

ACTUARIAL ACCOUNTING AND INSURANCE INDUSTRIES PERFORMANCE: THE CONTEXT OF THE EMERGING MARKET

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Abstract

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The purpose of this research is to provide an accounting perspective on the value of actuarial science in the insurance industry, investigate how it contributes as an actuarial accountant to the Jordanian insurance industry, and what kind of value it may bring to the table, in particular. The regional economy is plagued by erratic swings in the economy, which put a pall on financial security and its impact on productivity (Vyas, 2019). Despite the small number of actuaries working in the insurance industry in Jordan. In order to achieve the aim of the study, the author used a questionnaire surveying a cross-section of professionals from the fields of insurance practice, academia, actuarial science, financial analysis, and auditing. The sample of this study is 291. The study found that these professionals are vital to the industry, as the risks associated with economic volatility and financial crises necessitate the use of actuarial accounting techniques, and as such, they play a crucial role in bolstering the quality of financial reporting. According to the findings, actuarial accountants and actuarial science play a crucial role in the banking industry by helping institutions weather economic storms and financial crises through the use of actuarial methodologies.

Keywords: Insurance Sector, Financial Reports, Actuarial Accounting, Actuarial Science, Jordan

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1. INTRODUCTION

As a result of the advent of various financial crises that have impacted the world's economy, the effects of which are still being felt by many institutions, especially in the Insurance sector, it is imperative that all financial firms try to retain their stability and ability to persist by attempting to implement measures that help them cope with such situations.

Several people classify actuarial science as belonging to the realm of business, which includes many disciplines with which it has close ties, such as accounting, economics, finance, probability, statistics, and mathematics. Supporting and assisting experts in a wide variety of industries is what actuarial science is all about (Aormaih & Halim, 2021; Shahwan, 2018; Longoni, 2019; Jugu et al., 2016).

According to Grubbs (1999), actuaries are responsible for determining the likelihood of a future occurrence and calculating its potential financial effect combined with Trowbridge (Aormaih & Halim, 2021; Alzeaideen, 2018; Jugu et al., 2016). The field of study known as actuarial science draws heavily on the fields of accounting, economics, finance, probability, statistics, and mathematics to create intricate models and calculations. It is the study of the practical implications of uncertainty and risk on the economy and the finances (Shahwan, 2020).

Financial mathematics serves as the bridge between accounting and actuarial science. In order to solve issues with financial risk or asset management, the fields of actuarial science and accounting use mathematical models and methods from the field of finance. A financial mathematician works with the investments of banks, insurance companies, hedge funds, and commodities traders, whilst actuaries and accountants provide advice on how money has to be managed. In addition, financial mathematics is connected to computational finance (Aormaih & Halim, 2021; Jugu et al., 2016). Actuaries must be familiar with generally accepted accounting principles (GAAP) and other accounting regulations in order to properly assess the financial implications of their work. That was the conclusion reached by researchers (Shahwan & Abdel-hamid, 2020; Odomirok et al., 2014).

Accounting's newfound openness to actuarial calculation is a logical outgrowth of the discipline's developing ethos. This 21st-century business mentality compels us to use an actuarial accounting method predicated on projections of future cash flows and an actuarial rate that is sensitive to a wide range of exogenous variables, including but not limited to economic, financial, and monetary policy as well as current and future inflation rates. Following an era in which accounting just provided a posture that was static (18th-19th centuries) and subsequently became dynamic (20th-21st centuries), we are now seeing a trend to future cash flows getting updated in annual disclosures (Gheorghe, 2012).

Since 2005, when the International Financial Reporting Standard 4 (IFRS 4) was created in anticipation of the publication of a thorough standard for the insurance industry represented by IFRS 17 "Insurance contracts", which was formed in 2017 and is slated to enter into effect in 2023. One of the pillars of the health of the economy is the insurance sector, and IFRS 17 has a good focus on the problem of accounting for insurance companies (Khresat et al., 2023; Aormaih & Halim, 2021).

Finally, this research is significant because it provides an accounting-based rationale for the value of actuarial science in the insurance industry. The purpose of this research is to learn more about actuarial accountants in Jordan's insurance industry and to emphasise the value they can provide, especially in light of the country's volatile economy, which is having a negative impact on the country's capacity to maintain financial stability.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature, prior studies, and hypotheses development. Section 3 includes the methodology of the study that has been used. Section 4 discusses the results and

findings. Section 5 presents the conclusion, and recommendations, as well as the limitations and recommendations for future studies.

2. LITERATURE REVIEW

Since contemporary businesses need novel and efficient management tools, actuaries have developed a new branch of accounting called actuarial science (Bär & Gatzert, 2023). Actuaries in this field need to be well-versed in the fundamentals of conventional accounting, but they also need to keep an eye on the future of the industry. Consequently, even in times of extreme financial uncertainty (Longoni, 2019; Imran et al., 2022). After financial accounting established a standard for consistently compiling financial reports, the rise of the capitalistic in the 21st century ushered in the actuarial accounting method predicated on projections of upcoming cash flows and estimations of actuarial rates that are very sensitive to a wide range of external variables such as levels of inflation, monetary policies, economic, and their evolution (Ballout et al., 2023; Jumaa, 2020). Given the actuarial basis of fair value, several standards bodies have found the actuarial method for accounting for the fair value established by International Accounting Standards (IAS) and IFRS to be adequate, making use of these systems obligatory. According to Jerman (2013), actuarial accounting is quite similar to financial accounting. Actuarial accountants and financial accountants often collaborate because their respective fields require them to have a deep understanding of related areas such as law, taxation, economics, statistics, accounting practices, and business. The reports that these professionals produce are used by managers to make important decisions about the future of the economic unit (Eling, 2020).

In the realm of financial institutions, actuarial accounting or an actuary expertise is an architectural engineer or financial engineer. Actuarial accounting is tasked with planning, constructing, and managing financial companies so that they can endure volatility, inflation, sharp changes in interest rates, and challenges brought on by shifting natal and demise trends. The actuary looks at potential occurrences and their likelihood when they will happen, and the quantity of cash to be put aside to pay expenditures in case of certain issues in order to address business difficulties (Shahwan & Abdel-hamid, 2020; Boudreault et al., 2019). Since actuarial accounting deals with all administrative, technical, and financial issues, actuarial accounting is seen as responsible for the liability due to the notes and information the actuarial accounting gives to the insurance firm, and in the work of control systems and supervision, the actuary's work is a crucial component of the insurance industry (Boudreault & Renaud, 2019). Whether it is connected to emergency circumstances or natural catastrophes, actuaries build and create models for financial businesses that enable the detection of conceivable possibilities and hazards related. In brief, we may argue that actuaries are professionals in establishing and analyzing initiatives and programmes for financial security. This enables businesses to concentrate on attaining development and governments to concentrate on good governance. Due to their concentration on delivering services and solutions

that assist individuals, organizations, and governments in controlling the risks they face, actuaries have traditionally been linked to the insurance industry. It has (Al-Ramahi et al., 2021; Mohareb et al., 2015).

To emphasize the importance of actuarial accounting, Lepadatu (2010) noted in his research that the phrases fair value and market value accounting had arrived by the end of the year 2000 and that the word “actuarial accounting” had emerged more recently. In keeping with its adaptable nature, accounting is gradually opening up to actuarial analysis. The foundation of the International Accounting Standards Board (IASB) is the model for the creation, presentation, and disclosure of financial reports. The model will continue to serve as a constitution of financial accounting, a benchmark of standards, and a reference matrix. In addition, as Jameel (2016) pointed out in his research, actuarial accounting’s purpose is to “generate maximum value via services offered by using accounting knowledge, auditing skills, and specialised domain knowledge” (p. 151). Statistics and mathematics graduates are in high demand in the financial sector, where they are used to evaluate both existing and potential risks (Avdalyan, 2023; Jarallah & Bougatef, 2023).

2.1. Prior studies regarding actuarial accounting

Much research highlights the importance of actuarial accounting in the banking and insurance industries. For example, as stated by Tichareva (2016) in the summary of the extensive research conducted on the function of actuaries in the financial industry in South Africa in 2009 by the actuarial organization, these jobs are often associated with risk management. That’s because they have the appropriate abilities, such as modelling expertise and financial industry business and regulatory understanding, to deal with a wide variety of risks, including credit risk, market risk, liquidity risk, operational risk, balance sheet management (including liquidity risk management and asset-liability mismatching risk management), capital modelling, and other business risks.

In addition, according to Peabody (1995), the regulatory and market emphasis on financing and liquidity inside organizations, as well as the use of quality data available in this sector for particular products like credit cards, loans, and deposits, make this more logical. Peabody (1995) noted that a large number of actuaries’ accountants work under credit risk roles in the insurance sector. Moreover, using actuarial modelling approaches, actuaries try to make sense of the future, as Shah (2019) notes in his research. Macroeconomic risks, such as interest rate risk, liquidity risk, etc., are also considered. Actuaries are assessing these dangers and looking for ways to mitigate or protect against them. Shah (2019) added also that, according to Basel III actuaries may play a significant role in the solvency ratio and the evaluation of the minimum capital requirements utilizing actuarial techniques.

A survey conducted by Sinkis and Scott (2014) provides insight into the development of the actuarial profession in Australia’s insurance firms during a period of heightened interest in the country’s financial structure. The research reveals that actuarial accountants are employed in a broad variety of tasks within the insurance

industry, with a leaning toward credit risk. The large combined proportion in investment insurance companies and markets (29%), demonstrates that actuarial accountants are involved in “front-office” jobs in addition to the more commonplace corporate and intermediate-office responsibilities.

These days, actuaries appear particularly well-suited to the insurance business today; many recent studies explored the intersection of actuarial science with corporate disclosure in the financial and insurance industries. Jugu et al. (2016) provided empirical evidence that actuaries make important contributions to the activities of accountants, notably in the financial disclosure realm. As a result of this breakthrough, Jugu et al. (2016) realized that the two distinct disciplines of actuarial science and accounting have a common ground in the realm of financial reporting. The fields of accounting and the science of actuarial are concerned with the transfer of information about financial disclosure and evaluation of risk. Additionally, Botha et al. (2017) outlined the expertise necessary to execute IFRS 9 and in what way it mapped immediately to the skill set of actuarial, creating actuarial accounting highly qualified to apply IFRS 9 in the insurance sectors.

Furthermore, using a comparison to the general standards of financial reports, Luchik et al. (2018) made clear the necessity for a new development in “actuarial financial statements” in order for the economy to keep up with globalization and crisis tendencies at home. When actuarial accounting is implemented, a novel analytical framework and accounting for the management of domestic company operations is established.

Quantitative prowess, the ability to assess and mitigate risk, and sound strategic and project management judgement are only some of the required abilities. The evident transferability of abilities from IFRS 9 to other domains of practice makes it an ideal training ground for actuaries seeking employment in the insurance industry. According to Vyas (2019), the IAS for financial instruments was IAS 39 “Financial Instruments: Measurement and Recognition” which was formerly adopted by financial institutions. Since January 1, 2018, it has been superseded by IFRS 9. Therefore, insurers need to shift their focus from losses actually sustained to those that may reasonably be anticipated.

Finally, most of the prior studies focused on actuarial accounting in developed countries, and some on developing countries, but unfortunately, in Jordan there is a lack of studies focused on the field of actuarial accounting, especially with the rapid pace of development in the insurance industry, Jordan now has a severe shortage of professionals with the necessary modelling abilities. Therefore, this study seeks to fill the gap in the literature by focusing on one of the most important sectors that need to practice actuarial accounting, which is the insurance companies’ sector, as insurance companies practice actuarial accounting, in order to reduce the risks that they may face.

2.2. Actuarial accounting and the relevant fields

Actuarial accounting has a significant impact across a wide range of industries; some of the most notable are insurance firms, banks, financial markets, and auditing.

Some investments in the financial markets, like shares and securities, carry a high percentage of risk, but they also carry a high return, so actuarial accounting plays a crucial part in the financial sectors by assessing the risks engaged with investments and financial items in order to estimate the potential rate of return. In order to make a well-informed decision (Ajekwe, 2021).

On the other hand, the relation to external auditing, numerous in-house and outside specialists are consulted by businesses across sectors to assist them in coming up with the accounting estimations needed for their financial statements. Auditors must have mechanisms in place to evaluate the rationality and suitability of actuarial accounting working for the economy of the firm, professional actuaries are in charge of predicting accumulated claims liabilities, which are often the most substantial commitments on a company's financial statement, particularly for insurance firms (Afonso, 2019).

With respect to insurance firms, the primary focus of labor in insurance firms is achieving a condition of equilibrium between the two goals of minimizing the cost of premiums and keeping a healthy reserve to cover any compensation that may be owed as a consequence of insurance. When considering the difficulties underwriters face, it is important to remember that determining the cost of providing insurance — based on estimates of future claims — is a major one (Olivieri & Pitacco, 2015). The net premium also compensates for losses that may result from the actual occurrence of any risk. The amount the policyholder pays to the insurance business in exchange for protection against an insured risk is known as the (commercial premium), which includes a number of other components such as general expenses, administrative expenses, a percentage of revenues, and others. That the insurance premium is affordable on the one hand, while yet being high enough to cover the risk being insured against on the other, and yielding a reasonable profit (Assa et al., 2021).

Furthermore, financial actuaries are in high demand in the investment banking industry, but most of them go into insurance instead. This is because the insurance industry is more stable and predictable than the investment banking sector, which is prone to volatility and uncertainty because of the many risks that investment banks take on, such as those associated with the stock market and mergers (Embrechts & Wüthrich, 2022).

2.3. Study hypotheses

The research has generated hypotheses, which will be evaluated using statistical methods. Specifically, the study offered three primary hypotheses, which are as follows:

H1: Actuarial accounting techniques significantly improve the insurance sector's ability to weather economic changes and financial shocks.

H2: The actuarial accountant in the insurance sector is committed to improving the accuracy of financial disclosure.

H3: Actuarial accountants are critical in avoiding severe insurance credit risk.

3. RESEARCH METHODOLOGY

Only one method of data gathering was used for this article. A questionnaire surveying a cross-section of professionals from the fields of insurance practice, academia, actuarial science, financial analysis, and auditing. A survey questionnaire focuses on three concepts: the ability of actuarial accounting to help businesses (insurance companies in particular) improve their performance (by, for example, producing higher-quality financial reports and lowering the likelihood of sudden, catastrophic losses), surviving economic downturns, and surviving financial crises. It also contains sensitive personal data. Over the course of five months, from September 2022 to the end of January 2023, respondents may access the online survey by e-mail and Google Forms; as a result, a convenience sampling strategy was used to compile the results (Table 1).

The number of employees in the accounting department in their various positions reached 135 employees in 19 insurance companies listed on the Amman Stock Exchange, according to the Amman Stock Exchange website, as of 18 July 2022. The number of auditors based on the data of the Jordanian Association of Certified Public Accountants was 455 on the website until the date of August, and the number of academics holding postgraduate degrees in accounting and financial sciences in Jordanian universities was 585, and their numbers were confirmed based on the websites of universities in Jordan. Thus, the total study population is 1175 people. Based on Sekaran and Bougie (2016) if the study population consists of 1200 people, the sample should be 291.

To achieve the aim of the current research. The questionnaire was adapted from prior studies such as Afonso (2019), Lin (2020), and Fernandez et al. (2022). The Likert scale, from one (strongly disagree) to five (strongly agree), was used to rate each item. Since Arabic is the official language of the country, the questionnaire was initially created in English before being translated into Arabic. After conducting a pilot test to evaluate the questionnaire's applicability and reliability, more changes were made to the instrument.

4. DATA ANALYSIS AND FINDINGS DISCUSSION

After sending out 291 surveys to the target respondents, 227 valid responses were received, with 78% of the total (Table 1). To get a handle on the basic actuarial accountant factor structure, boosting insurance firm performance, and economic crisis, an exploratory factor analysis was conducted. The convergent validity of the measuring items was confirmed by conducting a confirmatory factor analysis, and the reliability and validity of the resulting component structure were assessed using Cronbach's alpha (Hair et al., 2010; Sekaran & Bougie, 2016).

Kaiser-Meyer-Okin (KMO) and Bartlett's test of sphericity were used to ensure sufficient sampling. Adequate sampling was shown by a KMO value of 0.87 and a test of Bartlett's sphericity of $\chi^2 = 1306.11$, $df = 195$, and $p = 0.000$. In addition, the whole scale's dependability (as measured by Cronbach's alpha) was 0.965, much above the 0.7 threshold suggested by Hair et al. (2010) and Sekaran and Bougie (2016).

Table 1. Samples demographic profile

Demographic elements	Count	Percentage (%)
Level of education		
Bachelors	80	35.3%
Master	55	24.2%
PhD	108	47.5%
Total	227	100%
Job positions		
Financial manager	18	8%
Auditor	63	27%
Financial analyst	13	5.5%
Accountant	25	11%
Academic	108	47.5%
Total	227	100%
Professional qualifications		
Fellowship actuarial	13	5.7%
JCPA	90	39.7%
CFA	29	12.7%
Other	33	14.5%
N/A	62	27.4%
Total	227	100%

Henceforth, for each of the study’s hypotheses and questions, the study’s means and standard deviations. were retrieved and then ordered in decreasing order based on their mathematical means. Table 2 presents std. dev. and means for the respondents’ responses for each of the questionnaire’s paragraphs. Based on the average consensus, the relative relevance of these paragraphs to one another was established.

4.1. The descriptive analysis and decision rule

If the mean is less than three, the respondents disagree. If the mean matches three, the respondents agree. Each item of the five-point Likert scale is used as the basis for the choice rule; if a responder had a minimum score of three, they might be considered to have a positive attitude, then if they received a maximum score of three, they might be considered to have a negative attitude. That is based on the equation $(5 + 4 + 3 + 2 + 1)/5 = 3$ (Sekaran & Bougie, 2016).

Table 2. Descriptive analysis

Question No.	Questions	Mean	Std. dev.	Cronbach's alpha	
<i>H1: Actuarial accounting techniques significantly improve the insurance sector's ability to weather economic changes and financial shocks.</i>					
1	In the face of uncertainty, the actuarial accountant contributes to the investigation of the safety of financial systems as a method of lowering or eliminating possible economic fluctuation risks.	3.62	0.897	0.965	
2	The involvement of an actuarial accountant in financial management comforts stakeholders about the capacity's capacity to withstand economic changes.	4.31	0.711		
3	The more serious the financial crisis, the greater the necessity for actuarial accounting tools.	3.79	0.708		
4	Actuarial accounting techniques assist in addressing domestic economic crises and globalization tendencies.	3.63	0.851		
5	The actuarial accountant's capacity to estimate financial market hazards is influenced by the volatility of macroeconomic conditions.	4.20	0.792		
6	Actuarial accountants can accurately assess the sufficiency of capital to survive financial crises.	3.46	0.839		
<i>H2: The actuarial accountant in the insurance sector is committed to improving the accuracy of financial disclosure.</i>					
7	Predictive financial reporting is made easier by the many techniques of actuarial accounting.	4.46	0.791		
8	The actuarial accountant's analytical skills are useful in creating accurate financial reports.	4.32	0.764		
9	The actuarial accountant helps the company improve its accounting information system and keeps clear of control issues.	4.09	0.653		
10	The inclusion of an actuarial accountant on the audit committee helps ensure reliable financial statements with high quality.	3.86	0.766		
11	In the insurance industry, the actuary accountant's significance is on par with that of the financial controller.	3.81	0.718		
12	Actuarial accounting techniques assume the reporting of financial data besides non-financial data that support decision-making.	3.21	0.837		
<i>H3: Actuarial accountants are critical in avoiding severe insurance credit risk.</i>					
13	The required skills and expertise assist the actuary in the creation of cutting-edge models, the optimization of the risk environment, and the advancement of policy formation.	4.56	0.618		
14	Actuaries use actuarial modelling techniques to estimate the minimum requirement for the solvency ratio and the capital.	4.34	0.576		
15	The actuarial accountant's, mathematical, statistical, and economic background contributes to strong predicting abilities in insurance risk management.	4.26	0.761		
16	A risk management committee's efficiency may be increased by including an actuarial accountant on the team.	4.19	0.662		
17	The actuary assists insurance companies with project assessments by forecasting potential default rates based on uncertainties.	3.99	0.831		
18	An actuarial accountant contributes to the management of credit and liquidity risk, as well as the design and pricing of insurance products.	3.61	0.964		

4.2. Results and discussion of the hypotheses

In accordance with the aforementioned decision rule, if the mean is equal 3 or above proves the respondents’ high acceptance rates of the question, as shown in Table 2, the first hypothesis (H1). The Chi-squared test is used to test

this hypothesis with the assistance of Table 3, as well as the findings show that the mean was 3.83. Findings from the study’s samples trend for this hypothesis in this direction is high. The findings also revealed that the Chi-squared value was 53.2 at a statistical significance of 0.002 and was less than the significance level of 0.05.

Table 3. First hypothesis test (Chi-squared test)

Mean	Sig.	Chi-squared	Df	Std. dev.
3.83	0.002	53.2	14	0.683

The statistical study supported the first hypothesis (*H1*). Moreover, to demonstrate that there is a significant correlation between the need to use actuarial accounting procedures and economic fluctuation risks, the study demonstrated that an actuarial accountant may assess the capital's sufficiency to resist financial crises and contribute to the development of financial protection systems as a way to lessen or completely eliminate the risk of probable economic fluctuation brought on by uncertainty.

The Jordanian insurance market is loaded with various dangers that need actuarial analysis and assistance, especially given the local economy's volatile economic changes, which throw a shadow on financial stability. Actuaries in Jordan must contend with a number of challenges, the most significant of which is the inability to communicate effectively with international actuarial organizations. Multiple pieces of research point to this conclusion are correct. Tichareva (2016) and Luchik et al. (2018) were cited as supporting evidence.

According to the decision rule previously mentioned, if the mean is equal 3 or above proves the respondents' high acceptance rates of the question, as shown in Table 2, the second hypothesis (*H2*). This hypothesis is examined with the assistance of Table 4 employing the Chi-squared test. The findings show that the mean was 3.95. Findings from the study's samples trend for this hypothesis in this direction is high. The findings also revealed that the Chi-squared value was 56.1 at a statistical significance of 0.008 and was less than the significance level of 0.05.

Table 4. Second hypothesis test (Chi-squared test)

Mean	Sig.	Chi-squared	Df	Std. dev.
3.95	0.008	56.1	14	0.601

The statistical study supported the second hypothesis (*H2*). In spite of the insurance industry's actuaries' limitations, an actuarial accountant's strong predictive and analytical skills make it possible for the company to consistently improve its financial reporting and, finally, its internal controls. Further, Jordan has a small number of fully certified actuaries and a larger number of partly qualified practitioners of the actuarial profession, but no undergraduates or graduates with a degree in the field. Vyas's (2019) research, as well as those of Botha et al. (2017), Luchik et al. (2018), Tichareva (2016), and Jugu et al. (2016) all corroborated these findings.

According to the ruling decision previously mentioned, if the mean is equal 3 or above proves the respondents' high acceptance rates of the question, as shown in Table 2, the third hypothesis (*H3*). With the assistance of Table 5, this hypothesis is investigated using the Chi-squared test, as well as the findings show that the mean was 4.15. Findings from the study's samples trend for this hypothesis in this direction is high. The findings also revealed that the Chi-squared value was 42.8 at a statistical significance of 0.012 and was less than the significance level of 0.05.

Table 5. Third hypothesis test (Chi-squared test)

Mean	Sig.	Chi-squared	Df	Std. dev.
4.15	0.012	42.8	15	0.610

The statistical study supported the third hypothesis (*H3*). Mathematical training gives the actuarial accountant an advantage in his capacity to make accurate predictions about the future financial health of insurance companies and also to assist with the design and pricing of insurance products and the management of liquidity and credit risks. Further, actuarial analysis and counsel are essential due to the high number of risks inherent in the insurance industry. One of the most crucial facilities in which actuaries may engage in a significant role is liquidity and credit risk analysis, while one of the primary challenges confronting actuaries in Jordan is the capacity to work with global actuarial organizations. The result of this hypothesis is consistent with the prior studies such as Tichareva (2016) and Luchik et al. (2018).

5. CONCLUSION

The growth and primary reliance on future information, notably in the insurance business, ushered in a new era of accounting science known as actuarial accounts, which is widely regarded as an innovative branch of accounting science. Risk assessment and insurance pricing for the future are two more areas where actuarial accounting has a significant role.

The actuaries at insurance companies are spread out across a wide variety of responsibilities, which is a good thing since it shows how versatile and sought-after their expertise is. The study also revealed that having an actuarial accountant in charge of financial management gives investors confidence that the facility can weather financial crises and economic fluctuations owing to the actuary's expertise in these areas. In addition, actuaries contribute to the research of financial protection systems as a method of decreasing or eliminating possible financial hazards, particularly in the face of uncertainty, due to their mathematical, statistical, and economic training and their strong prediction ability.

In order to maximize the benefits of actuarial accounting, businesses should raise executives' and insurance industry decision-maker's understanding of the field and its significance. Promoting the engagement of actuaries in the insurance businesses area in Jordan is important for the country to be prepared for the anticipated changes in the financial services rules, which will require various obligations for the insurance industry in Jordan.

Henceforth, financial report preparers for insurance firms and auditors need more guidance on how to use IFRS 17 from the big four auditing and accounting firms (EY, Deloitte, PwC, and KPMG). Also, there needs to be starting seminars and conferences for actuarial accounting to help stakeholders understand it as a new area of study and a modernization of the accounting discipline. Further, financial accountants must expand their skills in conventional accounting as well as future company development and solutions to combat future problems.

This study faces some limitations. The current study focuses on the perceptions of financial accountants, academics, auditors, and financial managers, in order to see if actuarial accounting is useful or not. However, it did not consider

the IFRS 17, which focuses on the insurance industries. It is recommended that future researchers use it in studies related to actuarial accounting.

REFERENCES

- Afonso, L. E. (2019). The actuarial science editorship of the accounting & finance review: Some general considerations. *Revista Contabilidade & Finanças*, 31(82), 9–13. <https://doi.org/10.1590/1808-057x202090320>
- Ajekwe, C. C. (2021). Impact of flexibility in accounting on financial reporting. *European Journal of Accounting, Auditing and Finance Research*, 9(3), 74–87. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3828502
- Al-Ramahi, N., Abuhusseini, A., & Shahwan, Y. (2021). The impact of applying the XBRL on the quality of annual reports of the firms listed in Amman Stock Exchange. In *2021 22nd International Arab Conference on Information Technology (ACIT)* (pp. 1–5). IEEE. <https://doi.org/10.1109/ACIT53391.2021.9677076>
- Alzeaideen, K. A. H. (2018). The impact of universities on protecting societies from administrative corruption case study: Zarqa University. *Zarqa Journal for Research and Studies in Humanities*, 18(2). <https://doi.org/10.12816/0054744>
- Aormaih, Y. H., & Halim, S. Q. A. (2021). The quality of actuarial accounting information under adopting IFRS 17 “Insurance contracts”. *Review of International Geographical Education Online*, 11(5), 3935–3950. <https://rigeo.org/menu-script/index.php/rigeo/article/view/1360>
- Assa, H., Sharifi, H., & Lyons, A. (2021). An examination of the role of price insurance products in stimulating investment in agriculture supply chains for sustained productivity. *European Journal of Operational Research*, 288(3), 918–934. <https://doi.org/10.1016/j.ejor.2020.06.030>
- Avdalyan, L. (2023). Actuarial profit in the context of eco-auditing. *Economics, Finance and Accounting*, 1(11), 108–119. <https://doi.org/10.59503/29538009-2023.1.11-108>
- Ballout, O. M. K., Harb, A. S. M., Bataineh, L. M. A., Shahwan, Y., & Zereban, A. (2023). The expected effect of electronic billing in increasing the efficiency of tax collection in Jordan (Case study income and sales tax department). In B. A. M. Alareeni & I. Elgedawy (Eds.), *Studies in systems, decision and control* (Vol 488). *Artificial intelligence (AI) and finance* (pp. 840–849). Springer.
- Bär, M., & Gatzert, N. (2023). Products and strategies for the decumulation of wealth during retirement: Insights from the literature. *North American Actuarial Journal*, 27(2), 322–340. <https://doi.org/10.1080/10920277.2022.2078374>
- Booth, P., Chadburn, R., Haberman, S., James, D., Khorasane, Z., Plumb, R. H., & Rickayzen, B. (2005). *Modern actuarial theory and practice* (2nd ed.). Chapman and Hall/CRC.
- Botha, A., Christian, M. & Walker, M. (2017, September 19). *Actuaries bringing value to banks by implementing IFRS 9* [Webinar]. International Actuarial Association. https://www.actuaries.org/CTEES_BANKING/Webinars/IFRS9_Webinar_19Sep2017.pdf
- Boudreault, M., & Renaud, J.-F. (2019). *Actuarial finance: Derivatives, quantitative models and risk management*. John Wiley & Sons.
- Boudreault, S., Roy, P., Lemay, G., & Bisaillon, M. (2019). Viral modulation of cellular RNA alternative splicing: A new key player in virus–host interactions? *Wiley Interdisciplinary Reviews: RNA*, 10(5), Article e1543. <https://doi.org/10.1002/wrna.1543>
- Eling, M. (2020). Cyber risk research in business and actuarial science. *European Actuarial Journal*, 10, 303–333. <https://doi.org/10.1007/s13385-020-00250-1>
- Embrechts, P., & Wüthrich, M. V. (2022). Recent challenges in actuarial science. *Annual Review of Statistics and its Application*, 9, 119–140. <https://doi.org/10.1146/annurev-statistics-040120-030244>
- Fernandez, C., Rusk, S., Glatard, N., Turkington, F., Nygate, Y., Kaiser, M., McClurg, J., Richard, M., Duncan, I., & Watson, N. (2022). 0068 Impact of OSA therapy on healthcare economics: Actuarial analysis of OSA prevalence, therapy adherence, co-morbidity, and costs in a large CMS population cohort. *Sleep*, 45(1), 31–32. <https://doi.org/10.1093/sleep/zsac079.066>
- Gheorghe, D. (2012). The accounting information quality concept. *Economics, Management, and Financial Markets*, 7(4), 326–336. <https://www.ceeol.com/search/article-detail?id=15399>
- Grubbs, D. S., Jr. (1999). The public responsibility of actuaries in American pensions. *North American Actuarial Journal*, 3(4), 34–41. <https://doi.org/10.1080/10920277.1999.10595857>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed). Pearson Education.
- Imran, M., Ali, S., Shahwan, Y., Zhang, J., & Al-Swiety, I. A. (2022). Analyzing the effects of renewable and nonrenewable energy usage and technological innovation on environmental sustainability: Evidence from QUAD economies. *Sustainability*, 14(23), Article 15552. <https://doi.org/10.3390/su142315552>
- Jameel, R. N. (2016). Actuarial accounting and its role in maximizing the value of the economic unit. *Tikrit Journal of Administration and Economics Sciences*, 12(35), 148–165. https://iraqjournals.com/article_125856.html
- Jarallah, S. A., & Bougatef, K. (2023). The role of the actuary in assessing financial risks: A case study of Iraqi insurance companies. *Journal of Law and Sustainable Development*, 11(11), Article e2265. <https://doi.org/10.55908/sdgs.v11i11.2265>
- Jerman, L. (2013). Fair value: Actuarial accounting for the markets... or for the accountants? In *4th Annual Workshop of Financial Reporting* (pp. 1–32). Dauphine Bibliothèque. <https://basepub.dauphine.psl.eu/handle/123456789/13729>
- Jugu, Y. G., Dapim, K. M., Nneka, I., Suleiman, A., Oladapo, A., & Bethel, W. (2016). *Accounting & actuarial science (An empirical search for the meeting point)*. Advance online publication. <http://surl.li/swnyk>

- Jumaa, M. A. M. S. (2020). The effect of corporate governance on bank performance evidence from UAE. *International Journal of Corporate Finance and Accounting (IJCFA)*, 7(1), 16-38. <https://doi.org/10.4018/IJCFA.2020010102>
- Khresat, O., Al-Fasfus, F., Shaban, O., Shahwan, Y., & Alsilawi, A. (2023). Impact of cash flow statement elements on financial performance: The mediating role of capital in private hospitals in Jordan. In B. A. M. Alareeni & I. Elgedawy (Eds.), *Studies in systems, decision and control* (Vol 488). *Artificial intelligence (AI) and finance* (pp. 821-830). Springer.
- Lepadatu, G. V., & Tilea, D. M. (2010). Contabilitatea actuarială - O ramură a contabilității financiare [Actuarial accounting — A branch of the financial accounting]. *Knowledge Horizons*, 2(1), 64-79. https://orizonturi.ucdc.ro/arhiva/2010_khe_1_pdf/khe_vol_2_iss_1_64to79.pdf
- Lin, Z. (2020). *Research on discretion in accounting: Evidence from the adoption of IAS 19R* [Doctoral dissertation, University of Vaasa]. OSUVA Open Science. <https://osuva.uwasa.fi/bitstream/handle/10024/11561/978-952-476-933-4.pdf?sequence=2&isAllowed=y>
- Longoni, P. (2019). *IFRS 17 insurance contracts and firm value*. Advance online publication. <https://doi.org/10.2139/ssrn.3589560>
- Luchik, S. D., Yevdoshchak, V. I., & Manachynska, Y. A. (2018). Neobkhidnist' rozrobky NP(S)BO 3 "Aktuarna finansova zvitnist'" v konteksti upravlinnya diyal'nisty pidpryyemstva [The need of development of NAR 3 "Actuarial financial reports" in the context of business management]. *Naukovyy Visnyk Polissya*, 2(1(13), 77-84. <http://nvp.stu.cn.ua/article/view/139574>
- Mohareb, O. A., Huynh, P.-L., Al-Janabi, A., Grimm, M., & Reuss, H.-C. (2015, April 14). *Electric vehicles in the Gulf region: Performance and potential* (Technical Paper No. 2015-01-1685). SAE Mobilus. <https://doi.org/10.4271/2015-01-1685>
- Odomirok, K. C., McFarlane, L. M., Kennedy, G. L., & Brenden, J. J. (2014). *Financial reporting through the lens of a property/casualty actuary*. Casualty Actuarial Society (CAS). https://www.casact.org/sites/default/files/database/studynotes_odomirok-et-al_financial-reportingv4.pdf
- Olivieri, A., & Pitacco, E. (2015). *Introduction to insurance mathematics: Technical and financial features of risk transfers* (2nd ed.). Springer.
- Peabody, J. L. (1995). Bank financial analysis: An actuary's-eye view. *The Actuary*, 29(4), 15-17. <https://www.soa.org/4938eb/globalassets/assets/library/newsletters/the-actuary/1990-99/1995/april/act-1995-vol29-iss04-peabody.pdf>
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* (7th ed.). John Wiley & Sons.
- Shah, I. (2019, September 9). Can actuaries redefine the risk management in banking? *BFSI*. <https://bfsi.economicstimes.indiatimes.com/news/banking/can-actuaries-redefine-the-risk-management-in-banking/71042006>
- Shahwan, Y. (2018). The mediating effect of investment decisions and financing decisions on the influence of capital structure against corporate performance: Evidence from Jordanian listed commercial banks. *Academy of Accounting and Financial Studies Journal*, 22(6), 1-20. <http://surl.li/svukr>
- Shahwan, Y. (2020). The effect of OECD principles of corporate governance on social responsibility accounting. *International Journal of Innovation, Creativity and Change*, 11(2), 418-431. https://www.researchgate.net/publication/344324248_The_effect_of_OECD_principles_of_corporate_governance_on_social_responsibility_accounting
- Shahwan, Y., & Abdel-hamid, O. (2020). The impact of social responsibility disclosure in reducing the risk in Jordanian commercial banks. *Research in World Economy*, 11(3), 142-150. <https://doi.org/10.5430/rwe.v11n3p142>
- Shahwan, Y., Alramahi, N., & Alayan, M. A. (2023). Saudi food industry value: Profile disclosure, profitability, and sustainable supply chain effects. *Information Sciences Letters*, 12(8), 2499-2509. <https://digitalcommons.aaru.edu.jo/cgi/viewcontent.cgi?article=2093&context=isl>
- Sinkis, P., & Scott, N. (2014, May 5-6). Actuaries in banking. *Actuaries Institute Financial Services Forum*. Actuaries Institute. <https://www.actuaries.asn.au/Library/Events/FSF/2014/SinkisScottBankingPaper140505.pdf>
- Tichareva, M. (2016). *Role of actuaries in banking*. International Actuarial Association. https://www.actuaries.org/CTTEES_BANKING/Cape_Town_Nov2016/Documents/4_Role_of_Actuaries_in_Banking.pdf
- Vyas, R. (2019, February 14). *Role of actuaries in banking — 1* [Post]. LinkedIn. <https://www.linkedin.com/pulse/role-actuaries-banking-1-ravi-vyas/>