to cope up with their complexity. **Business risk** is the possibility that a company will earn lower than anticipated profits or incur a loss rather than profit. In insurance, it is influenced by different factors such as number of policies sold, mispricing, cost factors, intense competition, lack of customer awareness, lack of loyalty, inaccessibility, poor company image, low policy duration, hasty claim settlement process, the policy is considered unnecessary by the customers etc. **Communication Risk** is the risk that arises when the company tries to communicate with the customers through various marketing channels. This risk arises when the customer assumes knowledge incorrectly, unclear language of sales representatives, non- receptiveness by consumers etc. **Actuarial Risk** arises when the actuary mis prices the securities due to faulty methods, lack of proper judgement, incompetence, cursory measures etc. that causes losses to the company due to customer defection or inability to face the claims, cover costs etc. There are many uncertainties and imponderables in the calculations which causes actuarial risk. **Reinsurance Risk** arises when the insurance company is unable to obtain reinsurance at the appropriate time or at the right cost resulting in losses. This may be caused due to unfavourable market conditions etc. **Liquidity Risk** is the inability to meet short term financial obligations. In insurance it arises due to the time lag between receipt of premium and payment of claims. There can always be unanticipated claims or surrender of policies or claims on account of catastrophe. Liquidity risk may cause loss of asset value on account forced sale of assets, more so if there is slump in the market. **Legal Risk** relate to financial risks faced by insurers due to non-compliance with Regulatory provisions that may lead to massive fines imposed by Authority. **Operational Risk** is the risk of loss resulting from inadequate or failed internal processes and systems. It is also caused by external events. The operational risks in insurance include human failure, fraud, technology failure, failed system and procedure, embezzlement by personnel, errors in accounting, lack of proper internal control and wrong application of models, methods, systems and procedures. Cybercrime is also another danger. **Environmental Risk** arises due to events or conditions beyond the control of the company such as competitor's actions, terrorism, natural disasters, government policies and inflation etc. Risks can be handled by avoiding them altogether, controlling them by taking steps to prevent losses, accepting the risk by assuming all financial responsibility for that risk or by transferring the risk to another party for a fee, such as reinsurance agreements. The method that is chosen depends upon the type of the risk, the frequency of occurrence, the severity of the risk and consequences to the company; therefore the approach of this research employs plotting the factors on the 5X5 Risk Matrix to identify their intensity (low, moderate, high or extreme). Based on the observations we infer that risks vary in their intensity overtime and also a single risk affects several different areas in a business such as profitability, liquidity, financial position, market share, customer experience, operations etc. So it is important to assess risk regularly and take prompt corrective actions to control them effectively.

LITERATURE REVIEW

Sumon Ganguly (2017) [1] the relevance of this article is that it discusses the various theft and fraudulent practices prevalent in cargo insurance claims and how it is difficult to detect and manage. The fraudsters are able to defraud the Shipper and the Insurance companies since it is difficult to investigate the fraudulent activities due to complexity of the marine trade and involvement of different intermediaries like Bankers, Shipping lines, Freight forwarders, Shipping Agents, Road Carriers etc., at different locations. The article calls for voluntary measures initiated by various parties in cargo transit in order to prevent such unscrupulous practices. **Jagendra Kumar (2018)** [2] the relevance of this article is that it provides valuable insights about how digital transformation and artificial intelligence are transforming automobile insurance sector. The role played by AI in capturing accurate real time data instantly will also prove to improve service efficiencies across the insurance sector. IoT device embedded in a vehicle will provide information about the driving patterns to an insurer. Constraints such as average speed at which this vehicle is driven or usage of breaks will help in determining the risk profile of a driver. Based on the risk profile, an insurer can reduce the cost of an insurance policy. **Jagendra Kumar (2018)** [3] The relevance of this article is that it provides an overview about digital distribution, how technology is adopted in the insurance sector, how IT will change the future insurance business model, the different digital platforms available to insurers, how various stages of the insurance process is being automated and the impact on the industry as a whole. A digital avenue helps insurers save on various operational costs, speedy sales service and increased efficiency, elimination of chances of fraud and mis-selling, especially by an agent or distributor. There are various benefits of holding electronic policies—no physical damage or loss, know-your-customer process is simplified and it is possible to manage multiple policies via a single platform. **R. Parameswari & Dr. S. Arumugasamy (2018)** [4] the relevance of this article is that it describes the Indian scenario of Customer retention marketing, its benefits, scope and recent trends. It also outlines the retention strategies that can be adopted and the customer loyalty strategies that companies can follow. The important steps to customer retention are as follows: Making members believe in their role to serve customers better. Communicate the mission, products, services and value proposition of the company. Invest in customer retention programs. Technology based CRM tool is a necessity. **Jagendra Kumar, Ex. CEO, Peral Insurance Brokers (2018)** [5] the article describes the Indian scenario in the sale of insurance products and the concerns for government, rural challenges for the insurance industry and the importance of insurance. It highlights the latest distribution trends in the industry and the general mis selling practices. Banks, online and CSCs are newer distribution channels besides traditional agents and brokers. CSCs will offer web-enabled e-governance services in rural areas. With costs under pressure, new channels like online brokers and web aggregators are also catching up. **Pietro Parodi (2018)** [6] This article focusses on the interactions of pricing with other departments, difference between costing and pricing, the pricing techniques and the components of pricing, the risks associated with each component, traditional and modern pricing approaches and uncertainties around pricing. The traditional approach to pricing is burning cost analysis. The modern approach is through stochastic modelling. The most popular method for the calculation of the technical premium is "cost plus", that calculates the technical premium as a sum of different components: expected losses, allowance for uncertainty, costs, profit, investment income. **Sumon Ganguly (2018)** [7] the relevance of this article is that it discusses various risks that cargoes are exposed to and the precautionary measures that must be undertaken to prevent the same. Arrangement for supervised loading and discharge from the vessel/ land conveyance should be done for sensitive, delicate and sophisticated cargoes. The early clearance of cargo will prevent the chances of theft, pilferage, fire or water damage at port and the importers can avoid payment of heavy demurrage to Port Authorities. Most cargo losses are preventable through proper care. **Mr. Rakesh Goyal (2019)** [8] the relevance of this article is that it discusses the importance of timely re-evaluation of health insurance plans and the benefits of doing so. Various new options are available for senior citizens and other family members which are cost effective and customized. It's always better to review the policy periodically. Re-evaluating provides a good value for money and peace of mind. **Anabil Bhattacharya (2019)** [9] The relevance of this article is that it describes the way how risks are managed in health insurance business, how they compete for clients and avoid excessive risks through a number of exclusions and policy restrictions. It also depicts how risk managers optimises claim in the Indian health insurance companies. Health insurance companies pay only genuine claims, repudiate the ingenuine, fraud cases which escalates unwanted burden of the company and inflates the cost. Companies are competing to offer better value to the customers by introducing new features in their policies. **Anabil Bhattacharya (2019)** [10] The relevance of this article is that the author has expressed the technicalities of PRI and how it is being used as a tool to mitigate political risks which are basically dynamic in nature. Political Risk Insurance (PRI) has become an essential but indispensable proposition to deal with the definite & likely losses in the overseas market, in this era of globalization. The significant role of PRI in securing financial support for large project abroad despite their serious social and environmental consequences for the communities have now been emerged due to political instability world over.

PROBLEM STATEMENT

Risks have a direct and indirect impact on the profitability, liquidity, operations and performance of the company. Business risk affects the ability of the company to earn more profits. It affects the product mix, customer experience, market share, liquidity, profitability, operations in a company. Communication risk due to lack of understanding, inattentiveness, lack of information affects the company's business. Actuarial risk and Reinsurance risk affects profitability, liquidity and financial position. Credit risk due to inability to collect premiums or defaults affects profitability and liquidity positions of the company. Liquidity risk due to insufficient funds to honor claims when due also affects the profitability and liquidity of the company. During the service delivery stage it affects the customer experience and operational performance of the company. Legal risk due to lack of compliance towards state and central laws affects normal business operations and profitability of the company. Operational risk during the claim settlement process, handling accounts, internal control and process failure affects the customer experience and profitability. Environmental risk arise due to factors beyond the control of the company affects the market share and sustainability of the company. The research identified all possible risks that could affect the company along different stages. Their impact on the business was further examined to identify the causes of these risks. The ways to mitigate these risks was also suggested to enable the company to take preventive measures.

OBJECTIVES

The research attempts to fulfill the following objectives:

- To find, analyse, assess the impact of various risk factors affecting the insurance process.
- To develop mitigating solutions for preventive measures.

RESEARCH METHODOLOGY

The research uses Descriptive and inferential statistics performed using SPSS. All possible risks that could affect the business was first collected using secondary data and survey questions were framed to check if these risks actually exist. Then the risks were classified into low, moderate, high and extreme risks based on probability and severity as indicated in the 5 X 5 Risk Matrix below and shown in the risk matrix column in the analysis.

Example of 5x5 Risk Matrix

Likelihood	Consequences				
	Insignificant *No injuries or harm suffered*	Minor *First aid treament applied*	Moderate *Medical treatment - potential long term harm*	Major *Permanent disability / disease suffered*	Severe *Fatalities involved*
Rare *May occur in exceptional circumstances*	Low	Low	Low	Low	Moderate
Unlikely *Could occur occasionally*	Low	Low	Low	Moderate	High
Possible *Expected to occur occasionally*	Low	Low	Moderate	Moderate	High
Likely *Expected to occur regularly*	Low	Moderate	Moderate	High	Extreme
Almost certain *Expected to occur frequently*	Moderate	Moderate	High	Extreme	Extreme

Likelihood

Impact - How serious is the risk?

In order to identify the risk intensity (low, moderate, high and extreme), each factor that was analyzed has a separate "**Risk Matrix**" column with coordinates "(x, y)" indicated against them. The "x" coordinate refers to the probability and "y" coordinate the severity. The coordinates must be referenced in the above table to understand the risk intensity. The "x" coordinate used corresponds to the row labels in the matrix; **1** = Rare**, 2** = **Unlikely, 3** = **Possible, 4** = **Likely, 5** = **Almost certain** respectively**.** Similarly the "y" coordinate corresponds to column labels; **1 = Insignificant, 2 = Minor, 3 = Moderate, 4 = Major, 5 = Severe** respectively**.**

Example; If the analysis table in the research has "Moderate (4, 3)" in the risk matrix column, it means one should refer to the risk matrix table above to locate the cell that corresponds to the fourth row and third column. The table reads **"Moderate"** so the factor analyzed is of moderate risk. The probabilities were assigned based on the survey responses. If the percentage response to a question is between 0% – 20% it is rare, 21% - 40% it is unlikely, 41% - 50% it is possible, 61% - 80% it is likely and 81% - 100% it is almost certain. The severity was based on an assumption about the possible impact the factor analyzed has on the company and based on whether they are controllable or uncontrollable by the company. The risk matrix was then referred based on the probabilities and severities to identify the intensity of risk (low, moderate, high and extreme). The results were concluded based on this method. **Chi-square tests of association** was performed to indicate if there are any further risks by combining dependent and independent variables. The dependent and independent variables were tested using Chi-square test with the confidence level of 95% and the significance level of 5%.

DATA ANALYSIS

Demographic data was collected pertaining to age, educational qualification, occupation, annual income level, possession of life insurance policy, preferred insurance companies etc. besides personal information. The following analysis was conducted as part of the research.

Table 1 - Adequacy **of the Sum Assured**

Adequacy of Sum Assured	**No of respondents**	**Percentage**	**Risk Matrix**
It covers everyday financial needs of the family	21	27%	Moderate (2,4)
It can cover onetime expenses like education and marriage of kids	28	35%	Low (2,3)
Can settle loans in the name of the policyholder	7	9%	Low (1,4)

Fulfils retirement needs of the spouse	6	8%	Low (1,3)
Others	17	21%	Low (2,3)
Total	**79**	**100%**	

From this data it is observed that there are multiple reasons for choosing a policy based on sum assured (**Pricing component**). This increases risk in the **Pricing stage.** This indicates that **Actuarial Risk** is present since the actuary must take into account these multifarious needs while pricing the policies (premium) and the chances of miscalculation is high.

Technical Premium = Expected Losses + Allowance for Uncertainty + Costs - Incomes + Profit

Reinsurance Risk: Cost of reinsurance is included price calculation. Reinsurance agreements are again subject to its own type of risks due to the failure of the reinsurance companies to honour the reinsurance claims made by the company, non-availability of reinsurance claims at the right time and at appropriate prices. **Investment Risk** is present since the income component used in the formula is dependent on the performance of investments. So pricing stage presents **low risk** overall as inferred from the **risk matrix**.

Table 2 - Choice **of General Insurance Policies**

Choice of General Insurance Policies	No of respondents	Percentage
Motor Insurance	40	35%
Health Insurance	63	55%
Travel Insurance	4	3%
Home Insurance	8	7%
Others	0	0%
Total	**115**	**100%**

Besides Life Insurance 35% of the respondents have Motor Insurance, 55% have Health Insurance, 3% have Travel Insurance and 7% have Home Insurance while 49 respondents have only one of the above General Insurance whereas 66 respondents have multiple General Insurance Policies. Tested using Hypotheses 2 to identify risk.

Table 3- Source **of Communication**

Source of Communication	No of respondents	Percentage	Risk Matrix
Past Experience	25	23%	High (2,5)
Referrals from family and friends	58	53%	High (3,5)
Advertisements	6	5%	Low (1,4)
Internet and Web searches	5	4%	Low (1,4)
Contacted by company representatives	14	13%	Low (1,4)
Others	2	2%	Low (1,3)
Total	**110**	100%	

From the above table it is observed that 23% of the respondents choose an insurance company based on past experience, 53% make their choices based on referrals from family and friends, 5% choose based on advertisements, 4% perform internet and web searches while making the choice, 13% were contacted by company representatives either directly or indirectly through their employer. The first two parameters, Past Experience and Referrals from family and friends pose **high Communication Risk** and the rest of the factors present low risk according to Risk matrix. Tested using Chi-Square, Hypotheses 6 to identify risks.

Table 4 - Reasons **for choosing Insurance Policies**

Reasons for choosing the policy	No of respondents	Percentage	Risk Matrix
Comparatively lower premiums	24	18%	Low (1,3)
Tax benefits	38	29%	Low (2,3)
Provides more coverage (Covers more losses)	40	31%	Low (2,3)
Company Reputation	23	18%	Low

			(1,3)
Others	5	4%	Low (1,3)
Total	**130**	**100%**	

From the above table it is observed that 18% of the respondents choose policies because they have comparatively lower premiums, 29% prefer policies because of tax benefits, 31% choose policies that provides more coverage for their losses, 18% rely on company's reputation, 4% choose based on other factors such as compulsion by employers, mutual benefit, easy process through policy bazaar, mutual benefits and some choose because of necessity. It was observed that 35 respondents look for more than one factor while 45 respondents choose based on a single factor. To understand customer perceptions all the parameters were rated as moderately severe. **Business risk** in the absence of any of these factors cause is **low** according to the Risk matrix**.** Tested using Hypotheses 3 to identify risks.

Table 5 - Features **of Insurance Companies**

Parameter	**Highly Important**	**Important**	**Neutral**	**Least Important**	**Not Important**	**Risk Matrix**
Accessibility	38 (48%)	36 (46%)	2 (3%)	3 (4%)	0 (0%)	High (3,5)
Company Image	32 (41%)	39 (49%)	7 (9%)	0 (0%)	1 (1%)	Moderate (3,4)
Services (Pre and Post Sales)	48 (61%)	25 (32%)	5 (6%)	1 (1%)	0 (0%)	Extreme (4,5)
Additional Benefits for extra fees (Rider Benefits)	27 (34%)	31 (39%)	4 (5%)	15 (19%)	2 (3%)	Moderate (2,4)
Premium	34 (43%)	34 (43%)	3 (4%)	7 (9%)	1 (1%)	High (3,5)
Charges	31 (39%)	34 (43%)	2 (3%)	11 (14%)	1 (1%)	Moderate (2,4)

Policy Term	41 (52%)	27 (34%)	2 (3%)	9 (11%)	0 (0%)	High (3,5)
Total Respondent	251	226	25	46	5	

From the above table, accessibility is considered a highly important factor by 48% of respondents. Inaccessibility presents **high Business Risk** according to Risk Matrix. It results in Company image is important to 49% of respondents. Poor Company Image creates **moderate Business Risk** where the company might earn lower than anticipated profits.

Pre and Post Sales services are considered highly important by 61% of respondents. Additional benefits for extra fees (Rider benefits) are considered important by 39% of respondents. Since pre and post sales services are considered important to the customers, absence of good services creates **Extreme Business and Liquidity Risk** in the Service delivery stage according to Risk Matrix.

Premium charges are considered highly important to important by 86% of the respondents. If the company does not have the ability to collect premiums from its customers as they fall due, it creates **high Credit risk and Liquidity risk** to the company. There is a risk that the premium amount due from customers may not be collected on time or some of the customers may default in payment.

Service charges are important deciding factor to 43% of respondents. Charges increases the possibility of **moderate Liquidity risk** due to lack of funds. Policy term is considered highly important to 52% of audience. Lower term creates **high Business Risk** to the company.

Table 6 - Customer's **attitude towards non-conventional insurance products**

Insurance Products	**No of respondents**	**Percentage In Favour**	**Percentage Against**	**Risk Matrix**
Credit Card Insurance	17	16%	84%	High (5,3)
Flight Insurance	14	13%	87%	High (5,3)
Flood Insurance	16	15%	85%	High

				(5,3)
Unemployment Insurance	32	30%	70%	Medium (4,3)
None of the above	26	25%	75%	Medium (4,3)
Total	**105**	**100%**	**100%**	

From the above table it is observed that 16% respondents feel that Credit Card Insurance is important, 13% of the respondents feel that Flight Insurance is important, 15% feel that Flood Insurance is important, 30% of the respondents feel that unemployment insurance is important, 25% feel that none of the above insurance products are important to in. Moderate severity was assigned to all the products and tested using risk matrix. The **Business Risk** of considering the products unnecessary is **high** for Credit Card, Flight and Flood Insurance and the **risk is low** for Unemployment and other Insurance. This is tested using Chi-Square, Hypotheses 5.

Table 7 - Customer **Loyalty**

Customer Loyalty	No of respondents	Percentage	Risk Matrix
Yes	35	44%	Low (3,1)
No	8	10%	Moderate (1,5)
Maybe	36	46%	Moderate (3,3)
Total	**79**	**100%**	

From the above table it is observed that 44.3% of the respondents answered yes, while 10.1 % answered no due to service dissatisfaction. 45.6% of the respondents are not sure if they will continue with the company. This results in higher **risk of customer defection** and consequently **moderate Business risk**.

Table 8 - **Claim Records**

Claim Records	No of respondents	Percentage	Risk Matrix
Yes	21	27%	Moderate (2,4)
No	58	73%	Moderate (4,2)
Total	**79**	**100%**	

From the above table it is observed that 27% respondents have made insurance claims before while 73% of them have never made claims before. The Risk Matrix indicates that there is **moderate Business Risk** through claims in insurance. This Tested using Chi-Square, Hypotheses 4 to identify risks.

Table 9 - **Retention rate**

Retention Rate	No of respondents	Percentage	Risk Matrix
1- 10 years	68	86%	Extreme (5,4)
10 - 20 years	9	11%	Low (1,3)
20 - 30 years	2	3%	Low (1,2)
Above 30 years	0	0%	Low (1,1)
Total	**79**	**100%**	

From the above table it is observed that 86% of the respondents have been holding the policy for less than a year, 11% have been holding policies from 10 – 20 years, 3% have been holding it from 20 – 30 years and none of them have policies above 30 years. The **Business Risk and Liquidity Risk** of losing customers is **Extreme** since 86% of the respondents have held policies between 1 to 10 years. Tested using Chi-Square, Hypotheses 1 to identify risk.

Table 10 - **Attitude towards Insurance Claim settlement process**

Claim settlement process	No of respondents	Percentage	Risk Matrix
Tedious	20	19%	Low (1,4)
User Friendly	24	23%	Low (2,1)
Lots of legal procedures	31	29%	Moderate (2,4)
Cost consuming	4	4%	Low (1,4)
Difficult to understand the terms etc.	27	25%	Moderate (2,4)
Total	**106**	**100%**	

User friendly attribute was assigned insignificant severity and all others were assigned major severity in the Risk Matrix. It was observed that 19% of the respondents feel that the claim settlement process is tedious and 23% feel that it is user friendly. These two questions measure claim service and customer experience. So **Operational Risk** is low. It is seen that 29% feel that it has a lot of legal procedures. The Risk Matrix indicates that **legal risk or regulatory compliance risk** is **moderate** for insurance companies. It is observed that 4% feel that it is cost consuming. **Business Risk** is low. It is seen that 25% find it is difficult to understand the terms and conditions. Risks during **Communication stage** and **Claim processing and servicing stage** is **moderate.**

Table 11 - **Flood Insurance**

Flood Insurance	No of respondents	Percentage	Risk Matrix
Yes	1	1%	Low (1,1)
No	78	99%	Extreme (5,5)
Total	**79**	**100%**	

From the above table it is observed that 99% of the respondents have not taken flood insurance while 1 % have taken flood insurance to safeguard against losses caused by floods. This indicates that loss due to natural disaster does not motivate the customer to take an insurance policy. This creates **Extreme Environmental Risk** to the company because these losses are not insured against by the customer so potential damages have to be borne by the company.

Table 12 - **Awareness about the insurance cover**

Awareness	**Yes**	**No**	**Total**	**Risk Matrix**
Household Insurance	56 (71%)	23 (29%)	79 (100%)	Moderate (4,3)
Jewellery Insurance	45 (57%)	34 (43%)	79 (100%)	Moderate (3,3)
Marine Insurance	33 (42%)	46 (58%)	79 (100%)	Moderate (3,3)
Health Insurance	78 (99)%	1 (1)%	79 (100%)	High (5,3)

It is observed that 71% of the respondents are aware about the existence of cover on household insurance, 57% are aware about jewelry insurance, 42% are aware about marine insurance and 99% are aware about health insurance. All the insurance covers were considered as moderately severe. **Business risk** due to awareness is **moderate** for household, jewelry and marine insurance and the risk is **high** for health insurance.

Table 13 - Types **of Health Insurance Cover**

Types of Health Insurance Cover	**Yes**	**No**	**Total**	**Risk Matrix**
Individual Cover	76 (96%)	3 (4%)	79 (100%)	High (5,3)
Family Floater	61 (77%)	18 (23%)	79 (100%)	Moderate (4,3)

Critical Illness Cover	16 (20%)	63 (80%)	79 (100%)	Low (2,3)
Hospital Cash Cover	19 (24)%	60 (76)%	79 (100%)	Low (2,3)
Coverage of Outpatient treatment	51 (28)%	28 (35)%	79 (100%)	Low (2,3)

From the above table it is observed that 96% of the respondents are aware about individual cover, 77% are aware about family floater cover, 20% are aware about critical illness cover, 24% are aware about hospital cash cover and 65% are aware about coverage of outpatient treatment. This indicates that **Business risk** from awareness is the **high** for individual cover and **moderate** for family floater cover, **low** for outpatient cover, critical illness and hospital cash cover

Table 14 - **Transparency**

Transparency	**No of respondents**	**Percentage**	**Risk Matrix**
Yes	44	56%	Low (3,1)
No	35%	44%	High (3,5)
Total	**79**	**100%**	

From the above table it is observed that 56% of the respondents agree that the insurance companies are transparent in communicating their policies and conditions, 44% say that they are not transparent and effective in their communication. The transparency level is good for majority of the respondents so there is **low Business risk** and **Communication Risk.**

Table 15 - Awareness **about exclusions**

Awareness about Exclusions	**Yes**	**Percentage**	**Risk Matrix**
Limitations in Life Insurance Policies	50	63%	Moderate (4,3)

Limitations in Motor Insurance Policies	37	47%	Moderate (3,3)
Limitations in Health Insurance Policies	41	52%	Moderate (3,3)
Limitations in Home Insurance Policies	39	49%	Moderate (3,3)

From the above table it is observed that 63% of the respondents are aware of the limitations in life insurance policies. 47% are aware of the limitations in motor insurance, 52% are aware of the limitations in health insurance and 49% are aware of the limitations in home insurance policies. The Risk Matrix indicates that there is **Moderate Business Risk** due to awareness in these areas.

CHI-SQUARE TEST

The objective of the analyses is also to check if there was any association between certain variables that can help us predict the relationship between them. So six hypotheses were tested to identify the risks underlying them.

Table 16 - The **results of Chi-square test**

Hypotheses	**Chi-square value**	**df**	**Asymp.Sig.(2-sided)**	**Results**
H1: Age group of the respondents has a strong association with retention period	6.000	6	.423	Not Supported
H2: Annual Income level has a strong association with general insurance plans taken.	8.788	9	.457	Not Supported
H3: Annual Income level has a strong association with reasons for choosing the policy.	12.362	12	.417	Not Supported
H4: Age group has a strong association with claims made.	3.489	3	.322	Not

				Supported
H5: Occupation has a strong association with the choice of non-conventional insurance products.	3.868	12	.986	Not Supported
H6: Accessibility has a strong association with channel of communication preferred by customers.	4.17	15	.997	Not Supported

According to the above table, the results of Chi-square tests for all the hypotheses are not in the significance level. Thus all the null hypotheses will be accepted at 5% significant level. The results reveal that there is no association between the dependent and independent variables, thus they have no association, and therefore predicting them becomes difficult. This increases risks.

The results of Chi – Square test is as follows:

H1: Age group of the respondents has no association with retention period. This increases the uncertainty in predicting the retention period. This **increases liquidity risks** and **business risks** for the firm when the customers stop renewing their policies by switching over to other companies or stop insuring at all.

H2: Annual Income level has no association with general insurance plans taken. This increases the uncertainty in premium collection and increases **credit risk**. The maximum number of general insurance policies was taken by respondents having annual income below 1 lakh. It increases credit risk since the burden on the customer's income is too much to support multiple insurance policies.

H3: Annual Income level has no association with reasons for choosing the policy. The reasons for choosing the policy were based on factors such as lower premium, more tax benefits, more coverage, company reputation etc. In order to remain competitive the companies have to make their products affordable to all income classes, which increases operating costs, lowers profits there by increasing **Price Risk** and uncertainties.

H4: Age group has no association with claims made.

Since there is no association between these two variables it creates uncertainty in receiving more investments from youngsters and more claims from elderly people. It could also be vice versa by receiving more investments from elderly and middle aged people and more claims from youngsters. This increases **liquidity risk** for the company.

H5: Occupation has no association with the choice of non-conventional insurance products.

The non-conventional insurance products are those that are not ordinarily thought of buying by current and potential customers of a company. These include credit card insurance, flight insurance, flood insurance and unemployment insurance. These cater to specific needs of certain professions such as business executives who avail frequent flight trips, home makers and contract employees who suffer the risk of unemployment and manufacturers and distributors in flood prone areas etc. Since there is no association between these variables, one loses out opportunities of cross selling because potential customers might consider certain insurance policies as unnecessary. This creates **Business risk** during the awareness stage.

H6: Accessibility has no association with channel of communication preferred by customers.

This indicates that customers always assess a company using information gathered from multiple channels of communication before availing a decision. This creates **communication risks** between the representatives, agents or brokers and the customers. There is a need to be consistent across multiple communication channels to deliver better services to customers.

CONCLUSION

Table 17 - **Summary of Findings**

Type of Risk	Factors creating Risk	Impact Areas	Scale of Impact
Business Risk	Customer's reasons for choosing the policy	Product mix	Low
	Inaccessibility	Customer experience	High
	Poor Company Image	Market share	Moderate
	Service delivery stage	Customer experience	Extreme

	Lower policy term	Liquidity	High
	Product considered unnecessary (Credit Card, Flight and Flood Insurance)	Market share	High
	Product considered unnecessary (Unemployment Insurance)	Market share	Low
	Customer defection	Profitability, Liquidity	Moderate
	Claims acceptance	Liquidity, Customer experience	Moderate
	Customer retention	Profitability, Liquidity	Extreme
	Claim settlement process	Operations, Customer experience	Low
	Awareness (household, jeweler, marine insurance)	Marketing and Communication	Moderate
	Awareness (health insurance)	Marketing and Communication	High
	Awareness (Individual Cover)	Marketing and Communication	High
	Awareness (Family Floater Cover)	Marketing and Communication	Moderate
	Awareness (Outpatient, Critical Illness, Hospital Cash Cover)	Marketing and Communication	Low
	Awareness relating to limitations in life, health, motor and home insurance.	Marketing and Communication	Moderate
Communication Risk	Marketing stage	Marketing and Communication	High
Actuarial Risk	Pricing stage	Profitability, Liquidity, Financial Position	Low
Reinsurance Risk	Pricing stage, Claim Processing stage	Profitability, Liquidity, Financial Position	Low
Liquidity Risk	Service delivery stage	Operations, Customer experience	Extreme
	Premium collection stage	Profitability,	High

		Liquidity	
	Low service charges	Profitability, Liquidity	Moderate
	Customer retention	Profitability, Liquidity	Extreme
Legal Risk	Claim settlement process	Operations, Legal Compliance	Moderate
Operational Risk	Claim settlement process	Operations, Customer experience	Low
Environmental Risk	Intention towards Flood Insurance	Market share, Sustainability	Extreme

SUGGESTIONS

Business Risk: Undertake market research about customer awareness, obtain customer feedback, empower employees to take actions, indulge in CSR initiatives, incorporate risk management in the business strategy, set up risk monitoring committees, customize offerings.

Communication Risk: Improve marketing and communication strategies to spread awareness about the company and products through advertisements, endorsements, slogans, segmenting and customizing offerings and communications and training employees.

Actuarial Risk: Select qualified and experienced actuaries, compare schemes and prices with competitors, periodic feedback to ensure that products and prices are successful in the market, ensure error corrections immediately and continuous performance monitoring.

Reinsurance Risk: Retrocession arrangements, spreading of risk to multiple reinsurers.

Liquidity Risk: Reinsurance contracts, cash calls, ensure Quick Liquidity Ratio is always maintained, investing in call money market, creating reserves out of profits, justify the price through unique service and enhanced customer experience.

Legal Risk: Ensure compliance with legal and regulatory framework instituted by the IRDA. Appoint an auditor and a company secretary and other legal advisors to ensure that the company is compliant with health and safety, employment and other statutory regulations.

Operational Risk: Establish policies and procedures and ensure that internal control mechanism is in place, multi-level supervision, encourage privacy of data through passwords, install anti-virus software, reward employees and motivate them. Conduct surprise branch visits and internal audits.

Environmental Risk: Spread awareness about insuring against this risk, consult experts, conduct environmental analysis, monitor competitors, and improve forecast accuracy.

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