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Roles and Scenario of Partly Qualified Actuaries in Insurance Companies of Nepal

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Abstract: *The field of actuarial science uses mathematical and statistical techniques to evaluate financial risks in the insurance and finance industries. Actuaries are creative, curious and adaptable human resources and problem solvers, who need to possess different skills and knowledge to solve risk related problems. Partly Qualified Actuaries (PQA) is semi-professionals actuary. From analyzing the financial costs of risk and uncertainty to pricing and reserving, partly qualified actuaries are important in doing the basic to advanced actuarial tasks in these businesses.*

The research paper investigates on the role of partly qualified actuaries in the insurance industry in Nepal and analyzes the factors impacting the role of PQA in Nepalese insurance companies. The objective of this study is to look into the scenario and important role of Partly Qualified Actuary in the insurance companies. Descriptive and analytical research design was used in this study. The data collected through questionnaire from 100 respondents was used for analysis from PQA, insurance companies' staffs, policy makers and some academicians of Nepal who are well informed about actuary. The research shows that the number of PQA is increasing in Nepal every year and they are working in different insurance companies.

Keywords: *Insurance, Actuarial Valuation, Actuarial Science, Impact Factor, Pricing and reserving*

1. Introduction

Actuarial science is a discipline that assesses financial risks in the field of insurance and finance using mathematical and statistical methods. Actuaries apply their skills, knowledge and abilities to create social impact, to formulate high-level strategic decisions and to produce significant impact on legislation, businesses and people (IFOA, UK 2022[11,22]).

Partly qualified actuaries are those who have not cleared all the requirements of fellowship set by an actuarial organization. From analyzing the financial costs of risk and uncertainty to pricing and reserving, partly qualified actuaries are important in doing the basic to advanced actuarial tasks in these businesses (SOA, USA, 2022[11,22]).

A Fully-Qualified Actuary, known as a Fellow Actuary, is a person who has cleared all the actuarial exams and has completed the required 3 years of work experience, called Personal & Professional Development (PPD), in the case of IFOA. Any other person who is yet to fulfill aforementioned qualifications is a Partially-Qualified Actuary, also known as a student or semi-professional actuary. (IFOA, UK, 2022[1, 22]).

Insurance is a contract, represented by a policy, in which an individual or entity receives financial protection or reimbursement against losses from an insurance company. For the contract to be enforceable, the life insurance application must accurately disclose the insured's past and current health conditions and high-risk activities (Goel, 2014[8])

In Nepal, insurance was introduced during 1930s by Indian insurance companies. First domestic non-life insurance company was established in 1947. Government of Nepal established a composite insurer in 1968. The number of insurance companies has reached to 41 including 19 life insurance, 20 non-life insurance and 2 Re- insurance companies at present in Nepal. (Insurance Board, 2021[23]).

According to Insurance Act 2049 section 2 (j) "Actuary" means a person having the qualification as prescribed and is appointed by the Insurer for assessing and calculating the liabilities of the Insurance Business. Similarly, section 26 of Insurance Act 2049 has clarified the role of Actuary in the Valuation. As per this clause, The Insurer, who deals with the Life Insurance Business, shall have to assess the financial position and the valuation of liabilities by an Actuary once in every three years. This profession has been developed in 1762 AD in London. There are around more than one lakh qualified actuaries in the world at present and it is one of the top professions.

In Nepal, there was not proper knowledge of actuarial science and study of actuaries before 2016. There is so many PQA who are studying and working in different insurance companies. The research question that arises in this study is: What kind of roles and scenario of Partly Qualified Actuaries can be observed in Insurance Companies of Nepal? The objective of this article is to unearth the role of PQA in Nepal and analyze the factors that impact on the role of PQA in Nepal.

2. Literature Review

Demographics consists of various types of high risk and observable characteristics (Hendren, 2013[10]) which include age, gender, and occupation and health status. These aspects provide the basis for risk classification purposes of different potential policyholders with age and gender being the most used factors. For life insurance products, insurers utilize an assortment of risk-rating features to determine the risk profile for each client. Insurers can divide policyholders into different risk groups and is referred to as risk pooling. (Handel, 2013[10]). For demographics to be considered ideal as a rating factor, it must meet the actuarial and operational criteria (Arrow,2009[2]).

USA, UK, and India have been continuously developing this profession. There are about 485 Fellowship Qualified Actuary in India at present (Annual Report, 2020-21[6]). Most of the developed countries have Actuary regulator, but there is no provision in Nepal at present. It is mandatory in insurance sector (Insurance act, 2049[6]) and social security's sector, however we have not developed this profession in Nepal either from the government or from the Universities site. So, the researcher selected the topics for the research purpose.

Pricing of insurance products is a process that should ideally be guided by recommendations of actuaries, the insurer's claims, non-claim expense, financial strength and the market demand. These dynamics include poor underwriting, premium undercutting, insurance fraud, lack of technology adoption in service delivery, misspelling by agents, underdevelopment of the agency force and ballooning management expenses (IRA Insurance Outlook Report, 2013[12]).

Among the different losses which bring about expenses in insured's life, there is the expense of maintaining good health. Its accessibility and affordability have to be ensured. The escalating cost of medical treatment is beyond the reach of the common man (Goel, 2014[8]). By estimating the overall risk of health and health system expenses over the risk pool, an insurer can develop a routine finance structure, such as a monthly premium or payroll tax, to provide the money to pay for the health care benefits specified in the insurance agreement (Pekerti,Vuong & Ho, 2017[21]).

In large and very competitive insurance markets, there are two main ways in which insurance companies competitively price their policies. To this end, insurers tend to charge lower premiums under their competitive lines while compensating for lower incomes by charging higher premiums for their other less price sensitive business lines (Berry-Stolzle & Born, 2012[7]).

There are different factors that directly impacts on the product pricing of insurance. These are: Age of People (Fong, 2015[13]), Gender 2010[3]), Socio-Economic Factors and Insurance Pricing(Amu & Dickson, 2016[1]), Cultural Influence(Mishra, 2010[18]), Economic Status(Kwon, 2013[16])Health and Occupational Influence (Ngueng Feze & Joly, 2014[20]) and Ideological Influence(Mushai & Mac Gregor, 2016[19])

Nepal Insurance Company Limited, a pioneer non-life insurance company of Nepal was established on 1947 A.D. by Nepal Bank Limited (the first commercial Bank) and the general public with 51% and 49% shares respectively. In the beginning, the name of this company was "Nepal Malchalani Tatha Beema Company" and had changed its name as "Nepal Insurance & Transport Company Ltd." on 1959 A.D. Now its name is "Nepal Insurance Company Ltd." since 1991 A.D. Similarly, Rastriya Beema Sanstan was established in 1967. After the establishment of RBS, then the life insurance corporation of India transferred its business to RBS and closed its offices in Nepal from 1972. In 1967 RBS was established under the company Act 2021 and it was converted into corporation in the following year under Rastriya Beema Sansthan Act 2025. Under the insurance Act 1968, Beema Samiti (insurance board) was established as the insurance supervisory authority.

Nepal reinsurance company limited (Nepal Re), the successor of insurance Pool that was set up on 2003 with the aim to cover damages caused by the terrorism, was incorporated on 7 November 2014, under the company act 2006 of Nepal in accordance to the decision of Council of Ministers. The government issued the license for 9 life and 3 non-life insurance companies. Then, there are altogether 41 insurance companies in Nepalese insurance industry. Among them 19 are life and 20 nonlife and 2 Reinsurance Company (Strategic plan, Beema Samiti[5]).

Insurance Companies have made steady progress in Nepal which was only 5 in 1990 and now it has increased up to 41 in 2021 including re-insurance companies. Among these, 19 companies are life, 20 companies are nonlife and 2 companies are Reinsurance Companies.

Table 1: Ownership structure of insurances companies

Ownership	Non-life	Life	Reinsurance	Total
Government	1	1		2
Private	15	15	1	30
Foreign	2	1	-	3
Joint Venture	2	2	1	5
Total	20	19	2	41

(Source: Beema Samiti2021)

3.Method and Data

Descriptive and analytical research design was used in this study. The data collected through questionnaire from 100 respondents was used for analysis. Self-administered questionnaires were provided to the sample population for completing the survey. The questionnaire were distributed to 100 individuals to know the Role of Partly qualified actuaries and factors that impact the role of PQA in insurance companies of Nepal. Among the respondents 60 PQA who are working in insurance companies as semi- professional and qualified human resources, 30 are members of insurances companies and 10 respondents are academicians who are familiar and know about PQA. The relevant data was coded to enable classification so as to guarantee that when it would be keyed into the Statistical Package for Social Sciences (SPSS) and it could be ideal for analysis. The data was analyzed through different descriptive statistical tools and nonparametric statistical too.

4. Result Analysis and Discussion

Here we analyze the data collected from respondents for research study. The collected data is presented along with the interpretation of different statistical tools applied for the analysis of the data followed by the discussion of the findings of the research data.

Analysis of the Role of Partly Qualified Actuaries

Table 2 Present the Friedman statistics test result including chi-square and significant value.

Table 2: Test Statistics

Test Statistics(Friedman Test)	N	Chi-Square	Df	Sig.
	100	16.976	4	0.037

Source: Survey, 2022

According to tabled value of chi-square is 16.976 and Significant value is 0.037. The value of Chi-Square is slightly lower and significant value is higher than 0.01, these values indicate that fitted Friedman mean rank is statistically significant about 95% confidence level. On the basis of above table there is only 5% error.

Table 3 Present the Friedman mean rank statistics test results is presented. The mean rank value is ordered into the smallest to the largest order according to structured questionnaire.

Table 3: Statistical Value of Ranking of Objectives

Role of Partly Qualified Actuary	Product Pricing	Employee's benefits valuation	Reserving	Reporting	Profitability measurement
Mean Rank	2.66	2.93	3.05	3.16	3.21

Source: Survey, 2022

According to the respondents, on the basis of mean rank the most important role of partly qualified actuaries is product pricing of different products in insurance companies because the mean value of ranking is lower than others i.e., 2.66 as p mentioned table 3. Similarly, other important roles are employee's benefits valuation, reserving, reporting and profitability measurement according to mean rank value mentioned as table 3.

Analysis of the Impact Factor on Role of PQA

Table 4 Present the Friedman statistics test result including chi-square and significant value.

Table 4: Test Statistics of Impact Factors

Test Statistics(Friedman Test)	N	Chi-Square	Df	Sig.
	100	41.153	4	.000

Source: Survey, 2022

According to tabled value of chi-square is 41.153 and Significant value is 0.000. The value of Chi-Square is high and significant value is less than 0.01, this value indicates that fitted Friedman mean rank is statically significant about 99% confidence level. On the basis of above analysis table there is only 1% error.

Table 5 Present the Friedman mean rank statistics test results is presented. The mean rank value is ordered into smallest to largest order according to structured questionnaire.

Table 5: Statistical Value of Ranking of Factors

Impact factors on the role of Partly Qualified Actuary	Professional Paper Cleared	Professional exposure	Experience	Academic Degree	Mentorship
Mean Rank	2.27	2.79	3.06	3.42	3.53

Source: Survey, 2022

According to mean rank value, professional paper cleared is the most important impact factor of partly qualified actuaries to the risk management of insurance companies in Nepal. The mean rank for the professional paper cleared is 2.27 which is the lowest value out of five mean rank value.

Reliability test Statistics of the Study

Reliability refers to how consistently a method measures something. If the same result can be consistently achieved by using the same methods under the same circumstances, the measurement is considered to be reliable. On the basis of research data analysis, the following Cronbach alpha is calculated by using SPSS.

Table 6: Result of Research Cronbach Alpha

Reliability Statistics	
Cronbach' Alpha	Number of Items
0.825	30

Source: Survey, 2022

On the basis of data analysis, the Cronbach alpha is .825 which is under the group $0.9 > \alpha \geq 0.8$ that is good so the calculated Cronbach alpha i.e., Reliability Statistics is good and there is internal consistency between statements of research.

Analysis of Likert Scale Measurement

The data collected from different respondents by using structured questionnaire, was analyzed through different statistical tools like mean, percentage of mean, mode and standard deviation. There are five-point rating scale of statement like 5: Strongly Agree, 4: Slightly Agree, 3: Neutral, 2: Slightly disagree, 1: Strongly disagree. It is the rating scale that quantitatively assesses opinions, attitudes and behavior of respondents. The response of respondent is analyzed as bellow.

Table 7: Statistical Value of Likert Scale Measurement

Statements	Mean	Percentage of Mean	Mode	Std. Deviation
PP1	3.62	72.40	4.00	1.237
PP2	3.76	75.20	4.00	1.074
PP3	3.55	71.00	4.00	1.123
PE1	3.90	78.00	5.00	0.969
PE2	3.98	79.60	5.00	0.964
PE3	3.67	73.40	4.00	1.045
AD1	3.80	76.00	5.00	1.005
AD2	3.82	76.40	5.00	1.058
AD3	3.81	76.20	5.00	0.982
M1	4.09	81.80	5.00	0.911
M2	3.76	75.20	4.00	1.065
M3	3.68	73.60	4.00	1.014
E1	4.05	81.00	5.00	0.957
E2	3.67	73.40	4.00	1.016
E3	3.75	75.00	4.00	1.019
R1	4.01	80.20	5.00	1.030
R2	3.92	78.40	5.00	0.918
R3	3.69	73.80	4.00	0.992
P1	4.03	80.60	5.00	0.858
P2	3.81	76.20	4.00	0.950
P3	3.89	77.80	5.00	1.024
PM1	3.79	75.80	4.00	0.988

PM2	3.60	72.00	4.00	1.119
PM3	3.77	75.40	4.00	1.072
R1	3.91	78.20	5.00	1.006
R2	3.68	73.60	4.00	1.081
R3	3.82	76.40	5.00	0.947
EB1	3.96	79.20	5.00	0.909
EB2	3.79	75.80	4.00	1.047
EB3	3.93	78.60	5.00	0.891

Source: Survey, 2022

Above table shows the results of different statements of research work as mean, percentage of mean, mode and standard deviation of the statements.

Table 8: Average Summary of Statistical Value of Likert Scale Measurement

Statements	Mean	Percentage of Mean	Mode	Std. Deviation
AVG	3.817	76.34	4.4	1.009033
MAX	4.09	81.8	5	1.237

Source: Survey, 2022

On the basis of the above analysis, maximum mean value of the different statements is 4.09. This mean value indicates that about 81.80% respondents agree for the statement and 19.20% data is considered to be error. The maximum mode value of the statement is 5, it indicates that the respondents highly agree with the statement. The standard deviation value is 1.237, which is close to all the statements. Similarly, on the basis of average mean value of the different statements is 4.40, this mean value indicates that 76.34% respondents agree with the statements and 23.66% data is considered to be error. The average mode value of the statement is 4.40, it indicates that the respondents agree with the statements. The standard deviation value is 1.009, which is close to all the statements.

Current Scenario of PQA in Nepal

The actuarial profession is recognized as a highly reputable profession in the field of risk management and seen as a key player in building sound & resilient insurance sector and social protection in Nepal. Since year 2016 TU school of mathematical science have been providing actuarial science education to the students on the basis of IFOA, UK courses.

A Fully-Qualified Actuary, known as a Fellow Actuary, is a person who has cleared all the actuarial exams as well as has completed the required 3 years of work experience, called Personal & Professional Development (PPD), in the case of IFOA.

Similarly, an Associate Actuary is a person who has cleared all 10 initial level exams (CM1-2, CS1-2, CB1-3 and CP1-3), and is yet to appear for the 3 specialization papers. Similarly, qualifying as an Associate Actuary requires 2 years of work experience in the IFOA. A person can legally call themselves an actuary in the UK after they become an associate.

Any other person who is yet to fulfill these qualifications is a Partially-Qualified Actuary, also known as a student actuary. Student Actuaries are in the process of studying & appearing for the exams, while also garnering work experience & skills in an entry-level Actuary job.

Table 9: Scenario of PQA in Nepal

No of Partly Qualified Actuaries	25	14	9	8	5	2	2
Professional Paper Cleared	1	2	3	4	5	6	7

Source: SMS TU and ASN, 2022

The table shows the scenario of PQA in Nepal who are studying actuarial science as well as working in the different insurance companies in Nepal. Most of the PQA are working in the insurance companies to fulfill the role of PQA actuaries which have been mentioned above.

Actuarial profession is a new paradigm in the context of Nepal. It was basically started in 2016 after establishment of School of Mathematical Science, TU. The school is purely established to produce the actuaries and the syllabus is totally based on IFOA which is very helpful to clear the professional papers. Due to the SMS TU, now there are more than 60 partly qualified actuaries who are studying as well as doing job in different insurance companies of Nepal.

The regulatory board Beema Samiti of insurance companies of Nepal have also recruit 2 PQA who have cleared 4 and 7 of professional papers. Those who have cleared 7 professional papers they are called associate actuary according to IFOA. Other PQA are working in different life and non-life insurance companies. Out of these different roles, product pricing is most in insurance companies.

There are different factors impacting the role of PQA, among these factors professional paper cleared is the most important factor and it is helpful to manage risk of insurance companies. There are 25 partly qualified actuaries who have cleared 1 professional paper and they are studying actuarial science at SMS, TU as well as some are working in insurance companies as PQA. Similarly, 14 PQA have cleared 2 professional papers, are also studying in different semester in SMS TU as well as some are working in insurance companies. On the same way, 9 PQA have cleared 3 professional papers and working as skilled human resource in insurance companies. They have played important role as a PQA. Similarly, a person who have cleared 4, 5, 6 and 7 professional papers, they are very qualified and skilled resources in insurance company in the context of Nepal. The study shows that Partly Qualified Actuaries can reduce the need for foreign actuaries in Nepal.

5. Conclusion

The research shows that there are five important roles of PQA in the insurance, they are Product pricing, Employees Benefit Valuation, Reserving, reporting and Profitability Measurement. Among these different roles, product pricing is the most important role of PQA in the insurance companies and the least important role is profitability measurement in the insurance companies that are important to risk management in the insurance companies.

Likewise, there are different impact factors which directly impact on the role of PQA in the insurance companies of Nepal. On the basis of research, the most important impact factor is professional paper cleared and the least important impact factor is mentorship on the role of PQA in insurance companies of Nepal. These are also very important to increase the efficiency of PQA in the insurance companies. The study concludes that the present scenario of PQA in Nepal is very good and the number of PQA is increasing in Nepal every year due to SMS TU. PAQ's are building their confidence to risk management and developing their performance in the insurance companies in Nepal. This study also supports the statement that insurers can divide policyholders into different risk groups, referred to as risk pooling, which is also the implication of this study.

The research is equally important to Beema Samiti for decision making about actuarial valuation of different insurance companies by the help of Nepalese PQA. On the basis of the research, the government can make plan and policies to increase the numbers of PQA and Associate as well as fellow Actuaries in coordination with School of Mathematical science, TU.

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