# BHUTAN JOURNAL OF BUSINESS AND MANAGEMENT

BJBM | 2023

Volume 6 Issue 1

## ABOUT THE JOURNAL

Bhutan Journal of Business and Management (BJBM), ISSN-L 2079-7680 (Print), 2663-1784 (Online), is a double-blind peer reviewed journal published annually. The journal primarily encourages empirical and conceptual research articles, case studies and research notes. It provides a platform for researchers, practitioners, professionals, and academicians involved in business and management in particular and other areas in general. The inferences drawn from the studies in this journal are expected to benefit students, researchers, academicians, and policymakers both at the national and international levels.

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# Contents

**Financial Performance Analysis of Telecom Industry of Bhutan: A Study on Bhutan Telecom Limited (BTL)**

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## Abstract

*Telecommunication industries are the boosters of any economic growth. In Bhutan, Bhutan Telecom Limited (BTL) plays a significant role in providing quality network services. The study aims to assess the financial performance of the company from 2011 to 2021 and also identify the factors affecting its profitability. This study is based on hypothesis testing of the research design and tries to identify the best model to explain the performance of the company using regression analysis. The study considered the Return on Equity (ROE) as the dependent variable and Current Ratio (CR), Working capital to sales (WCS), Return on sales (ROS), and Debt-to-equity Ratio as independent variables. The test stated that DER, WCS, and ROS have a significant impact on the profitability. However, CR has no significant impact on the profitability. The finding portrays that the company's profitability has increased continuously from 2019-2021, despite the interruptions from the COVID-19 pandemic.*

*Keywords: Bhutan Telecom Limited, Financial Performance, Covid-19 Pandemic, Regression Analysis*

## Introduction

Telecom is a service provider business and is also known as telecommunication. Telecom provides the services of electronic transmission of information over the distances. It plays a major role in the daily lives of the people and makes a large contribution towards the country's economy. Bhutan has two telecom operators, one under the ownership of the government and the other one under private ownership. Since 1970, Bhutan Telecom Limited (BTL) has played a significant role in the nation's telecommunication and internet infrastructure. In addition to fixed line telephony, it offers Internet services under the brand name Druk Net and GSM mobile services under its main brand B-Mobile. The network

of BTL has covered 205 gewogs in Bhutan enabling its services even to the remotest corner of the country.

The covid pandemic over the last few years has led to revised growth forecasts for the global economy. Outbreak of the pandemic impacted on many lives, and it has also affected various business sectors. However, it is evident that under the current conditions, some businesses become more critical to people's lives and could face an increase in demand, such as in the case of the information and communication technology (ICT) industry. In the case of BTL, some operations were interrupted by regulations and restrictions during the pandemic crisis and despite that the company remained strong and played a vital part in keeping society linked, offices and schools working digitally, with no major losses. In addition to cutting costs and enhancing network quality to keep society connected, the company gave Nu 258.32 million to the government's Covid-19 Fund and offered free and sufficient internet services to quarantine centers and offices to strengthen efficient communications in the country's effort at preventing the pandemic from spreading[1].

**Literature review**

This section of the article will focus on how various academics have conceptualized the performance of telecom industries. Earlier research suggested that several variables affect the performance of the telecom industries.

The study done by Mitra Debnath and Shankar (2008), compared the relative efficiency of mobile service providers in India by employing the method of data envelopment analysis (DEA). The research examined the differences between the number of subscribers and the performance of the service providers. The study also checked whether the benchmarking of the service providers would depend on the efficiency and quality of services. The findings reflect operating performance as a primary reason for inefficiency among the service providers. It was recommended that Government policies needed to be fine-tuned so that a better competitive environment emerges to meet the customer expectations.

Later, Goto(2010) investigated the financial performance of the world telecommunications industry by DEA–DA (Data Envelopment Analysis–

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[1] Bhutan Telecom (2020), Annual Report, pg. 3

Discriminant Analysis). The study measured the financial performance of AT&T (American Telephone & Telegraph) and NTT (Nippon Telegraph and Telephone) after the company's split. The study showed that AT&T outperformed NTT because AT&T changed itself to an IT (Information Technology) company that provides wireless communications services and other IT services, but NTT separated IT and wireless services into the other companies after the breakup.

Venkatram and Zhu (2012)conducted a study in the telecom industry of China and India. The author tried to make a relation between factors affecting the growth in the profit of telecom industry of China and India. The author collected data from primary sources through interviews and questionnaires. The Granger Causality Test was used for the purpose of data analysis. The findings of the study presented that "Number of Subscribers", "Technology Innovation" and "Government Regulation and Policies" were the most influential factors contributing to the profit of telecom industry in India and China.

Koi-Akrofi(2013)conducted a study to determine profitability of the telecommunication industry in Ghana from 2002 to 2006. The research adopted a quantitative approach, and the data were collected through secondary sources. Multiple regression was used for analysis. The result shows that total assets and net assets increased by 4 times each from 2002 to 2006, industry net profit increased, and the industry's revenue had increased by 5 times which was positive development and gives hope to investors who would like to invest in the industry.

Likewise, Sabutey et al. (2014), conducted a study to assess overall customer satisfaction and loyalty as well as sustainability of products and service quality delivered by Mobile Telecommunication Network and Vodafone to the students of University for Development Studies. A structured questionnaire was used to collect data from hundred (100) individual subscribers selected from the two Telecom groups via cluster and simple random sampling procedures. The findings indicated that overall customer satisfaction ratings among subscribers of mobile telecommunication networks in university for development studies significantly differ and that relatively, customers of mobile Telecommunication networks rated their satisfaction with service quality higher than those of Vodafone.

Ali and Haque (2017) conducted a study on the financial performance, customer satisfaction and service quality of the telecommunication industry in Saudi Arabia. Financial performance of service providers indicates STC (Saudi Telecommunication Company**)** as the best, while Zain currently has the highest net sales. The findings stated that customer satisfaction was much lower in the telecommunication sector. The results also indicated that there was neither any significant difference between the satisfaction of customers from their respective service providers nor was there any significant difference between aspects of service quality of different service providers.

Similarly, Gaste and Hundekar (2017) analyzed the financial performance of the Indian telecom sector especially focused on BSNL (Bharat Sanchar Nigam Limited), Bharati Airtel and Vodafone. The data were collected through secondary sources. It showed that the highest profit earning company is Bharati Airtel, and it had the highest return on capital employed (ROCE) comparatively. The profit and ROCE of BSNL keeps on changing as compared to Bharati Airtel and Vodafone which have an increasing ROCE and profit. To maintain a consistently reputable company image, it was advised that the corporation concentrate on innovative technology, client needs, and employee satisfaction.

The study conducted by Ramachandran and Kelkar (2019), analyzes the financial performance of telecom companies in Oman. For seven years (2010-2016), data were collected through yearly reports from two telecom businesses, and financial statement data was examined using the Z score model. The results of the analysis show that the performance of Omantel was better than Ooredoo. The study also gave investors a recommendation for a business where they may invest for higher returns.

In another study done by Hendrawan et al. (2019), the author aimed to analyze the efficiency of telecommunications companies and found out the variables of efficiency of telecommunications companies in Southeast Asia in the period of 2008-2017 using the Stochastic Frontier Analysis method. The results of these studies showed that the telecommunications companies in Southeast Asia still had room to improve their profit efficiency scores of 0,984 – 0,689 = 0.295. Furthermore, the results showed that input variables such as Personal, capex and opex have a positive effect on the value of efficiency which means that each increase in the variable Capex, opex and Personal Expenses will have an impact in increasing the value of

efficiency whereas the total assets will have negative effects on the efficiency value of telecommunications operators. Output variables consisting of revenue, subscribers and ARPU have a significant effect on the value of efficiency.

Daryanto et al. (2020) analyzed the development of the four telecom companies using financial ratio analysis from 2014-2018. The method used in this research was a descriptive analysis. The result revealed that the financial performance of telecommunications companies in the 2014-2018 period were based/dependent on liquidity ratios, solvency, and the activity ratio. The result indicates that the performance based on liquidity ratio, PT Telecom had the best financial performance. Regarding the solvency ratio PT XL Axiata has the best performance; however, in the activity ratio PT XL Axiata in 2014 had the best performance until 2017 and PT Smartfren Telecom in 2018.

Singh and Garg (2020) examined the effect of covid-19 on the telecom company and it also determines how reliance Jio affects the telecom industry. It states that although the burden on telecom grew up to 40-60%, the way the telecom industry handled the situation was far better than expected.  Findings showed that Reliance Jio has become the most considerable telecom player by beating Airtel, Vodafone and Idea. It changed all the market strategy in India and forced the other telecom industry to lower the rates. Further, it was suggested that the companies have to update themselves by bringing new products and digital tools for their customers, and they have to improve their infrastructure as the traffic of the network increases.

Barot and Japee(2021) evaluated the financial performance of the two large and old companies, Airtel and Vodafone through ratio analysis which shows more volatility in the selected time span from 2015-16 to 2019-20. Considering the gross profit and net profit of Airtel, finding shows that Airtel is performing better than Vodafone.  Both companies are doing well in terms of liquidity, but Airtel average liquidity is slightly stronger than Vodafone's. The analysis found that Airtel had greater financial performance than Vodafone Idea over the course of the five years, leading to the conclusion that Airtel had superior financial performance overall.

Shankhdhar(2021), analyzed the financial performance of four companies (Tata Com, Artel, Vodafone Idea and R.com) of telecom trade for the duration of 10 years from 2011-2020. The data which has been used for

analysis is secondary nature data, and it has been retrieved from various online sources and fiscal reports of the companies. Profitability, leverage, liquidity, and managerial efficiency are the tools used for the data analysis. The outcome demonstrates that the financial management of the organizations differs significantly. Except for liquidity, Tata Com has performed well across all financial indicators. The company has performed exceptionally well in terms of profitability ratios as compared to all its fellow competitors. Airtel and Tata Com have been able to maintain a decent Liquidity as compared to other companies, and they were in a better position to repay their debts.

Jauzaa and Hirawati(2021), also conducted a study to analyze the performances of telecommunication sectors judging from profitability ratios which includes ROA, ROE, and NPM period before and during pandemic. The data were collected through the financial statements of telecommunication companies listed on Indonesian Stock Exchange quarter 2 of 2019-quarter 1 of 2021 and analyzed using descriptive methods. The results reveal that the average value of profitability measures such as ROA, ROE, and NPM influenced the financial performance of companies in the telecoms sector. Overall, average financial performance of telecommunications sector enterprises has grown since the Covid-19 epidemic was first identified. Assessment with analysis of Hoteling's T2 test also provided results that there was no difference in financial performance in terms of profitability ratio between before and during Covid-19 pandemic.

In a similar manner, Rani et al. (2021)predicted the changes in the taste and preference of the customers and also checked which customers are likely to switch to a competitor in the future. The analysis of the companies with their previous data was done to understand the current situation of the company, so that the company could develop new plans to bring new customers and also to retain the existing customers.

A study was done on Impact of Capital Structure on Profitability: Panel Data Evidence of the Telecom Industry in the United States. The results reveal that the ratio of Total Liability to Total Assets has a significant impact on ROA, and Total Equity to Total Assets has a significant impact on ROA. However, Total Liability to Total Assets and Total Equity to Total Assetshave no impact on ROE(Habibniya et al., 2022).

Zhang et al. (2022), conducted a study in China to create a mixedestimate model to forecast telecom client turnover through customer segmentation. Data was collected from three main telecom operators in China. A telecom customer churn prediction model was developed using Fisher discriminant equations and logistic regression analysis. The findings of the study presented that the telecom customer churn modelhad a greater accurate forecasting (93.94%) and produced better outcomes. The study helped telecom companies to efficiently predict the possibility of better performance and take focused steps to prevent loss of consumers to boost their earnings.

Mulyono(2023)The results concluded a significant effect of the Covid-19 pandemic on company profitability in the technology and telecommunications industry. A total of 65.79% of the sample of companies experienced a decrease in profitability. However, the study conducted in indionisa on the companies listed on Indonesia Stock Exchange by AlifaJauzaaa and HeniHirawat (2021), It stated that financial performance of telecommunications sector has increased. It has been guided by average value of profitability ratios that include Return on Assets, Return on Equity, and Net Profit Margin.

As can be seen from the literature mentioned above, performance evaluation of an organization becomes necessary to understand the financial as well as non-financial positions of the organization. Such a study will help the organization understand its current position and will also help the organization improve in future. However, a study related to financial performance of the telecom industry in Bhutan is very limited. With this background, this paper studies the financial performance of one of the oldest telecom industries (Bhutan Telecom Limited) in Bhutan. This study identifies factors contributing to the financial performance of Bhutan Telecom Limited and makes a model to explain the relationship between various factors and the profit of the organization.

**Objectives of the study**
The following are the identified objectives of the study:
  i.   To assess the financial performance of Bhutan Telecom Limited for the period 2011 to 2021.
  ii.  To identify the factors affecting the profitability of Bhutan Telecom Limited.

## Hypotheses of the study

For this study, the following null hypotheses has been identified:

i. Current ratio (CR) has no significant impact on the profitability of BTL

ii. Working capital to sales (WCS) has no significant impact on the profitability of BTL

iii. Return on sales (ROS) has no significant impact on the profitability of BTL

iv. Debt-to-equity Ratio (DER) has no significant impact on the profitability of BTL

## Research Methodology

For analyzing the financial performance of Bhutan Telecom Limited, 11 years (2011 to 2021) data were gathered. The data was collected from the published annual reports of Bhutan Telecom Limited. This research only considered one telecommunication company in Bhutan (namely Bhutan Telecom Limited) due to unavailability of the data.

## Research design

This study is based on hypothesis testing research design and tries to identify the best model to explain the performance of Bhutan Telecom Limited. The following model was tested using regression analysis:

$$ROE = \alpha + \beta_1 CR + \beta_2 WCS + \beta_3 DER + \beta_4 ROS + e$$

In the above model:

- $\alpha$ is constant
- $\beta_1$, $\beta_2$, $\beta_3$, and $\beta_4$ are the coefficients
- $e$ is the error

## Operational design

To explain the relationship of different variables on the profitability of Bhutan Telecom Limited, the following sets of dependent and independent variables were used:

**Dependent Variable**

**Return on Equity (ROE)**

Return on equity is a measure of financial performance calculated by dividing net income by shareholders' equity. Shareholders' equity is equal to a company's assets minus its debt. ROE, on the other hand, is considered as the return on net assets. ROE is an important financial metric that investors use to determine how efficient management is at utilizing equity financing, and it also helps investors understand whether they are getting a good return on their money. The higher the ROE, the more efficient a company's management is at generating income and growth from its equity financing.

$$ROE = \frac{Net\ income}{Shareholders'\ Equity}$$

**Independent Variable**

**Current Ratio**
Current ratio is one of the liquidity ratios and determines the company's ability to pay off current debt obligations without raising external capital. Current ratio is calculated by dividing the current assets by the current liabilities. Both the current assets and liabilities are derived from the balance sheet.

$$CR = \frac{Current\ Assets}{Current\ Liabilities}$$

**Working capital to sales**
It determines how well the company is utilizing its working capital to generate revenue. The sales to working capital ratio is calculated by dividing annualized net sales by average working capital.

$$WCS = \frac{Net\ sales}{Average\ working\ capital}$$

**Return on sales.**
Return on sales (ROS) is used to measure how efficiently a company turns sales into profits. ROS is calculated by dividing operating profit by net sales.

$$ROS = \frac{EBIT}{Net\ sales\ revenue}$$

**Debt-to-equity Ratio (DER)**
It is the ratio of total liabilities to total shareholder's equity. The ratio is used to evaluate a company's financial leverage. It is a measure of the degree to which a company is financing its operations with debt rather than its own resources. Debt-to-equity ratio is a particular type of gearing ratio.

$$DER = \frac{Total\ liabilities}{Total\ shareholders'\ equity}$$

**Results and Discussion**

To determine the relation between different variables on the financial performance of Bhutan Telecom Limited, a regression model was tested. ROE was kept as the dependent variable in the regression model. The result of the test is presented below:

**Table 1**
*Descriptive Statistics*

| Years | ROE | CR | WCS | DER | ROS |
|-------|------|-------|--------|---------|--------|
| 2011 | 0.16 | 2.10 | 0.29 | 0.22 | 0.37 |
| 2012 | 0.19 | 2.07 | 0.26 | 0.17 | 0.39 |
| 2013 | 0.12 | 2.22 | 0.68 | 0.12 | 0.29 |
| 2014 | 0.13 | 1.67 | 0.39 | 0.07 | 0.29 |
| 2015 | 0.14 | 1.41 | 0.08 | 0.11 | 0.28 |
| 2016 | 0.21 | 1.81 | 0.03 | 0.07 | 0.31 |
| 2017 | 0.20 | 0.92 | 0.01 | 0.15 | 0.40 |
| 2018 | 0.21 | 1.25 | 0.01 | 0.16 | 0.39 |
| 2019 | 0.24 | 1.42 | 0.12 | 0.18 | 0.43 |
| 2020 | 0.28 | 2.72 | 0.24 | 0.13 | 0.48 |
| 2021 | 0.34 | 2.19 | 0.26 | 0.07 | 0.55 |
| CAGR | 7.04% | 0.38% | -0.88% | -9.74% | 3.64% |
| Mean | 0.203 | 1.798 | 0.216 | 0.131 | 0.381 |
| SD* | 0.063 | 0.498 | 0.192 | 0.047 | 0.082 |
| CV** | 31.05% | 27.70% | 88.69% | 35.71% | 21.43% |

Note: *Standard Deviation; **Coefficient of Variation
Source: Author's calculation

Table 1 represents the descriptive statistics of variables used in this study. The figure shows that ROE has the highest compounded annual growth

rate (CAGR) of 7.04% over the last 11 years, and it has consistent growth which was indicated by the SD of 0.063. After 2018 ROE has continuously increased, it's because of the company's proper mixture of equity with long term loans and also company maintained the strong capital structure which helped the company's growth increased from 21.23% to 23.76%. Another reason for the increased ROE was from the growth of company's revenue. Company recorded a revenue of Nu 4,039.01 million in 2019 and profit after tax of Nu 1,102.51 million, marking a revenue growth of 12.40% and profit after tax growth of 17.07% respectively, as compared to 2018.

CR has one of the lowest positive growths among the variables used in this study. It has shown the most inconsistent growth over the period of study (SD: 0.498). CR had its major decline in 2014 where the ratio decreased from 2.22 in 2013 to 1.67 in 2014. This mainly resulted due to a decrease in short term loans and advances in the year 2014. CR recorded its lowest fall in 2017 where the ratio decreased form 1.81 in 2016 to 0.92 in 2017. This was mainly due to the adoption of IFRS for the first time by the organization. The adoption of IFRS mad a change in the bad debt norms of the organization. The decline was also because the organization had to pay 313 million to the shareholders of registered under Group Investment Revenue.

On the other hand, CAGR of DER shows that the debt of BTL has decreased over the period of study. DER has also depicted one of the consistent changes in this study. This shows that the company was able to do a proper debt management for the period of study. In the same manner, there has been decrease in WCS as well for the period of study.

**Table 2**
*Correlation Matrix of Independent Variables*

|     |                     | DER    | ROS    | WCS   | CR  |
| --- | ------------------- | ------ | ------ | ----- | --- |
| DER | Pearson Correlation | 1      |        |       |     |
|     | Sig. (2-tailed)     |        |        |       |     |
| ROS | Pearson Correlation | 0.117  | 1      |       |     |
|     | Sig. (2-tailed)     | 0.731  |        |       |     |
| WCS | Pearson Correlation | -0.105 | -0.188 | 1     |     |
|     | Sig. (2-tailed)     | 0.758  | 0.581  |       |     |
| CR  | Pearson Correlation | -0.107 | 0.287  | 0.599 | 1   |
|     | Sig. (2-tailed)     | 0.754  | 0.393  | 0.052 |     |

Source: Author's calculation

Table 2 presents the correlation matrix of independent variables used in the study, and the test was conducted at 5% of significance level. The test concluded that the independent variables used for the study had no correlation between them.

**Table 3**
*Coefficient Table (Dependent variable ROE*

| | Unstandardized Coefficients | | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | B | Std. Error | | | Tolerance | VIF |
| **(Constant)** | -0.025 | 0.026 | -0.957 | 0.375 | | |
| **DER** | -0.342 | 0.092 | -3.704 | 0.010 | 0.964 | 1.037 |
| **ROS** | 0.659 | 0.063 | 10.471 | 0.000 | 0.701 | 1.427 |
| **WCS** | -0.095 | 0.032 | -2.985 | 0.024 | 0.500 | 1.999 |
| **CR** | 0.024 | 0.013 | 1.876 | 0.110 | 0.469 | 2.133 |
| **Model Summary** | $R^2$: 0.972 | **Adjusted** $R^2$: 0.854 | **F:** 52.351 | **Sig.** 0.000 | **Durbin-Watson:** 2.505 | |

Source: Author's calculation

Table 3 presents the coefficient table of regression analysis where ROE is the dependent variable and DER, ROS, WCS, and CR are the independent variables. The test was conducted at 5% level of significance. From the table, the test fails to reject the null hypothesis of CR (sig: 0.110) as its significant value is more than 0.05. Therefore, it can be stated that CR has no significant impact on the profitability of BTL.

On the other hand, the significant value of DER (sig: 0.010), ROS (sig. 0.000), and WCS (sig: 0.024) is less than 0.05 and hence, the test rejects the null hypothesis of DER, ROS, and WCS. Therefore, it can be stated that DER, ROS, and WCS have a significant impact on the profitability of BTL. It can also be seen that ROS (t-statistics: 10.471) has a positive relation with the profitability of BTL. However, DER (t-statistics: -3.704) and WCS (t-statistics: -2.985) have negative relation with profitability of BTL.

The table also presents the model summary of the analysis. The adjusted $R^2$ is 0.854. It means that 85.4% of the time the independent variables explain the dependent variable. The value of Durbin Watson is 2.505 which falls under the acceptance level of these statistics (i.e., 1.5 to 2.5). The F-statistics (52.351) from ANOVA was also significant (Sig: 0.000) at 5% level

of significance. Therefore, with the help of the coefficient table given above (Table 4), the following regression model is formed:
ROE= -0.025 – 0.342DER +0.659ROS – 0.095WCS

Collinearity statistics column presents the test of multicollinearity among the variables used in this study. This is done mainly because if the value of multicollinearity is very high, the variable may not fit for regression analysis. In regression analysis, multicollinearity is checked by variance inflation factor (VIF).

As a rule of thumb, a VIF value from Collinearity statistics is regarded acceptable if it is less than 10. Any VIF value more than 10 will have adverse effects on the regression model[2]. From the table, the VIF value for DER, ROS, WCS, and CR was less than 10. This shows that the variables used in this study did not have any issues of multicollinearity.

**Table 4**
*Testing of Hypothesis*

| Hypotheses | t-statistics | Sig. | Accept or reject |
|---|---|---|---|
| Debt-to-equity Ratio (DER) has no significant impact on the profitability of BTL | -3.704 | 0.010 | Reject |
| Return on Sales Ratio (ROS) has no significant impact on the profitability of BTL | 10.471 | 0.000 | Reject |
| Working Capital to Sales (WCS) has no significant impact on the profitability of BTL | -2.985 | 0.024 | Reject |
| Current ratio (CR) has no significant impact on the profitability of BTL | 1.876 | 0.110 | Accept |

Source: Author's Calculation

Table 4 shows the testing of hypotheses where the test was conducted at 5% significance level. Out of the four hypotheses, the test rejects the null

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[2]Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed., pp. 697-698). SAGE Publications, Inc.

hypothesis of DER (0.010), ROS (0.000), and WCS (0.024). The test fails to reject the null hypothesis of CR (0.110).

## Findings

The analysis done in this study shows that the WCS and DER of BTL has decreased for the period of the study. However, the profit of the organization (measured by ROE) has increased for the period of the study. This shows that BTL is in profitable condition though the world was impacted by Covid-19 pandemic during last few years. The increase in ROS of BTL depicts the company's ability to generate profit from its operation. During the Covid-19 period, the ROS of BTL has increased as compared to other years. This was mainly due to the need of internet for the people who were working from home and the student internet scheme introduced by BTL for the students to attain the online classes.

The study indicates there was no correlation between the independent variables used in the study. By considering ROE as the dependent variable and CR, WCS, DER and ROS, as the independent variables, the test was conducted at 5% level of significance. The test rejects the null hypothesis of WCS (0.001), DER (0.103) and ROS (0.051). Therefore, the test concludes that there is no significant impact of CR on the profitability of BTL. Whereas DER, ROS, and WCS had a significant impact on the profitability of BTL. It was also seen that ROS (t-statistics: 10.471) had a positive relation with the profitability of BTL. However, DER (t-statistics: -3.704) and WCS (t-statistics: -2.985) had negative relation with profitability of BTL.

## Conclusion

Telecom industry plays a vital role in the Bhutanese economy by providing the necessary communication services through technology which ultimately contributes to the growth of the economy. From the test conducted, the findings were DER, ROS and WCS had a significant impact on the profitability of BTL; however, CR has no significant impact on the profitability of BTL.

While the company's debt had decreased and the return on equity and return on sales has increased especially from 2019. From these, it can be concluded that even though Covid-19 pandemic had affected business all around the world, it was a different scenario for BTL. Although there was

disruption in the physical activities of BTL during the pandemic, the performance was not affected. In fact, the performance of BTL was better as demand for the digitalized connection had increased.

This study observed that despite the impact of the pandemic, the company's profitability has increased over the years. The profitability of the company has been shown with the CR, WCS, DER and ROS ratios. Though the ratios used in the study ratio show the significant impact on profitability of a company, still these are not only the ratios that analyze the financial performance of the telecom industry. Many financial ratios were discarded from this study because of the issue of multicollinearity with the dependent variables used in this study. This creates opportunities for the future researchers who would like to conduct similar study in telecom industry in Bhutan. Different sets of dependent and independent variables can be used to study the profitability position of telecom industry in Bhutan.

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# Modeling and Predicting Stock Market Volatility using ARCH Model: Evidence from Bhutanese Stock Market

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**Abstract**

*The stock market is widely known for its high degree of volatility, making it more challenging for individuals to accurately model and predict it in real-time. In an attempt to forecast the stock price and its volatility, investors, stock market analysts and academicians have been developing models for quite some time. One such model, the Autoregressive Conditional Heteroskedasticity (ARCH) model, developed by Engle (1982), has found wider applications in time series analysis where the central issue lies with the volatility clustering phenomenon.*

*This paper employs the ARCH model as an econometric model to forecast volatility of the share price of three companies listed on the [2]Royal Securities Exchange of Bhutan, namely Sherza Ventures Limited (SVL), Bhutan Insurance Limited (BIL), and Bhutan National Bank Limited (BNB). For this study, we statistically tested the time series share price return data from January 2019 to December 2022 for stationarity using Augmented Dickey-Fuller unit root test and for conditional heteroscedasticity effect using the ARCH Lagrange Multiplier test before modelling the ARCH model.*

*To model the ARCH model, we selected the optimal order of the model, q, using the partial autocorrelation function of the squared residuals. The ARCH (1) model provided the best fit, resulting in accurate forecasts of the volatility of the stock price return. Overall, our ARCH (1) model performed very well with a mean absolute error and root mean squared error of 0.02628 and 0.03139, respectively, for the volatility of SVL return, 0.01523 and 0.01943 for BIL return, and 0.01395 and 0.01666 for BNB return.*

*The study is expected to benefit stock market investors for making a sound investment decision thorough their knowledge about the volatility of return. Also, it would enable the stock market regulators to develop effective regulations and policies to promote market efficiency and investor confidence. Additionally, the study may shed light to future researcher and academicians for potential future research on applications of the ARCH model beyond stock market.*

***Key words**: ARCH, Augmented Dickey-Fuller test, ARCH-LM test, Volatility of Return, Modeling, Forecasting, Bhutan*

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[2] Royal Securities Exchange of Bhutan was established in August 1993

## Introduction

The financial and economic time series data, such as stock prices, oil prices, and inflation, are considered highly volatile in nature, exhibiting a phenomenon known as volatility clustering (Engle, 1982; Gazda & Vyrost, 2003; Alberola, 2007; Zhang, Yao, He, & Ripple, 2019). Therefore, modeling and forecasting the volatility of the equity market has garnered significant interest due to its potential to provide valuable insights into stock market volatility, and its associated investment risks and return. One such modeling method is called the Box Jenkin's autoregressive integrated moving average (ARIMA) model, which is widely adopted for modeling the mean value of the variable in question (Gazda & Vyrost, 2003).

Modeling and forecasting agricultural commodity prices for example using ARIMA has become increasingly challenging due to the rapidly changing prices caused by actual and presumed changes in supply and demand conditions, exacerbated by weather-induced fluctuations in farm production (Lama, Jha, Paul, & Gurung, 2015). This highly volatile nature of time series data has made ARIMA model difficult to accurately forecast prices of commodities due to its limitations on assumptions of linearity and homoscedastic error variance. Therefore, Robert F. Engle introduced the ARCH model in 1982 as a non-linear model to deal with the heteroscedastic nature of the time series data.

The ARCH model has been widely utilized in numerous studies for forecasting the volatility of financial and economic markets. Engle (1983) applied the ARCH model to estimate the conditional mean and variance of inflation in the U.S using time series data. Engle, Ng, & Rothschild (1990) successfully priced Treasury bills using the FACTOR-ARCH model and demonstrated their stability over time. Degiannakis (2004) employed the ARCH model to generate more accurate volatility forecasts of stock returns. Alberola (2007) used the ARCH model to estimate the volatility of returns in the Spanish energy market, observing higher volatility compared to the gas and oil markets. Furthermore, Hu (2017) applied the ARCH-GARCH model to analyze stock market returns of China's listed real estate companies, revealing the presence of accumulation and memory effects, indicating the impact of past returns on current returns.

To study the volatility of stock market return, various econometric models, such as ARIMA, ARCH/Generalized ARCH (GARCH), Exponential GARCH, and Threshold GARCH models, have been adopted by researchers globally. However, such application of the econometric models in stock market remains limited in Bhutan. Therefore, this pilot study seeks to contribute to the existing gap by exploring the effectiveness of the ARCH model in modeling and predicting stock market volatility of three companies listed on the Royal Securities Exchange of Bhutan, namely SVL, BIL, and BNB.

The significance of the study lies in several aspects. Firstly, it will provide insights to the investors on the risk-return trade-off, helping them make better investment decisions. Secondly, it will offer some valuable information to market regulators regarding the impact of volatility on stock market performance, aiding in the formulation of effective regulations and policies. Finally, the study will pave way for future research on broader applications of ARCH and other econometric models beyond the stock market.

## Methodology

## ARCH Model

ARCH model was developed by Robert Engle in 1982 as a tool to capture the heteroscedastic characteristic or varying volatility of a financial time series data. The model assumes that the current volatility of the time series data is a function of the previous squared residuals and a constant term. The autoregressive model (AR) of order one with a stochastic error term is shown in equation (1) (Engle, 1982; Gökbulut & Pekkaya, 2014; Vasudevan & Vetrivel, 2016).

$$= a + bR_{t-1} + \varepsilon_t \quad \varepsilon_t|\psi_{t-1} \sim N(0, h_t), \tag{1}$$

Where, $R_t$ is return at time $t$, $a$ is the intercept term, $b$ is coefficient of the lagged return $R_{t-1}$ at time $t-1$, $\varepsilon_t$ represents the error term or disturbance term at time $t$, and $\psi_{t-1}$ represents the information set available up to time $t-1$. In the context of an ARCH model, the distribution of $\varepsilon_t$ is assumed to be normal with mean zero and conditional variance $h_t$.

The equation for the conditional variance of the error term in a time series model called the autoregressive conditional heteroskedasticity (ARCH(q)) model is provided in equation (2).

$$h_t = \alpha_0 + \sum_{i=1}^{q} \alpha_i \varepsilon_{t-i}^2 \tag{2}$$

Where, $h_t$ is the conditional variance of the error term at time $t$, which we are trying to model and forecast, $\alpha_0$ is the intercept term, $\alpha_i$ is a coefficient of the $ith$ lagged squared error term which is non-negative constant that determine the impact of past squared error terms on the current conditional variance, $\varepsilon_{t-i}^2$ represents the squared error term at time $t-i$, and $q$ represents the maximum lag order. The squared errors capture the deviation of the actual value from the expected value based on the model's prediction.

The order of ARCH (1) model, where $q = 1$ has been identified by plotting the partial autocorrelation coefficient (PACF) of the squared residuals (Virginia, Ginting, & Elfaki, 2018).

## Forecast Evaluation

There are various metrics for evaluating volatility forecast. In this study, to evaluate the forecasting performance of the ARCH (1) model, the mean absolute error (MAE) and, the root mean square error (RMSE) will be employed as per equation (3) and (4).

$$MAE = \frac{1}{n}\sum_{t=1}^{n} |y_t - \hat{y}_t| \tag{3}$$

$$RMSE = \sqrt{\frac{1}{n}\sum_{t=1}^{n} (y_t - \hat{y}_t)^2} \tag{4}$$

Where $n$ is the total number of observations, $y_t$ is the actual value, and $\hat{y}_t$ is the forecast value.

## Statistical Testing

## Augmented Dickey-Fuller Test

The Augmented Dickey-Fuller (ADF) unit root test is employed to test the null hypothesis for measuring presence of unit root in time series sample. For a return series $R_t$, the ADF test consists of a regression of the first difference of the series against the series lagged $k$ times as provided in equation (5) (Dickey & Fuller, 1979; Gökbulut & Pekkaya, 2014; Virginia, Gunasekaran & Rajamohan, 2016; Ginting, & Elfaki, 2018).

$$\Delta Y_t = \mu + \beta Y_{t-1} + \varphi_1 \Delta Y_{t-1} + \varphi_2 \Delta Y_{t-2} + \cdots + \varphi_p \Delta Y_{t-p} + \varepsilon_t \tag{5}$$

Where $Y_t$ is the time series to be tested, $\mu$ is the intercept term, $\beta$ is the coefficient of interest in the unit root test, $\varphi_1, \varphi_2, \dots, \varphi_p$ represent the coefficients of the lagged differenced variables $\Delta Y_{t-1}, \Delta Y_{t-2}, \dots, \Delta Y_{t-p}$, and $\varepsilon_t$ represents the error term or residual at time $t$.

The ADF test is used to determine stationarity in a time series, where the null hypothesis is that the time series has a unit root, which implies non-stationarity, and the alternative hypothesis is that the time series is stationary. If the calculated ADF test statistic is less than the critical value at a given significance level, the null hypothesis is rejected, meaning stationarity of the time series sample. Conversely, if the calculated ADF test statistic is greater than the critical value at a given significance level, the null hypothesis is not rejected, implying non-stationarity.

**ARCH LM Test**

To test for the presence of conditional heteroscedasticity (ARCH effect) in a time series samples, researchers have employed the Lagrange multiplier (LM) test, which was introduced by Engle in 1982. The ARCH-LM test involves estimating an ARCH regression model and calculating the sum of squared residuals. Subsequently, the resulting ARCH-LM test statistic is compared to a critical value obtained from the chi-squared distribution, with degrees of freedom equal to the number of lags in the model. If the test statistic is greater than the critical value, the null hypothesis is rejected, indicating the presence of ARCH effect in the time series (Vasudevan & Vetrivel, 2016). Conversely, if the test statistic is less than or equal to the critical value, there is no significant evidence of ARCH effect, and the null hypothesis is not rejected.

**Data**

To model and predict the volatility of stock market return using ARCH (1) model, we downloaded the time series share price data from the official website of the Royal Securities Exchange of Bhutan (www.rsebl.org.bt). For this study, the secondary share price data for Sherza Ventures Limited (SVL) was considered from Jan 2020 to Dec 2022, and for Bhutan Insurance Limited (BIL) and Bhutan National Bank Limited (BNB), we used share price data from Jan 2019 to Dec 2022. The movement of the share prices for the three companies is shown in Figure 1 to Figure 3.
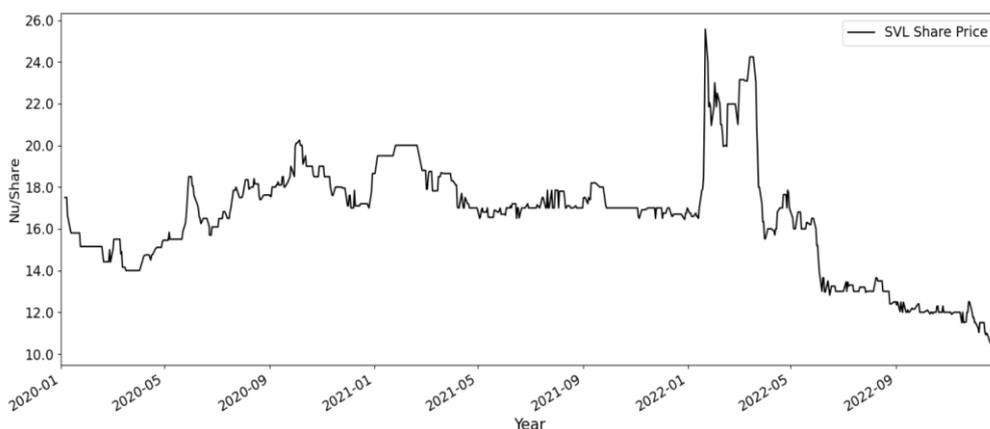


Figure 1 Share Price of SVL from Jan 2020 to Dec 2022
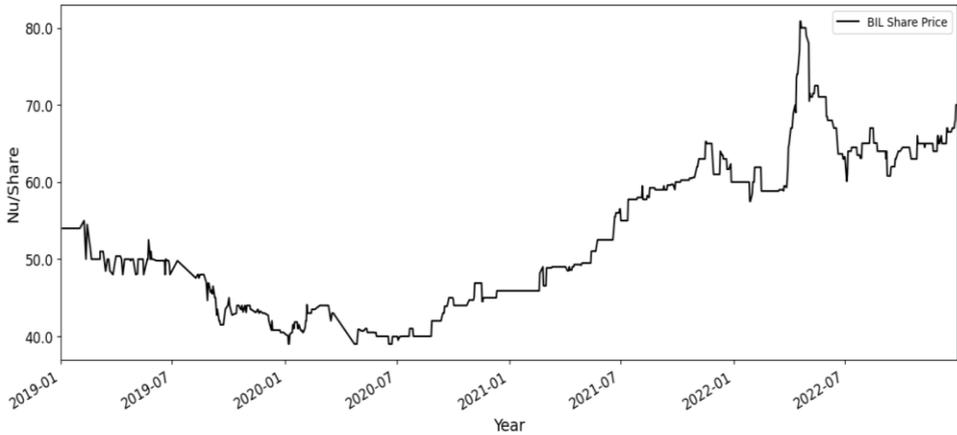
Figure 2 Share Price of BIL from Jan 2019 to Dec 2022
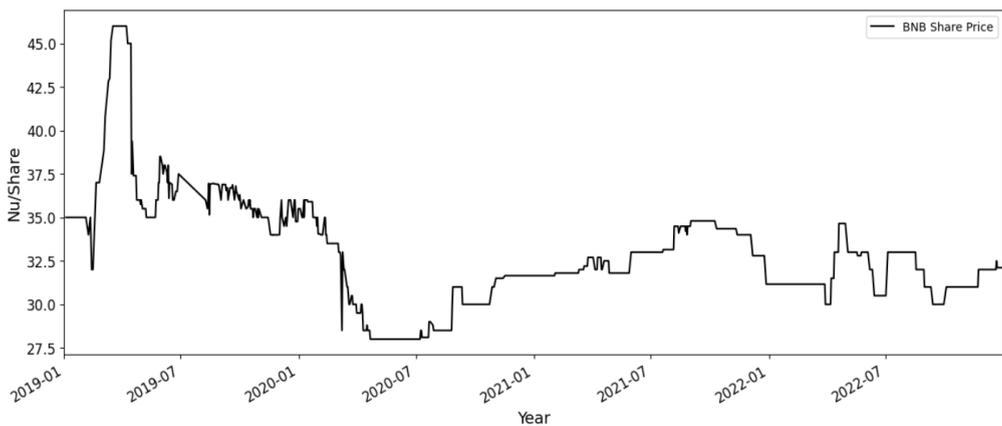


Figure 3 Share Price of BNB from Jan 2019 to Dec 2022

The daily return is calculated using the closing price data available from 2019 till 2022 as per equation (6).

$$r_t = \frac{P_t - P_{t-1}}{P_{t-1}} X\ 100 \tag{6}$$

Where $r_t$ is the daily return at time $t$, $P_t$ is the opening share price at time $t$, and $P_{t-1}$ is the closing share price at time $t-1$. The movement of the daily returns for the three companies is provided in Figure 4 to Figure 6.

Figure 4 Volatility of the Daily Return for SVL from Jan 2020 to Dec 2022



Figure 5  Volatility of the Daily Return for BIL from Jan 2019 to Dec 2022

Figure 6 Volatility of the Daily Return for BNB from Jan 2019 to Dec 2022

**Results & Discussion**

**Descriptive Statistics**

**Table 1**

*Descriptive Statistics of the Returns*

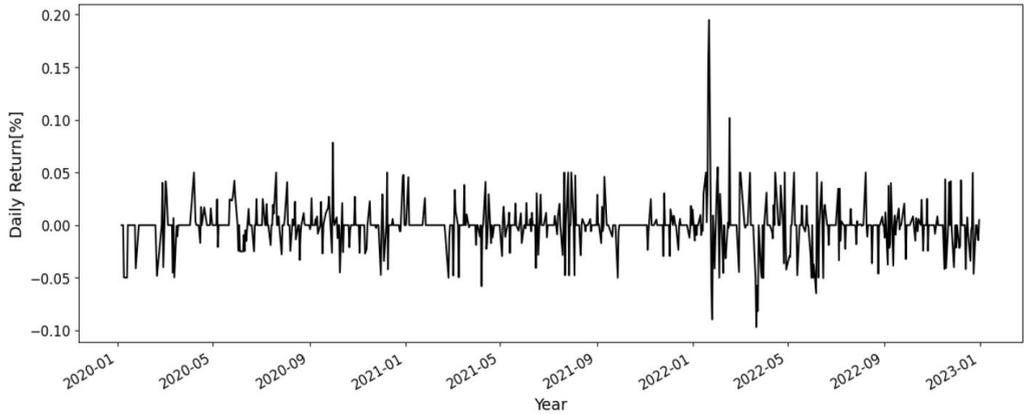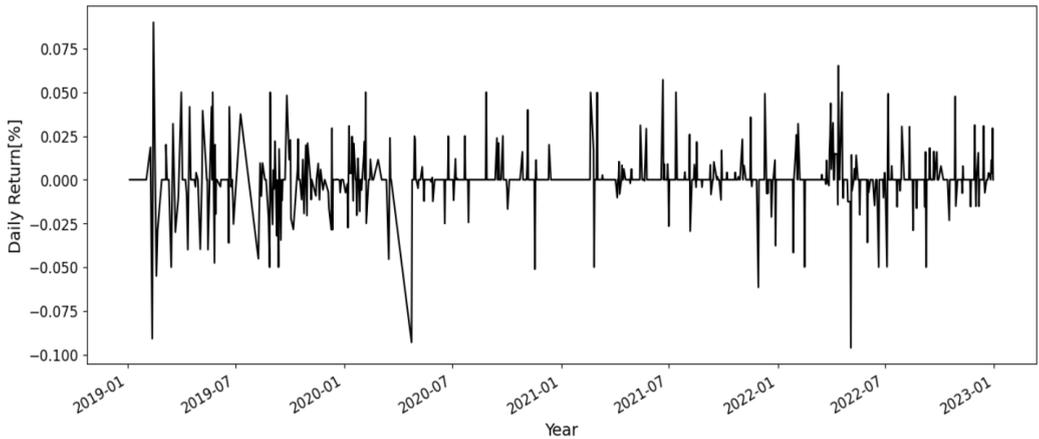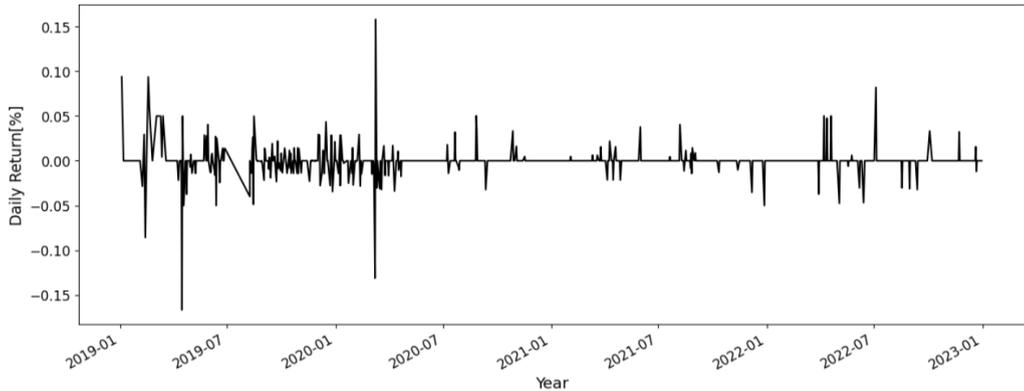| Statistics | SVL Return | BIL Return | BNB Return |
|---|---|---|---|
| Mean | -0.000493 | 0.000426 | 0.000118 |
| Maximum | 0.194860 | 0.090000 | 0.157895 |
| Minimum | -0.096830 | -0.096154 | -0.166667 |
| Standard Deviation | 0.022507 | 0.015093 | 0.015055 |
| Skewness | 1.211989 | -0.467732 | -0.249265 |
| Kurtosis | 12.890136 | 10.295969 | 42.441573 |
| Jarque-Bera Test Statistics | 5041.952967* (0.000) | 3656.06392* (0.000) | 67314.607286* (0.000) |

Note: *– indicates significance at one per cent level.

Source: Descriptive statistics were computed using Python's pandas library

Table 1 provides summary of the descriptive statistics of the returns of three companies namely Sherza Ventures Limited, Bhutan Insurance Limited, and Bhutan National Bank Limited. The result suggests that the mean return for SVL is negative while positive for BIL and BNB. The standard deviation, which measures the variability of returns around the mean, is also highest for SVL followed by BIL and BNB. Jarque-Bera Test Statistics results with a low p-value (less than the significance level) indicates that the data is not normally distributed for all three different return data. The presence of non-normality in asset returns indicate that in order to accurately predict the volatility of asset return, a more robust and accurate model would be needed.

## ADF Test Results

### Table 2
*ADF Test Statistics Results*

| Variable | p-value | Test Statistics | 1% Critical Value | 5% Critical Value | 10% Critical Value |
|---|---|---|---|---|---|
| SVL Return | 0.000000 | -14.188588 | -3.440 | -2.866 | -2.569 |
| BIL Return | 0.000000 | -34.398530 | -3.438 | -2.865 | -2.569 |
| BNB Return | 0.000000 | -9.076169 | -3.438 | -2.865 | -2.569 |

Source: Test was performed using Python's statsmodels library

Table 2 shows the results of the Augmented Dickey-Fuller (ADF) unit root test for three different returns. Having the test statistics for all three returns more negative than the critical values at 1%, 5%, and 10% significance level, rejects the null hypothesis of existence of unit root in the return series. Such ADF test result for stationarity was also observed by Islam (2013), and Vasudevan & Vetrivel (2016) during their studies on the volatility of stock market return. Therefore, the ADF test result ensures that we can adopt ARCH model to examine the dynamic behavior of volatility of the returns over time (Islam, 2013).

## ARCH LM Test Results

### Table 3
*ARCH-LM Test Statistics Results*

| Dependent Variable of Model | Test Statistics | p-value | 5% Critical Value |
|---|---|---|---|
| SVL Return | 139.3343 | 0.0000 | 3.8415 |
| BIL Return | 33.7717 | 0.0000 | 3.8415 |
| BNB Return | 68.0645 | 0.0000 | 3.8415 |

Source: Test was performed using Python's arch package and Ordinary Least Squares regression

The results of the ARCH-LM test conducted on the return data for the three listed companies is provided in Table 3. The observed t-statistics surpasses the critical value at a 5% significance level, rejecting the null hypothesis. This indicates that the volatility of stock market returns exhibits a clustering phenomenon or ARCH effect, implying that it is not constant over time. To address this heteroscedasticity, an ARCH (1) model is employed for modeling and predicting the volatility of stock

market returns. By considering the ARCH effect, more accurate volatility forecasts can be obtained (Goudarzi, 2011).

**Results of Estimated ARCH (1) Model**

**Table 4**

*Estimated Parameters of the ARCH (1) Model*

$$R_t = a + bR_{t-1} + \varepsilon_t$$

$$h_t = \alpha_0 + \sum_{i=1}^{q} \alpha_i \varepsilon_{t-i}^2$$

|  | $a$ | $b$ | $\alpha_0$ | $\alpha_i$ |
|---|---|---|---|---|
| SVL Return | -1.9862e-04 | 0.3620 | 3.1615e-04 | 0.3620 |
| BIL Return | 4.7187e-04 | 0.2000 | 1.1662e-04 | 0.2000 |
| BNB Return | -4.7324e-04 | 0.2000 | 1.2445e-04 | 0.2000 |
| ARCH (1)-LM Test: 0.05 | | | | |

Source: ARCH (1) model was estimated using Python's arch model function in the arch library

Table 4 presents the estimates of the parameters for autoregressive model, and ARCH model for modeling and forecasting the volatility of the returns as per equation (1) and (2). The results of the ARCH (1)-LM test, conducted at a 5% significance level, provide evidence to reject the null hypothesis and support the existence of ARCH effect or time-varying volatility in all the returns. This finding suggests that the estimated parameters can now be used to model and forecast volatility of return using ARCH model. By doing so, the model can effectively capture and account for the non-normality and heteroscedastic characteristics that are present in the return data, allowing it to generate reasonable forecast (Vasudevan & Vetrivel, 2016).

**Forecast Performance of ARCH Model**

**Table 5**

*Forecast Error Metric Results*

|  | MAE | RMSE |
|---|---|---|
| SVL Return | 0.02628 | 0.03139 |
| BIL Return | 0.01523 | 0.01943 |
| BNB Return | 0.01395 | 0.01666 |

Source: MAE and RMSE were calculated using Python's NumPy library functions

Table 5 presents the results of the Mean Absolute Error (MAE) and Root Mean Square Error (RMSE). Among the three assets, BNB Return exhibits the lowest values for both MAE and RMSE, indicating that the ARCH models provide

relatively accurate volatility forecasts for BNB Return compared to SVL Return and BIL Return.

**Actual Versus Forecast Volatility**

**Table 6**

*Actual Vs Forecast Volatility of Returns*

| | Volatility | | | | | |
|---|---|---|---|---|---|---|
| | Actual | Forecast | Actual | Forecast | Actual | Forecast |
| | SVL | | BIL | | BNB | |
| 12/19/2022 | 0.01148 | 0.01832 | 0 | 0.01124 | 0 | 0.010689 |
| 12/20/2022 | 0.00023 | 0.02179 | 0 | 0.0107 | 0.00244 | 0.010683 |
| 12/21/2022 | 0 | 0.01601 | 0 | 0.01069 | 0.00144 | 0.012831 |
| 12/22/2022 | 0.02457 | 0.01592 | 0.00141 | 0.01068 | 0 | 0.011898 |
| 12/23/2022 | 0.02146 | 0.03354 | 0.00140 | 0.01079 | 0 | 0.010676 |
| 12/26/2022 | 0 | 0.02597 | 0 | 0.01078 | 0 | 0.010670 |
| 12/27/2022 | 0 | 0.01644 | 0.01253 | 0.01067 | 0 | 0.010664 |
| 12/28/2022 | 0.00091 | 0.01599 | 0.00136 | 0.01173 | 0 | 0.010658 |
| 12/29/2022 | 0.00208 | 0.01872 | 0.08651 | 0.01076 | 0 | 0.010652 |
| 12/30/2022 | 0.00024 | 0.01708 | 0 | 0.01683 | 0 | 0.010648 |

Source: Results were generated using Python's pandas library

Table 6 displays the actual and forecast volatility of returns for the three companies during a 10-day period in late December 2022. Notably, there is a significant variability between the actual and forecast volatility of returns for each financial asset. For example, on 12/19/2022, the actual volatility for SVL Return is 0.01148, while the forecast volatility is 0.01832. Conversely, on 12/29/2022, the actual volatility for BIL Return is 0.08651, whereas the forecast volatility is 0.01076. These discrepancies indicate that the ARCH model overestimated the volatility of SVL Return and underestimated the volatility of BIL Return. This highlights the limitations of the ARCH model in accurately predicting short-term volatility. Despite the model's capability in capturing the ARCH effect of time series data, the ARCH model might not fully account for unexpected events or sudden shifts in market dynamics, such as unexpected news announcements, economic factors, pandemics, and global economic shocks.

However, in addition to the ARCH models for modeling and forecasting stock market volatility, there are other advanced econometric models that can deal with issues related to unexpected events or sudden shifts in market dynamics. Such one model is the Exponential GARCH (EGARCH) model developed by Nelson

(1991), that allows for asymmetry in the volatility response to positive and negative shocks, capturing the notion that negative shocks might have a different impact on volatility compared to positive shocks (Gazda & Vyrost, 2003; Goudarzi, 2011; Islam, 2013). Also, Threshold GARCH (TGARCH) model introduced by Zakoian (1994) explains how volatility in financial markets responds to different situations, specifically focusing on the relationship between current volatility and past volatility levels (Gazda & Vyrost, 2003).

## Conclusion

This study employed the ARCH (1) model to analyze and predict the volatility of stock market returns for three companies listed on Royal Securities Exchange of Bhutan; Sherza Ventures Limited (SVL), Bhutan Insurance Limited (BIL), and Bhutan National Bank Limited (BNB). The Augmented Dickey-Fuller (ADF) unit root test confirmed that the return data exhibited consistent statistical properties suitable for modeling volatility using the ARCH model. The ARCH-LM test further confirmed the presence of heteroscedastic characteristics in the return data.

Using the share price data from 2019 to 2022, our out-of-sample forecast using the ARCH (1) model demonstrated accurate predictions, with mean absolute errors ranging from 1.4% to 2.6% and root mean squared errors ranging from 1.7% to 3.1%. These results indicate the effectiveness of the ARCH model in capturing the time-varying volatility of stock market returns.

The findings of this study hold significance for investors and stock market analysts in providing them valuable insights for making informed investment decisions. Market regulators can also benefit from our study findings in developing appropriate regulations and policies for creating a conducive stock market environment. Furthermore, future research can build upon this study by exploring the application of ARCH models and other advanced statistical tools in various domains beyond the stock market.

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# A Qualitative Analysis of HR Managers' Role in the Health Care Sector of Oman

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## Abstract

*This study aims to explore the role of HR managers in Omani hospitals through a qualitative analysis. The research involved in-depth interviews with HR managers and healthcare professionals in various Omani hospitals. The study found that HR managers play a vital role in developing the skills and knowledge of healthcare professionals through training, mentoring, and providing opportunities for professional development. However, several challenges, such as a lack of resources and limited budgets, hinder the effective implementation of HR strategies in healthcare organizations. Further, it was identified that most of the healthcare organizations do not have a dedicated HR department, and the HR activities are performed by the senior officials or medical doctors. The study recommends that every established health care system should have a dedicated HR department where the HR managers can collaborate with healthcare professionals to identify their learning needs and prioritize training and development programs to enhance their skills and knowledge.*

***Keywords:*** *HR Manager, Professional Development, Health Care Professionals, Performance, Training*

## Introduction:

Health care system and Human Resource Management (HRM) both deal with the humans, and are often viewed as two different domains. On one hand HRM deals with the organizational processes like recruitment, training, performance etc., the health care system deals with the health of individuals in the society. The role of HR in health care system is less represented and needs attention as it can address the component of "*care of health care employees*". HRM is a vital function within organizations that focuses on effectively managing human capital to achieve organizational goals and objectives. At the core of HRM is the role of HR managers, who are responsible for implementing HR strategies, policies, and practices that support the organization's overall mission. HR managers serve as the bridge between the organization and its employees, ensuring that the workforce is aligned with the organizational strategy and creating an environment conducive to employee development, engagement, and satisfaction.

**Role of HR Managers**

One of the primary responsibilities of HR managers is talent acquisition and recruitment (Albert, 2019). HR managers conduct interviews, assess candidates' qualifications, and make informed decisions regarding hiring and onboarding. By employing effective recruitment strategies, HR managers ensure that the organization has a skilled and diverse workforce (Malik et al., 2021; Albert, 2019). Once employees are hired, HR managers play a pivotal role in training and development (Ozkeser, 2019). They design and implement training programs that equip employees with the necessary skills and knowledge to perform their jobs effectively. HR managers identify training needs, provide resources for professional development, and foster a learning culture within the organization. Continuous learning and skill enhancement not only benefit the employees but also contribute to the overall growth and success of the organization (Zareen & Khan, 2023; Ozkeser, 2019).

Further, the HR managers are responsible for performance management and appraisal systems. These managers establish performance metrics, provide feedback on employee performance, and facilitate goal-setting processes. By conducting regular performance appraisals, HR managers help employees identify their strengths and areas for improvement, thereby promoting continuous growth and development (Stone et al., 2020). These evaluations have implications on employee promotions, bonuses, and recognition, ensuring that employees are rewarded for their contributions (Zhang et al., 2019). Along this the HR managers also play a significant role in creating a positive work environment leading to better employee efficiency and job satisfaction. This includes addressing employee concerns, mediate conflicts, and ensure effective communication channels within the organization (Dhir et al., 2020). By prioritizing employee well-being and engagement, HR managers contribute to increased employee loyalty and reduced turnover rates (Boutmaghzoute & Moustaghfir, 2021). HR managers also assess the current and future workforce needs of the organization, identify skill gaps, and develop strategies to attract, develop, and retain talent (Mukhuty et al., 2022).

**Health Care Sector in Oman and HRM**

The healthcare sector in Oman has witnessed significant growth and development in recent years. The government has made substantial investments to improve the quality and accessibility of healthcare services throughout the country (Al Abri, 2020; Al Kalbani et al.,2020). Oman boasts a comprehensive healthcare system that provides both primary and specialized care to its citizens. The sector encompasses a network of modern hospitals, clinics, and healthcare centers equipped with state-of-the-art facilities and advanced medical technologies. The government's focus on healthcare infrastructure development, coupled with

initiatives to attract highly skilled healthcare professionals, has played a crucial role in meeting the growing healthcare demands of the population (Al Abri, 2020; Al Kalbani et al.,2020). In addition, Oman has prioritized preventive care and health promotion programs, aiming to enhance public health and reduce the burden of chronic diseases (Fadhil et al., 2022). The commitment to continuous improvement and the emphasis on providing high-quality healthcare services have positioned Oman as a regional leader in the healthcare sector.

As the healthcare sector continues to flourish, effective HRM practices become essential in ensuring the availability of skilled healthcare professionals and the efficient management of human capital (Hamouche, 2021). The role of HR managers is crucial in every organization including the ones that belongs to the health care sector (Thurman et al., 2021). Their responsibilities go beyond recruitment and administrative tasks, extending to fostering a supportive work environment, facilitating continuous learning, and nurturing talent. This article aims to provide a qualitative analysis of the crucial role HR managers play in developing healthcare professionals in Omani hospitals, highlighting the strategies, challenges, and outcomes of their efforts. As Omani healthcare sector is less researched sector from the perspective of the role of HR Managers, this study aims to answer the following questions:

RQ1. What is the current role of HR in healthcare services in Oman?
RQ2. What are the Challenges in the role of HRM within healthcare organizations in Oman?
RQ3. What are the effective solutions that can improve the role and engagement of HRM in the healthcare system in Oman?

**Problem statement**

The healthcare industry in Oman is experiencing rapid growth, leading to an increased demand for competent and well-trained healthcare professionals. HR managers play a crucial role in developing these professionals in Omani hospitals, ensuring they possess the necessary skills and knowledge to deliver high-quality healthcare services. However, HR managers face various challenges in fulfilling this role. Firstly, the scarcity of healthcare professionals in Oman poses difficulties in recruiting and retaining skilled individuals. Secondly, limited training and development opportunities hinder the professional growth of healthcare professionals. Thirdly, the hierarchical structure of Omani hospitals can impede effective communication and collaboration between HR managers and healthcare professionals. Additionally, the cultural diversity within Oman adds complexity, requiring HR managers to be culturally sensitive and aware of the diverse needs and expectations of healthcare professionals. Consequently, it is important to explore the role of HR managers in developing healthcare professionals in Omani

hospitals, examining the current state of training opportunities and the challenges encountered by HR managers. By identifying effective strategies and best practices, HR managers can be better equipped to support the development of healthcare professionals, contributing to the long-term success of Oman's healthcare sector.

## Objective

Based on the research questions, following objectives are established:

- To identify the current role of HR in health care services in Oman.
- To identify the Challenges in the role of HRM with health care organization in Oman.
- To explore effective solutions that improve the role and engagement of HRM in the health care system

## Literature Review

### Role of HRM and HR Manager

While exploring the role of HRM and HR manager in the context of health care sector, it is evident that like any other sector, the HR plays an important role in health care sector as well. This role starts with Talent acquisition and recruitment (Albert, 2019), where the HR manager needs to conduct interviews, evaluate candidates' qualifications, and make informed decisions regarding hiring and onboarding of the health care professionals. The health care sector includes two types of employees i.e., clinical and non-clinical staff (Schute et al., 2020). The employees who are responsible for providing health services are considered one of the most important inputs, performance and benefits of the health care system depend mainly on their skills, motivation and knowledge. (Sheikh et al., 2019). Through the implementation of effective recruitment strategies, HR managers ensure that the organization maintains a diverse and skilled workforce (Malik et al., 2021; Albert, 2019). The next important role that has an implication as per the topic of this study, is the development of employees through training and development (Ozkeser, 2019). HR managers need to create and implement training programs designed to equip employees with the necessary knowledge and skills for effective job performance. Identifying training needs, providing resources for professional growth, and cultivating a culture of continuous learning within the organization are all part of the HR manager's responsibilities (Zareen & Khan, 2023; Ozkeser, 2019). HR needs to establish standards for employee performance based on which the appraisal of the employees can happen. This involves creation of performance metrics, offering feedback on employee performance, and facilitating goal-setting processes (Stone et al., 2020). Regular performance appraisals conducted by HR managers enable employees to identify

their strengths and areas for improvement, fostering continuous growth and development (Stone et al., 2020). These evaluations also have implications for employee promotions, bonuses, and recognition, ensuring that employees receive appropriate rewards for their contributions (Zhang et al., 2019). As the mental health of the employees is also very important, keeping the employees free from stress is an important consideration for HRM (Bocar et al., 2022; Gavin et al., 2022), This involves addressing employee concerns, mediating conflicts, and establishing effective communication channels within the organization (Dhir et al., 2020). This helps in creation of a positive work environment, which enhances employee efficiency and job satisfaction. By prioritizing employee well-being and engagement, HR managers contribute to higher employee loyalty and reduced turnover rates (Boutmaghzoute & Moustaghfir, 2021). Additionally, HR managers assess the current and future workforce needs of the organization, identify skill gaps, and develop strategies for attracting, developing, and retaining talent (Mukhuty et al., 2022). This allows the health care sector to attract better human capital (health care professionals) who can contribute better in the field of health care and can help Oman in improving its health care index.

## Health Care System in Oman

Ministry of Health (MoH) alone owns 49 hospitals (84.5% of the total) and has 84.1% of beds in Oman. Four of these hospitals serve as national referral hospitals, ten are regional hospitals that provide tertiary and secondary medical services (the last five are also provided through Vilayet Hospital) (Al-Kalbani et al., 2020). In addition, MoH operates a network of 30 regional hospitals and 167 health centers that provide PHC services. The government places particular emphasis on the role of the private sector in the medical industry (Al-Kalbani et al., 2020). Participation in this sector will help reduce the increasing burden on the public health system, create a competitive environment between the private and public health care sectors, and thereby improve the quality of care provided in the country. Therefore, the government has devised several strategies to encourage the private sector to invest in health (Alshishtawy, 2010; Kabene et al., 2006). The government is funding the private health care sector through laws that treat the private health care sector on par with those who invest in the industry. They are given equal interests and equal grants. In addition, MoH provides all the technical support that the private sector needs to set up its own hospitals and clinics. (White, 2012). In addition, MoH has privatized most of its support services in hospitals and medical institutions, allowing the private sector to play an important role in the market segment as well (Al-Kalbani et al., 2020).

## HRM and Health Care sector

When analyzing global healthcare systems, it is valuable and crucial to understand the influence of human resources on the reform of the healthcare sector (Cabini

et al., 2006). Although the specific process of healthcare reform varies from one country to another, certain trends can be observed. The three main objectives encompass quality, equity, and efficiency. Various initiatives related to human resources have been implemented to enhance efficiency. One such initiative is outsourcing, which involves converting fixed labor costs into variable costs to improve efficiency (Vermeeren et al., 2014). Examples of these methods include canceling contracts, employing internal contracts, and implementing performance contracts. With good human resources hired in the organization the service quality and patients' satisfaction levels can be improved (Cabini et al., 2006). Health care quality has two types i.e., technical healthcare quality and socio-cultural health care quality. While technical quality deals with the available service to the population and their health conditions, the socio-cultural quality means the level of acceptance of services and the ability to meet expectations of the patients' (Sharif, 2020).

Human resources and their development form the backbone of any health care system; it is people who manage and perform health care services for the population (Kim, 2019). Thus, they must be effective and qualified in carrying out the tasks assigned to them, considering one of the necessary and fundamental factors that add value to the organization and make the organization capable of overlapping and adapting. (Hennekam et al., 2021) With the surrounding factors, it is a training of human resources within the organization, which makes them able to develop and adapt to make management decisions that can improve the management of the organization (Kabene et al., 2006; Vermeeren et al., 2014). At the present time, there is no health institution devoid of human resources and cannot continue or achieve the goals of health care without managing human resources, so we will talk about the importance of the role of human resources for health care, its effective role in the continuity of the health institution. (Dhanpat et al., 2020; Pillai & Senthilraj, 2019). There are many roles for human resources in health care, and each role differs according to the services it provides and the employees working in it, but all roles are important and complementary to each other (Dhanpat et al., 2020; Pillai & Senthilraj, 2019). In this study, we will talk about the importance of human resources and all they can offer to health care and their effective role in contributing to the development of health care, and how to manage human resources successfully and make them useful for health in the community.

### Research Methodology

This study is based on Qualitative research, where interview was conducted with the HR leaders that includes HR Manager and HR director. For this purpose, several hospitals were selected considering the feasibility of conducting this study, and these hospitals were representative of four cities of Sultanate of Oman i.e., Sohar, Al Buraimi, Saham & Muscat. Prior interview appointments were fixed with

the concerned persons and subsequently the interviews were conducted. It was identified that most of the hospitals do not have a dedicated HR Manager or office, and the dealings like performance appraisal and other employee related activities were conducted by Medical Officer or Assistant Director of Financial and Administrative affairs.

## Data Analysis

## Role of HR department and HR Managers

To address this issue, a question was asked to the respondents*, "What is the role of human resources department and HR managers in the health care sector?".* Six of the respondents said that the HR manager is in charge for: regular and sick leave; their role in working on the resignations and appointment of staff in the hospital ;Salary certificates and orders. Reservation of travel tickets and renewal of visas. Thus, we can see that the role of the HR manager in a hospital is more clerical in nature rather than a leadership role. However, one hospital mentioned, "Human resources seek to improve health care in hospitals, so all employees in the hospital must obtain experience and training to gain knowledge that contributes to the success of health care. The role of human resources is not limited to providing service only but has reached the advancement of health care and service recipients. Human resources have a clear role in strengthening performance in health care."

As role of HR is meaningless without understanding the authority level that HR manager enjoys, in order to address these issues, a question was asked to the respondents, *"What are the powers available to the director of HR in the hospital?".* The directors of HR in the hospital said that: The powers they have include a selection of nurses and heads of departments and approval of vacations and annuals Employee data  in addition to appointment, providing training and employment opportunities for health personnel. In terms of authority, he (he or they?) does (if it is 'they', then should be 'do' instead of 'does') not have direct authority and does not have a job registration. One of the hospitals said: the authority available to the manager in human resources for the health care sector is to unify human resources management procedures in all health care sector institutions in order to maintain the efficiency and effectiveness of the services provided by human resources departments in these hospitals, evaluate the performance of employees and submit reports to the company's management, publish advertisements, pay salaries, promotions, support, supervision, interviewing, evaluation and monitoring.

The researchers also considered including the expectations in terms of authority handling as well. For which the powers/ authority expected by the employees needed to be studied as well, for this, a question was asked to the respondents*, "As a director of human resources in the health care sector what power do*

*you think you should be entitled to for the development of hospital services".* Three hospitals said: Determining the number of nurses in the departments and determining working hours. Powers to develop patient service in terms of rooms, medical staff, number of nurses, quality of health equipment, and others. The medical field is known for its challenges and high levels of stress, particularly because managers are responsible for overseeing doctors and nurses. In the healthcare sector, human resources director/manager play a vital role in the development and improvement of employee engagement, job satisfaction, and the quality of care delivered to patients. It is crucial for human resources to collaborate closely with healthcare practitioners to achieve these goals. By employing appropriate strategies and tools, human resources can effectively enhance employee effectiveness and job satisfaction. As the medical field evolves, it is essential for human resources in healthcare to adapt and evolve alongside it, keeping up with the changing dynamics and requirements.

## Employee Appraisal and Performance Appraisal

While addressing the issue of performance appraisal, the first step is to know the basis for which the question *"On what basis are employees in your hospital evaluated?"* was asked to the respondents. one of the hospitals said through a report, the job performance assessment complete for Staff is evaluated by assessment factors which are: Commitment with rules, regulations and occupational safety, the quality level at performance job duties and responsibilities, honesty, and confidentiality, performing duties, respecting work deadlines, Accept advice and guidance, Desire for self-improvement, Cooperation and good conflict, overall approach. Another hospital said: Employees are evaluated through an assessment developed by the Ministry of Health. Also, on the quality of work, activity, and commitment to work times, Human resources employees in health care are evaluated on the basis of competence, good skill, and approved training certificates. Saham hospital told: new employees are evaluated every 3 months, while permanent employees have an annual evaluation. The last hospital said: employees are evaluated through a program called Al-Barwa, and soon another application will be activated to evaluate employees called *Al-Ejadah*.

Further, the hospitals were found to have performance appraisal system based on standard procedure and format prescribed by the MoH, Government of Oman. Thus, the designated authorities were found to have limited role in that. The Question asked to understand this was, **"***How HR managers determine/ evaluate the performance of the employees".*

## Challenges faced by HR managers in Hospitals in Oman

Intending to address this issue a question was asked to the respondents, *"what challenges do you face managing HR in your hospital?".* Five hospitals

informed that, it took a lot of time to change from the old system to the new system. Agreeing with department heads to coordinate employee vacation. Some powers are not fully available to improve the quality of services. Some difficulties in satisfying patients due to the lack of full power to improve quality, the human resource manager in the hospital faces many challenges and pressures, and works under great pressure. Examples of these challenges are: *Staff shortage: due to the limited capacity of nursing programs, and the lack of sufficient supply to meet the growing demand. This lack of arrangements has resulted in an unfair advantage for nurses. * Employee fatigue: Stress has a negative impact on both the manager and patient safety because emotional, mental, and physical exhaustion makes service providers, doctors, and nurses, unable to do their best. One hospital said: No data update.

**Solution you think will solve the challenges you have been through**

So as to address this issue a question was asked to the respondents*, "what solution do you think will solve the challenges you have been through".* Six hospitals said: Speed up the system update process. Digital transformation. Giving more powers to the human resources manager to improve health quality. Disposal of paperwork. Giving more powers. HR in the healthcare sector has the potential to alleviate some of the fatigue experienced by healthcare professionals by implementing reward and recognition strategies, along with comprehensive training programs. These initiatives can contribute to increasing job satisfaction among healthcare workers. Recognizing and appreciating their hard work and dedication through rewards and incentives can help boost morale and motivation. Additionally, providing ongoing training and development opportunities can enhance professional growth and skill acquisition, enabling employees to feel more fulfilled and satisfied in their roles. By prioritizing these strategies, HR department/managers can contribute to improving the overall well-being and job satisfaction of healthcare professionals.

**Conclusions and Recommendations**

**Conclusion**

The study gathered insights from respondents in the healthcare sector regarding the role of HR departments and HR managers. While the majority of hospitals described HR managers' roles as primarily administrative, focused on tasks like leave management and appointment processing, one hospital emphasized the importance of HR department in improving healthcare through employee experience and training. The authority level of HR managers varies, with the power to select staff, approve vacations, and evaluate employee performance being common, but direct authority and job registration were limited. Standardizing HR

management procedures and granting more authority were suggested to enhance efficiency and effectiveness. Employee appraisal factors included commitment, job performance, honesty, and cooperation, with evaluations based on ministry-developed assessments and training certificates. Challenges faced by HR managers included transitioning to new systems, coordinating vacations, limited powers, and addressing staff shortages and fatigue. Potential solutions involved system updates, digital transformation, empowerment of HR managers, and implementing reward and recognition strategies and training programs to improve job satisfaction. Overall, the responses highlighted the multifaceted role of HR departments and managers in healthcare sector, the need for effective authority handling, standardized evaluation procedures, and the importance of addressing challenges through system improvements, digital transformation, and empowering HR managers.

## Recommendations

It was identified that most of the hospitals in Oman are not having trained and qualified HR professionals to deal with the HR practices within the organisation. Most of the time, the appraisal and other HR related process is undertaken by a finance staff or a general director. It also came to notice of the researchers, that many a times a senior doctor is assigned with the task of staff evaluation, hiring and appraisal. This signals a huge deficiency, and as discussed as part of introduction and literature review of this article, there is a strong need to establish a dedicated team of HR professionals who can take care of the work of HR processes and can-do better justice in dealing with Human capital within the organisations. This perhaps is the reason why the HR related work seems more clerical than managerial in nature. It is important for anyone who officiates as an HR manager, to undertake the responsibility of Human Resource Development within the system.

### Direction for Future Studies

Future studies on the role of HR managers in developing healthcare professionals in Omani hospitals are essential to improve the quality of healthcare services provided in the country. By exploring the challenges faced by HR managers, examining the strategies used to develop healthcare professionals, identifying the impact of these strategies on performance, and analyzing the role of HR managers in promoting continuous learning and development, future studies can provide valuable insights that can be used to improve the effectiveness of HR management in Omani hospitals. For this purpose, mixed method approach i.e., mix of Qualitative and Quantitative data is recommended from the side of the researchers.

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# Micro foundations of Decision-making

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## Abstract

*Decision-making is primarily a mental activity of the decision-maker even when the decision-maker is confronted with the decision environment of data and context. This aspect of the psychological process is delineated into the intra-individual sub-systems of cognition, affect, motivation and personality traits. The sub-systems influence the decision-making process in interactive and integrative ways thereby the choice of the decision-maker become an outcome of cognition, affect and personality traits wherein it becomes interacting and intervening variables of significance. The mechanisms of cognition in the form of information-processing and knowledge structures, affect in the ways of the emotional processes of the decision-maker, motivation in the form of the pursuit of goals and personality traits in its constellation.*

*Keywords: Decision-making, Cognition, Affect, Motivation, Personality traits*

## Introduction

Decision-making can be considered the single most managerial core behaviour that tilts the effectiveness, the efficiency and ultimately the success of the manager and the firm in either way. Decision-making becomes a pivotal variable in firm performance and successful firms can be characterised by the quality of decisions made (Jones, 2022). The literature and the empirical studies in decision-making covers a wide range of topics such as rational models, utility models, mathematical models, artificial intelligence models, behavioural models and intuitive models wherein it is implied that models can be categorised in terms of focus on objective and data-driven decisions and models that place greater emphasis on the inner world of the decision-maker. In the behavioural analysis of decision-making, the decisions are loaded with the intra-individual subsystems of cognition, affect, motivation and personality processes over and above the rational or utility models that suggest profit maximisation (Etzioni, 2001; Karimi, Holland, & Papamichail, 2018; Jones, 2022). The cognitive-affective-personality system theory proposed by Mischel and Shoda (1995) presents an interactive and integrative perspective on these intra-individual subsystems in explaining individual behaviour. This paper specifically examines the facets of the decision-maker's intra-individual subsystems, namely cognition, affect, motivation, and personality traits.

**Conceptual Background of the Study: An Explanatory Literature Review**

Decision-making which is evidently the selection of the best alternative from a number of competing alternatives is primarily an outcome of the managers' own cognitive processes, personality processes, emotional processes and motivational dynamics, all of which interact at different levels in the selection of the best alternative (Etzioni,2001; Mohammed & Schwall,2009; Daood, Calluso, & Giustiniano, 2020). It is the intra-individual processes of the individual decision-maker that significantly matter in the decision-making process allowing for the influence of the environmental variables and processes (Christauskas & Stunguriene, 2007; Franken & Muris, 2005). Unavoidably the decision made turns out to be an outcome of three significant factors that influence the predecision-making phase, the actual decision-making process and the post decision-making phase (Mohammed & Schwall, 2009). The task characteristics, the environmental characteristics and individual characteristics influence the entire decision-making process in varying ways depending on the decision problem itself, the decision-marker, and the context of decision wherein the exact nature of influence of a factor may be mathematically determined ( for e.g.) (Mohammed & Schwall, 2009). It may be contended that of the three factors, the least factor that is interactively and otherwise studied is the individual processes (Mohammed & Schwall, 2009). It can be argued that the individual process is dynamic, unstable, and inconsistent across different situations. Consequently, studying these intra-individual processes becomes challenging as they are not easily quantifiable, unlike task characteristics and environmental variables. However, within the realm of behavioral methodology, it is possible to rely on conceptual and empirical research methods. In this study, the conceptual method is employed.

Decision-makers are influenced by their "inner world" of cognitions, motivation, affect/emotion and personality processes, negating the influence of which no decision can be taken in the theoretical and empirical sense and the way the intra-individual sub-systems play a mediating role differs across individuals and situations (Stoker & Moseley, 2013; Mohammed & Schwall, 2009).

Deciphering the intra-individual subsystems, the cognition of the decision-maker, as it relates to information processing and knowledge development, reduces the uncertainty of the situation as it also broadens the availability of alternatives. The cognitive structures and processes involved in the representation and development of knowledge, (the cognition, be it strategic or problem solving), of decision-makers show varying patterns (Schneider & Angelmar,1993; Narayanan, et al., 2011). The cognitive structures and processes are differentiated in the functional aspect of cognitive complexity defined as the differentiation and integration of information processing (Gupta & Govindarajan, 2002; Mohammed & Schwall, 2009). The need for cognition is "the tendency to be engaged in and to enjoy effortful cognitive endeavours" that differs across individuals (Mohammed &

Schwall, 2009, p.255). Individuals with greater cognitive complexity and/or individuals with high need for cognition, are prone to process greater levels of information than individuals with low cognitive complexity and low need for cognition (Mohammed & Schwall, 2009). Decision-makers with a high need for cognition tend to be processors of much information as they enjoy complex cognitive structures and the way they process information markedly differ (Schneider & Anmgelmar,1993; Mohammed & Schwall, 2009).

Due to variations in cognitive structures and processes among individuals, one specific type of cognitive structure that warrants attention is cognitive schemata. These schemata consist of organized knowledge structures that serve different purposes and are characterized by their interrelation with the decision-maker's cognitive complexity and need for cognition. Decision-makers who possess diverse and integrated schemata, representing various aspects of the decision problem, tend to excel in their decision-making abilities.

In the same way human life cannot do without affect, the second intra-individual sub-system, the decision-making process is not free from the individual dynamics of emotion that play its role in the pre-decisional, the decision-making process and the post decisional phases (Loewenstein & Lerner, 2003; Mailliez, et al., 2020). In the dynamics of emotion, the appraisal theory, the most accepted theory of emotional experiences among other explanations, states that the nature of the emotional experiences is determined by the evaluation/judgement of the internal and the external stimuli that the individual is confronted with (Roseman & Smith, 2001). In the way the interpretation changes the emotional experiences also change signalling the fact that what *matters* is the individual's own subjective interpretation. The appraisal of what is going on produce the affective reactions and it is the "information processing basis of affect" that hold the key to the experience of emotion (Carver, Sutton, & Scheier, 2000, p.744). Considering the fact that emotional experiences are processes rather than states and that it is continuous, the emotional experiences of the decision-maker are significant in all the phases of decision (Ellsworth, 2013).

The way the emotions colour the decision-making process is brought out in studies that demonstrate the way emotion can change the same. The influence of discrete emotions, the specific emotional experiences experienced by the individual following specific cognitive appraisals, in the decision-making process is corroborated (Achar, et al., 2016). Moreover researchers have also examined the influence of specific emotion-related (ability-related) process in decision-making (Hess & Bacigalupo, 2011).

The third intra-individual sub-system of the decision-making process is the motives which are the driving forces of behaviour and the motivational processes are

generally explained by the pursuit of goals that are relevant, that has some value for the person and the possibility of accomplishing the goals, given the situation. The choice and the pursuit of goals are mediated by different psychological mechanisms and it assumes complex proportions in varying ways (Larrick,1993). The individuals' dispositions, environmental factors and the person-environment interaction shape the choice/decision that the individual makes which point to the fact that all decisions involve motivational tendencies and processes (Naatanen & Summala,1974; Sell & Dejong,1978; Larrick,1993). Focusing on the individual processes, it has been identified that the goals that the individual pursues are also the product of related intra-individual constructs like values, beliefs, and even cognition and affect (Eccles & Wigfield, 2002). Values can activate a goal directed behaviour as these are more to do with the incentives or the reason for doing an activity (Verplanken & Holland, 2002; Eccles & Wigfield, 2002). Expectancies are beliefs regarding the possibility of achieving the outcome wherein it is implied that absence of motivational beliefs desist the person from pursuing a task and having the beliefs motivate the person to do the task. In other words, the decision is influenced by the individua's own motives, expectancy, and the value that the individual place on the outcome.

The fourth intra-individual sub-system of the decision-making process entails the personality processes of the decision-maker which can be understood at different interpretative schools of psychoanalytic, behavioural, learning, trait, social cognitive phenomenological and even transpersonal. Be that as it may, a parsimonious and a popular way of explaining the personality is the trait approach which interprets personality in terms of a unique constellation of traits, which are enduring stable dispositions. Cervone and Pervin (as cited in Colbert, et al., 2012, p.671), define personality traits as "psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking, and behaving". It is evident in this definition of traits its interactive nature as these stable dispositions are in a process of inter-relationship with cognition, affect and motivation (Mischel & Shoda, 1995).

As a significant predictor of behaviour, trait approach to the study of personality and its relationship with the decision-making process involves examining the way a single trait or a cluster of traits influence the behaviour (Novikova, 2013). Traits are continuous individualised processes that influence the behaviour across situations with cross-situational consistency. The scientific and the neuropsychic basis of traits are evidenced in empirical studies that analyse different dispositional tendencies (Costa & Mc Crae,1998). This differential way of identifying theses sable tendencies have resulted in a number of trait theories that started with the Allport theory of trait and further refinements continue even today (Novikova, 2013). Among all these different classifications of the stable neuro-psychological tendencies the widely discussed and researched is the Big-Five Factor Model of

Personality. The decision-making process of the managers are analysed using this and similar frameworks (Busic-Sontic, Czap & Fuersta , 2017).

It is evident that the intra-individual sub-systems discussed become the foundational structure and function of decision-making process. The line of thinking in the contemporary literature is to "look inward and downward" to understand the foundational mechanisms that lead to specific behaviours or a phenomenon in question rather than searching for macro variables to explain a phenomenon, and these fundamental processes are termed micro foundations (Ployhart & Hale, 2014; Helfat & Peteraf, 2015). In the analytical process a micro foundation or a set of interacting micro-foundations can become causative explanations of a phenomenon and it is in this sense that the intra-individual sub-systems of cognition, affect, motivation and trait-related process become causative and influential in the decision-making process, hence these become the micro-foundations of the decision-making process (Felin, Foss, Heimeriks, & Madsen, et al., 2012). It is to be observed that the micro foundational approach go with the "notions of "reduction" or "decomposition" in science and with "methodological individualism" in the philosophy of social science" (Felin et al.,2012 p.3). In the management literature, it is found that individual level processes like cognition and related inner behavioural processes are treated as micro foundations of molar behaviour like managerial capability (Helfat & Peteraf, 2015).

Having reviewed the literature that throws light on the intra-individual sub-systems that influence the decision-making process, further examination of it leads to greater understanding of the way each of these sub-systems individually and interactively influence the decision-making of a decision-maker.

**The Micro-foundations: Cognition, Affect, Motivation and Personality Traits**

The interaction and integration of the intra-individual subsystems of cognition, affect, motivation, and traits form the micro foundations of decision-making. The reciprocal interactions between these subsystems are represented by double-headed arrows, and their nature will be examined after discussing each subsystem individually.

**The Cognitive underpinnings**

The cognition of decision-making can be the pattern that involves the cognitive structures and processes of constructing, refining, "coercing", and deriving a "reasonable interpretation" about the decision-environment that culminates in the identification of an alternative that become the decision in the problem-context (Daft & Weick, 1984, p.287). Interpretation is the process that involves understanding the environment (decision-environment), making sense of the

situation thereby a coherent picture of the situation is framed, laying bare its meaning and the implications, and developing the conceptual schemes of bringing out meaning, and of assembling the conceptual schemes of the problem (Daft & Weick, 1984). It is the specific patterns of the cognitive structures and processes of the decision-maker that becomes the cognitive representations of the decision-environment that can be labelled the cognitive anchors of the decision-maker (Narayanan, et al., 2011).

By definition and by actual operation, representations of organised knowledge are cognitive structures which can be otherwise represented as organised storehouse of knowledge whereas cognitive process "refer to how knowledge is selected, organized, transformed, stored and utilized" (Schneider & Angelmar, 1993, p.351). In the information processing terminology, information received is the input, selection, organisation, transformation, storing and utilization of information is through the cognitive processes and once the information is transformed it becomes the outcome that is the cognitive structures of decision0maker that differs across induvials reflecting the quality of the decision (Schneider & Angelmar, 1993; Narayanan, et al., 2011). The cognitive complexity of the decision-maker is expressed in the differentiation and in the integration of the cognitive processes and the structures wherein it is implied that the higher the complexity the higher the knowledge load and the lower the knowledge load, the lower the cognitive complexity (Gupta & Govindarajan, 2002).

In the theory of cognitive structures, representations of knowledge can be in the form of "categories, construct systems, causal systems and scripts" which are ways of organising the knowledge (Schneider & Angelmar, 1993, p.349). Categories are nothing but formation of delineated knowledge in relation to the similarity or the underlining relations between attributes or phenomena wherein different categories of knowledge, referring to the different levels of complexity, are formed by the individual. In the increasing structures of cognitive complexity of knowledge differentiation and integration, categories give rise to construct systems, causal systems, and scripts and these are differing and varying conceptual elaborations of abstract to concrete relationships (construct systems), cause-effect relationships (causal systems) and procedural relationships (schemata and scripts) (Schneider & Angelmar, 1993).

Of these differing cognitive structures, categories and construct systems are rather general that are functional in almost all the cognitive operations like reasoning, analytical thinking and the like. However, researchers specifically identify the role of causal systems or cognitive maps (Nadkarni & Barr, 2008) and decision-schemata in the decision-making process (Imbrogno,1997).

Schemata that steer the individual in the process of perception, problem-solving, inferences and most importantly decision-making are subjective theories-in- use, which are also nucleuses to make sense out of a situation (data packets or application-based data repository). Decision-schemata are cognitive structures of organised, differentiated, integrated, and purified knowledge structures that aid the decision-maker in unravelling the complexity of the problem. These are also "conceived as expectation systems with invariant knowledge about the specificity of the situation" (Rulence-Paques, et al., 2005). As repositories of action-packed knowledge, the decision-schemata can enable the decision-maker to make effective and efficient decisions in ways like mapping of experiences, application of information derived from memory, heightening of the information processing, providing the decision-maker, confronted with new situation, the missing details to draw the big picture, construction of templates that aid in problem-solving, easy interpretation of experiences and goal setting and execution (Taylor & Crocker, as cited by  Harris,1994; Mathews, 2022).

When it comes to content of the schemata, it is evidenced that individual possesses myriad schemas as they encounter differing and varying stimuli across different interactional situations (Harris, 1994). Schemata are generally divided into stimuli-domain ones and context-specific ones wherein the former are dominated by the stimulus properties (for e.g., a car schemata) and the latter ones take in much of the information from the situation around which schemata are formed (for e.g., leadership or decision-making schemata) (Harris, 1994). In relation to this Harris (1994) identifies five categories of in-organisation schemata: self, person, object/concept, organisation, and event. Self-schemata define an individual's own personality, roles, values, and organisational interactional situations, person schemata revolve around significant others in the organisation, their identifications, behavioural patterns and importance in the organisation, organisation schemata are concerned with the characteristics, culture and everything that is central as far as it goes with the organisation, object/concept schemata are differentiated as it provides conceptual/ object support to participants to interpret aspects of organisational life and event schemata are for events like staff meetings, departmental meetings, etc., (Harris, 1994).

Decision-schemata which are specifically operative in the decision-making process can be related to self, person, object/ concept, organisation, and event. The decision-makers' own evaluation and knowledge about himself/herself play a significant role in making timely, independent, and effective decisions. Person schemata becomes relevant when group decisions are made and/or when implementation of decisions become significant or when expertise of individuals is required to make correct decisions. The process of decision-making and the related organisational variables are contained in the object/concept schemata. Object/concept decision-schemata facilitate the decision process, and the

decision-maker can identify the hurdles and think of the way of overcoming the hurdles. Organisation decision-schemata provide the decision-maker with information about the way things are conducted in the organisation and event schemata is a source of information that supplies the decision-maker with greater clarity as to how decisions are made, the procedures to be followed and the other dos' and donts'.

A variant tool of cognitive mapping or causal system is called decision tree that maps out the "choices, risks, objectives, monetary gains, and information needs involved" in decision-making (Magee, 1964). It portrays in the form of a tree with its branches and sub-branches the different possibilities or probabilities of different occurrences with its payoffs or success rate that go with each decision alternative. A decision tree consists of a series of nodes and branches where nodes are decision points and branches are the chance events open to the decision-maker. The root nodes are the decision choice points, the internal nodes are the chance points available to the decision-maker and leaf nodes are the end nodes representing the combination of results (Song & Lu, 2015). Branches are the chance outcomes or occurrences that originate from the nodes and at the end of each branch or alternative course is another node representing a choice point. By adding more nodes and branches the tree grows and becomes complex as the problem and alternatives also become complex.

**Affective processes in decision-making**
Decision-making, heavily loaded with the cognitive processes, has been recently studied with reference to the impact of emotion as to the efficacy of the decision-maker and the quality of the decisions made (Hess & Bacigalupo, 2011). Research has shown in three significant ways that emotion greatly influences the decision-making process not easily explicated and evident at the outset (Loewenstein & Lerner, 2003). It is shown that, firstly emotion even unrelated to the decision task influence the judgement taken and the choices made, secondly emotional deficits poorly affect the quality of decisions and thirdly the explanatory and the predictive power of affect in models of decision-making has been greatly recognised by researchers (Loewenstein & Lerner, 2003).

The two streams of research available to evaluate the influence of emotions in decision-making is that of considering the influence of the experience of discrete emotions in decision-making and the relation between specific emotional abilities like emotional intelligence in decision-making (Mailliez, et al., 2020; Brown, George-Curran, & Smith, 2003). About the influence of discrete emotions in decision-making, Loewenstein and Lerner (2003) differentiate two paths by which emotion enters the decision-making process. The first influence is that of expected emotions and the second path is that of immediate emotion wherein in the case of former, the decision-makers anticipate the probable positive and/or negative

emotions in relation to each decision alternative and select an alternative that minimise negative emotions and maximise positive emotions (Loewenstein & Lerner, 2003). Regarding the influence of immediate emotions in decision-making, in the case of direct impact, the experience of positive emotions like happiness can improve the quality of decisions and negative emotions like fear can lower the quality of decisions (Mailliez, et al., 2020). When it comes to indirect impact, the experience of certain immediate emotions can lead the decision-maker to alter the probability or the desirability of future consequences or by changing the way these consequences are assessed. The experience of immediate emotions can colour the way the consequences are perceived and/ or they are expected in a different way so that the immediate emotion continues to play a significant role in the way decisions are taken.

However, the way affect influences decisions are not so straightforward and simple as involved in these valence-based approaches wherein it is implied that the effect of emotion is in accordance with the valence, positive or negative emotion positively or negatively influence the judgement behaviour (Lerner & Keltner, 2000; Bachkirov, 2015). Labelled appraisal tendency framework (ATF) (Lerner & Keltner, 2000), it implies that two emotions of the same valence could lead to different outcomes on decisions as appraisal mediates the relation between emotion and its effect on judgement (Mailliez, et al., 2020). In accordance with this emotion-specific framework the cognitive dimensions that differentially change the impact of emotion on decisions are certainty (the extent to which future events are predictable or unpredictable), anticipated effort (the required level of low or high physical or mental effort), control (whether the event is under the control of the individual or the situation) responsibility (the locus of responsibility, oneself or not oneself, as to something or someone), attentional activity (greater or lower attentional activity on one's part) and pleasantness (the degree to which one feels pleasure or displeasure or at home or not at home) (Lerner & Keltner, 2000; Mailliez, et al., 2020). ATF theory states that emotions of same valence with different appraisal dimensions determine the way emotions influence judgement behaviour. A corollary to the theory is that regardless of the valence positive or negative what is important in the influence of emotion on judgement is the central cognitive dimensions of appraisal and where the decision-maker or the object is placed.

Considering the second stream of research interrelating emotion and decision-making, the construct of emotional intelligence that identifies an inextricable relationship between emotion and rationality "can serve as the necessary bridge between the two" (Hess & Bacigalupo, 2011, p.711). The three key approaches to understanding emotional intelligence are the ability model, the trait, and the mixed approaches (Hess & Bacigalupo, 2011). The ability model posits that individuals differ in their ability to process emotion-related stimuli and to enact adaptive

behaviours. The trait model depicts emotional intelligence along the pattern of behavioural dispositions and a cluster of personality traits which are fundamental to emotional intelligence. The celebrated Goleman's mixed approach delineates emotional intelligence as learned social competencies and skills that characterise high emotional intelligence and low emotional intelligence among individuals (Hess & Bacigalupo, 2011).

In the explication of the nature and the components of emotional intelligence it is evident that the decision-maker's own perception, use, understanding and management of their own as well as the emotion of others are in a better position to contain the ill effects of negative emotions and to ward off the effects of irrational and unfounded emotions (Hess & Bacigalupo, 2011). In accordance with the theorisation of emotional intelligence, the cognitive brain and the emotional brain work in a coordinated way that there is the optimum processing of emotional experiences and decision-related information (Brown et al., 2003). In the Goleman characterisation of emotional intelligence, self-awareness, self-regulation, social awareness, and social relationship skills provide the decision-maker with adequate leverage to take effective and efficient decision (Hess & Bacigalupo, 2011).

**Motivational processes of the decision-maker**
The decision-making process is not without the motivational underpinnings as all decisions involve the pursuit of goals and the dominance of individual (and group processes) processes that influence the selection of an alternative. The selection of an alternative is determined by the individual's own motives that are active and dominant at the time of doing so (Naatanen & Summala,1974). The individual's motive influence the decision-making process by its effect on perception, expectancy, subjective risk and the desired action (Naatanen & Summala,1974). The perception of the meaningfulness of the task and its relevance accompanied by ego-involvement and intrinsic interest facilitates the decision-making process (Butler, 1987). Individuals intrinsically motivated "have chosen to do so voluntarily and because the activity represents a challenge to their existing competencies and requires them to use their creative capabilities" (Noels, Clement & Pelletier,1999,p.24). In the conceptualisation of Deci et al. (Radovan, & Makovec, 2015) the three factors which are important in developing and miniating intrinsic motivation are autonomy, competence, and relatedness . The implication is that decisiosn-makers intrinsically motivated are less influenced by external/contextual factors apparently unrelated to the core process of decision-making.

A significant motivational theory that has implications in decision-making is the valence-instrumentality-expectancy theory which states that "people's actions and choices are lawfully related to the preferences and affective reactions they have for certain outcomes (i.e., valences), their beliefs about whether certain actions lead to particular outcomes or performance levels (i.e., expectancies), and their

perception of the association between primary and secondary outcomes (i.e., instrumentalities)" (Lord, Hanges & Godfrey, 2003, p.22). In the decision-making process, the individuals are motivated to act in an optimal way thereby they consider the impact of valence, instrumentality and expectancy. In the elaboration of this process motivational theory of decision-making, it is contended that it is the effort-performance expectancy that is positively correlated with performance and the inference is that decision-makers with high-effort-performance expectancy are better decision-makers than those with low effort-performance expectancy (Fudge, & Schlacter, 1999). The second factor of importance in the theory is that of the relationship between performance-outcome wherein the decision-maker must have the expectancy that the decision would lead to a favourable outcome and finally the decision-maker must value the outcome than anything else which in other words mean that the decision-outcome must be greatly rewarding to the decision-maker to make the decision.

Yet another motivational theoretical input that explains decision-making is the self-regulatory focus theory derived from the fundamental hedonic principles of approaching pleasure and avoiding pain (Higgins,1997). "It implies that differences in performance, emotions, decision making, and so on could occur as a function of regulatory focus…"(Higgins,1997,p.1282). The two regulatory focus of individuals are promotion -focused and prevention-focused wherein the former self-regulation goes with the achievement of rewards and promotion of goals (individuals are inclined to approach positive outcomes) and the latter focuses on avoidance of punishments where the goal is one of prevention rather than promotion (individuals are inclined to avoid pain) (Kark & Dijk, 2007). Self-regulatory theory states that these are two distinctive motivational states that guide the induvial in their seeking of goals. Promotion-focused individuals are focused on achieving goals and prevention focused individuals are focused on avoiding negatives, criticism, or punishments (Higgins, 1998).

**Decision-making and the personality processes**
The way personality is conceptualised, researched, and practiced is also true of the way the decision-making process of the decision-maker is understood. The key approach used in the study of personality is the trait approach wherein personality is interpreted in the way of fundamental traits determining the consistent pattern of behaviour of individuals across situations. In this analysis, researchers can follow either the variable-centred approach or the person-centred approach (Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, & Potter, 2013). In the variable centred approach, the focus is on the relationship between isolated traits like proactive personality and the corresponding behaviour like the decision-making. In the person-centred approach, the researcher takes the position of "a more configural approach, focusing on the effects of intra-individual constellations of personality traits…" (Obschonka, et al., p.8). It can be surmised that the

decision-making styles and the decision-making processes are not free from the influence of the personality processes like any other organisational behaviour (Bayram & Aydemir, 2017).

Evaluating the influence of personality on the decision-making process in the variable-centred approach involves relating the two in such a way that one finds the definite differential impact of personality, given the same decision-making situation. The five commonly identified general decision-making styles of rational decision-making, intuitive decision-making, dependent decision-making, the avoidant style and the spontaneous style are found to be differentially influenced by the Big Five Factors of extraversion, agreeableness, conscientiousness, neuroticism/emotional stability and openness to experience (Bayram & Aydemir, 2017). The individual adult attachment style developed in relation to the childhood experiences is also found to be good predictor of decision-making styles (Deniz, 2011). The secure and the confident attachment style predicts decision-making styles characterised by self-esteem and vigilance and hypervigilance decision-making is predictive of fearful attachment style (Deniz, 2011).

The Big-Five Factors of personality is found to be predictive of the decision-making process of the decision-maker. The studies of Busic-Sontic, et al., (2017) identify the way the five traits are related to the decision-making process. The trait of openness to experience in its influence on the decision-making process can push the individual to more risky behaviours and preferences where they are likely to be experimenting with uncommon alternatives and more unconventional and creative solutions. The trait of conscientiousness is found to be evident in controlled situations of goal achievement which in the other way implies that such individuals show an unwillingness to pursue goals or choose alternatives which are rather uncontrolled (Brown & Taylor, 2014; Busic-Sontic, et al.,2017). The trait of extraversion forces the individual to be more outward-oriented and challenging and risk-prone in the decisions. They show an inclination to take more risky/uncertain decisions given their broader perception and wider involvement.

The trait of agreeableness is found to be greatly useful in group decision-making situations where one must be cooperative, participative, and democratic. It is the trait that is pro-social, and the decision-maker endears himself to the other parties involved in the decision-making process (Busic-Sontic, et al.,2017). The neuroticism trait evidences itself as anxious, susceptible to influence and emotionally unstable and as such they may not be decision-makers who can be ones dealing with non-programmed decisions (Busic-Sontic, et al.,2017).

In the configural approach to personality the traits are differentially ordered and the traits exercise relatively differential effects on the patterns of behaviour. "A configuration can represent a number of specific and separate processes and

dynamics connected to attributes which are meaningful collectively rather than individually…" (Mathews, 2018, p.54). The configuration of the traits/personality variables change in response to situation or from time to time in the direction of greater adaptive functioning (Dess, Newport, & Rasheed,1993; Mathews, 2018). In a given situation a person can be higher on openness to experience and lower on emotional stability, extraversions and conscientiousness and all of these trait processes can be higher in relation to persuasive behaviour/ humility (Rakshani & Furr, 2021). In these configurational dynamics, the cluster of traits arrange and/or rearrange and reciprocal interactions between these traits that characterise the specific configuration of personality (Mathews, 2018). In accordance with this approach of total personality system that is differentially configured, it is evident that decision-making style can be better understood in a holistic way rather than in a fragmented variable-by variable way ( for e.g. Busic-Sontic, et al., 2017; Pilarik, & Sarmany-Schuller, 2011).

The interaction and integration of affect, cognition, motivation and personality traits that attest to the gestalt effect, is to be brought forward in the consideration of the micro foundations. The gestalt effect implies that neither of these sub-systems independently influence the decision-making process, instead it impacts the decision-making process in an interactive combination process such that "when a set of factors occur together the output or product is a new configuration or gestalt" (Ainley, 2006, p.396).

Emotion, cognition, motivation and traits are so intertwined that none of these processes independently occur in the individual process states (Mischel & Shoda, 1995). Emotion mediate motivation, emotion and cognition influence each other, motivation and traits are interdependent, the activation of traits are mediated by emotional and cognitive processing (Linnenbrink,2006). Each sub-system interacts with the other sub-systems at different levels of activation and processing, such that for example, cognition, affect and traits interact with the goals of the individual leading to the activation of the motivational processes (Schunk & Zimmerman, 1994; Mathews, 2018).

Lazarus (1994) sums up the interactive and the integrative nature of the intra-individual subsystems in the following way:
"Without cognitive activity to guide us, we could not grasp the significance of what is happening in our adaptational encounters with the environment, nor could we choose among alternative values and courses of action. Emotion without thought would be mere activation without the directionally distinctive impulses of attacking in anger or fleeing in fear. Motivation without cognition too would be merely a diffuse, undifferentiated state of activation, a tissue tension that does not specify the consummatory goal or means to attain it. Finally, integration of behaviour would also be impossible without cognitive direction (p.352)."

## Conclusion

The rational and the other mathematical models of decision-making apart from the empirical evidences culled from the literature makes it clear all decisions involve the differential influence of the inner behavioural processes of the decision-maker. Even the best alternative identified by the decision-support systems of artificial intelligence may not be the one preferred by the manager as the intra-individual subsystems exercise their influences. It is the combined and the interactive effect of cognition, affect, motivation and personality traits that finally determines the choice made by the decision-maker. The nuances of these micro foundations of decision-making have both theoretical and empirical basis as it is based on the findings available and it can be further proved through additional studies.

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# Factors Affecting the Performances in Accountancy in BHSEC 2021

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## Abstract

*The current study was designed to examine the underlying causes behind low performance in accountancy in BHSEC 2021 by covering the perception of teachers and students. The sample size of 273 students (137 girls and 136 boys) from different schools and 68 teachers (16 females and 52 males) were chosen by using a simple random sampling method. Data were collected using a structured questionnaire in the google form. The data collected was tabulated and results were interpreted through mean values, frequencies, standard deviations and percentages. The study revealed different question patterns and more of competency-based question (CBQ) as the major cause of low achievement in accountancy by the perception of students and teachers. This study revealed that Bhutan Council for School Assessment and Examination (BCSEA) and Department of Curriculum and Professional Development (DCPD) have not oriented teachers on change of question pattern.*

*Keywords: Accountancy, Performance, Teacher Experiences, Examination, New School Curriculum.*

**Introduction**

Accountancy, as a subject, was introduced into Bhutanese education in 1978 which was affiliated to Indian School Certificate (ISC), Board of Delhi University (DCPD, 2022). Bhutan Council for School Examinations and Assessment (BCSEA) took over assessment when the subject was introduced in the higher secondary schools in the country, however, the curriculum materials remained the same till the reform was initiated in 2016 in line with the Bhutanese Accounting Standards (BAS). Accordingly, the curriculum reform for Accountancy subject was initiated in 2016 with the development of a curriculum framework for the subject.

Accounting plays a crucial role in capturing and quantifying financial transactions within a business, converting this information into meaningful reports, and presenting it to decision-makers. Its significance extends beyond specific professions, as it is a subject that is relevant to individuals in various fields. Accounting is widely recognized as an essential component of our lives, aiding our comprehension of the world and our own endeavours. Unfortunately, students' performance in the subject has not been encouraging, especially at the Bhutan Higher Secondary Education Certificate (BHSEC) 2021.

Several factors such as students' learning styles and teachers teaching styles ( Alfordy and Othman (2021); learning abilities, gender and race (Hanson, 2000); and family income levels, and students and teachers attendance (Bang, 2020). Moreover, students' language competence in English and classroom participation is found to be significant for students' performance in subjects like Accountancy (Harb & El-Shaarawi, 2009).

The Pupil Performance Report (PPR) from the BCSEA showed a drastic decline in the performance rate of students in Accountancy subject in BHSEC from 94% to 39% in 2021 as compared to 2020. In other words, more than 61% of the students failed in the Accountancy subject in BHSEC in 2021 which has prompted the current study. It was observed from the literature that students' academic performance is determined by a number of complexity of factors. The study tries to recognize causes of low performances in Accountancy subject from the teachers and the students' perspective and consequently, avoid failure in Accountancy subject.

Since the performance of the students in Accountancy were comparatively similar in the past, the need to study the performances of students in Accountancy subject was not felt. However, conducting this study is expected to provide convincing evidence for improvement in the performances of students in Accountancy.

## Literature Review

The quality of an educational institution is often reflected in the academic performance of its students (Nabilah et al., 2014). However, there are noticeable differences in the performance of students across different disciplines, despite having access to the same facilities, teachers, and curriculum. Several research studies have been conducted to examine and understand the various factors that influence academic achievement at different levels of education (Browny & Sunniya, 2002; Nabilah et al., 2014; Vundla, 2012). These studies aim to identify and analyze the numerous variables that contribute to variations in students' scores.

Various factors have been identified as contributing to poor academic performance, including changes in schools, family disruptions, teacher absences, health issues affecting both parents and students, and learning disabilities caused by visual or hearing impairments. These factors were highlighted in the study conducted by Browny and Sunniya (2002). Additionally, other studies (Mbugua et al., 2012; Vundla, 2012) have identified factors such as a lack of trained teachers, inadequate teaching facilities like laboratories and libraries, insufficient funds for necessary equipment, limited teaching and learning resources, overcrowded classrooms, demotivated teachers, ineffective supervision, interference by the civil service in the school system, frequent teacher and principal transfers, and automatic promotion of students.

Furthermore, poor academic performance has been linked to improper teaching methods, negative teacher behavior, inadequate subject knowledge, and student fear of particular subjects. These factors were highlighted in studies conducted by Enu, Agyman, and Nkum (2015), Igwe and Ikatule (2011), Tshabalala and Ncube (2013), and Ezeagba (2014).

The field of accounting encompasses financial accounting, managerial accounting, and auditing (Hendriks & Dunn, 2021). It is widely recognized as a particularly demanding subject within business programs, often characterized by low pass rates and high failure rates (Velasco, 2019). The poor performance of accounting learners can be attributed to various factors. Hendriks and Dunn (2021) asserted that the socio-economic environment, school culture and management, qualification of educators, curriculum coverage and absenteeism, lack of resources, problems understanding medium of instruction, parental involvement and the learners themselves are some of the factors affecting the performances of the students.

Furthermore, the poor performance of students in accounting can be attributed to factors such as students' negative attitudes towards the subject, their academic aptitude, and their past and present academic performances. Insufficient effort and

lack of motivation on the part of students also contribute to low performance in accounting (Atieh, 2013).

Additionally, the qualifications and experience of teachers play a significant role in students' academic performance in accounting (Omotayo, 2014; Okon, 2002). Scholars and researchers have highlighted numerous factors that contribute to high failure rates in accounting, which can be broadly categorized as student-related factors and teacher-related factors (Velasco, 2019). The personal responsibilities of learners and the expectations placed on them by tutors also have a significant impact on student performance in accounting (Atieh, 2013; Omotayo, 2014; Okon, 2002; Velasco, 2019). The performance of learners depends on their readiness and commitment. Effective learning can only take place if the learners maintain motivated and undisrupted learning (Hendriks & Dunn, 2021). Moreover, poor effort-reward system, lack of student's motivation to learn and poor studying habits of students are the reasons for poor performance in Accountancy (Atieh, 2013).

Therefore, this paper has aimed to examine the main cause of high failure rate in Accountancy in BHSEC examination for class XII in Bhutan.

## Methodology

This study was conducted through quantitative approach. The study explains phenomena with the use of quantitative data that are analyzed using mathematical statistics as explained by Creswell (1994). Moreover, Cohen's (1980) definition of quantitative research has mainly considered empirical methods and empirical statements. Thus, quantitative method was very much relevant and appropriate for this study.

**Design**: Quantitative survey questionnaire was employed to study the reasons for underperformance in Accountancy in BHSEC 2021. Survey questionnaire is considered as a classical approach of collecting data (Dalati & Gomez, 2018). The authors mentioned five advantages: low cost, reduction in biasing error, greater anonymity, considered response and consultation, and accessibility.

**Sampling:** Purposive sampling was used to select 68 accounting teachers and 273 students as samples for the study. This particular sampling technique is employed because it involves a purposeful selection of participants based on specific qualities that are relevant to the study's objectives. It is a non-random sampling method deliberately chosen to ensure alignment between the participants' characteristics and the research's purpose (Etikan, Musa & Alkassim, 2016).

**Participants:** Out of 73 schools that provide Commerce Stream for class XII (BCSEA), 68 teachers (52 males and 16 females) teaching Accountancy participated in a quantitative survey. The teachers' turnover for the survey was 93.15%. Moreover, 273 students (136 boys and 137 girls) responded to the survey questions. Every teacher from each school randomly selected four students who appeared the exam in 2021. The response rate for students was 100%. This could be because they were directly selected by their teacher. However, one of the teachers selected one extra which resulted with 273 students.

**Data collection:** The questionnaire was designed adopting key questions and themes from research tools available online. The survey questionnaire was prepared in the google form and sent to teachers who have taught class XII Accountancy in 2021 and to the commerce students who have appeared for BHSEC in 2021. The students were contacted by the respective teachers and randomly selected from the groups that they have created using Telegram, one of the widely used social media in the school. The questionnaire contained both closed and open-ended questions to allow respondents to share the response in detail.

**Analysis:** The descriptive analysis of the data collected through survey was administered using MS Excel Worksheet. The percentage, frequency and mean were computed to examine Bhutanese teachers' engagement with and in educational research. Descriptive statistics serve the purpose of organizing and summarizing data in a structured manner, providing a description of the relationship between variables within a sample or population (Kaur, Stoltzfus &Yellapu, 2018). In educational research, frequencies are employed to analyze the demographic information of respondents and sources of data.

**Ethical consideration:** The approval for permission to conduct a survey with the teachers and students were sought from the school principals. The consent to participate for this survey was sought from the individual teachers and the student before a survey was done. The researcher ensured that confidentiality was maintained and the data collected was used only for the purpose of this study.

**Findings**

**1. Demographic Information:**
**a. Qualification:** Out of 68 respondents (teachers), 79.4 % (n=54) have a degree certificate while 20.6% (n=14) have completed a Master degree. On the other hand, 86.7% (n=59) respondents have been trained at Samtse College of Education while 13.3 % (n=9) of them who are from the private schools have not been trained in teaching.

**b. Teaching experiences:** Table 1 shows the teaching experiences in teaching accountancy. 13% (n=9) teachers had been teaching accountancy subject for less than 3 years, 19% (n=13) had been teaching for 3-5 years, 47% (n=32) maximum number of teachers had been teaching for 5-10 years and 21% (n=14) of the teachers had been teaching for more than the 10 years. The detailed information is given in table 1.

**Table 1**
*Teaching experiences*

| Teaching Experiences in Accountancy | No. of teachers | Percentage |
|---|---|---|
| Less than 3 years | 9 | 13% |
| 3-5 years | 13 | 19% |
| 5-10 years | 32 | 47% |
| Above 10 years | 14 | 21% |
| | 68 | 100% |

Source: Primary data

**2. Relationship between number of years in services and students' performances**
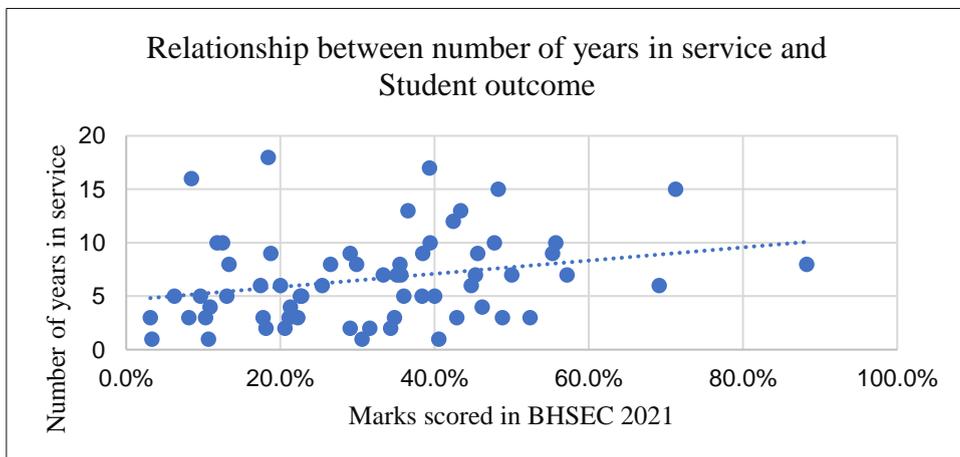


Figure 1: Correlation between teaching experiences and students' performances

Figure 1 represents the correlation between number of years in services and the marks scored by students in BHSEC 2021. The weak positive correlation (r= 0.262146) was observed between the teachers' teaching experiences and student performances. The number of years in the teaching service of the teachers have no significant influence on the overall performance of students in accountancy.

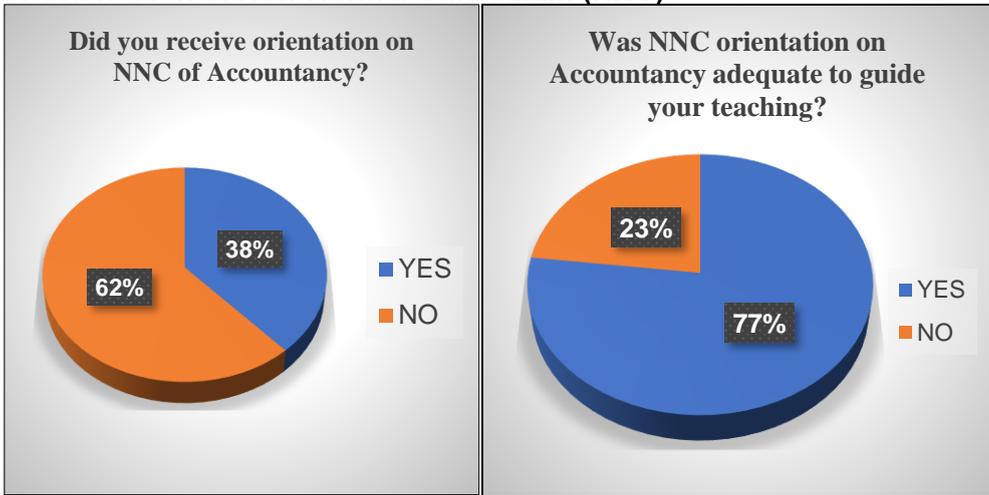## 3. Orientation of New Normal Curriculum (NNC)



Figure 2: Orientation on accountancy Figure 3: Adequacy of Orientation

Figure 2 represents number of teachers who have received orientation on NNC of accountancy. Only 38% (n=26) of teachers teaching accountancy subject in 2021 received orientation on NNC while the majority of teachers 62% (n=42) have not received orientation on NNC.

Figure 3 represents the adequacy of orientation on NNC by Department of Curriculum and Professional Development (DCPD). 77% (n=53) of teachers who have received NNC orientation have found it adequate to guide their teaching while 23% (n=15) of the teachers didn't find it adequate to guide their teaching.

## 4. Relevancy of Accountancy subject
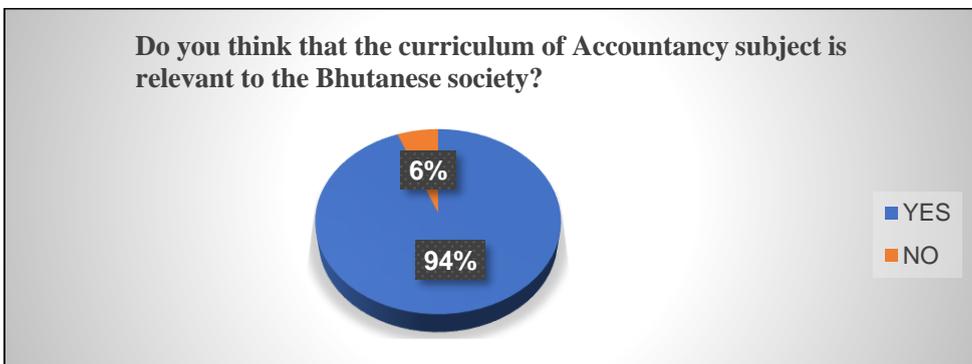


Figure 4: Relevancy of Accountancy

Figure 4 shows the participants responses on relevancy of accountancy subject to the Bhutanese society. 94% (n=64) of teachers found accountancy subject relevant to the Bhutanese society and 6% (n=4) of teachers found revised accountancy subject irrelevant to the Bhutanese society.
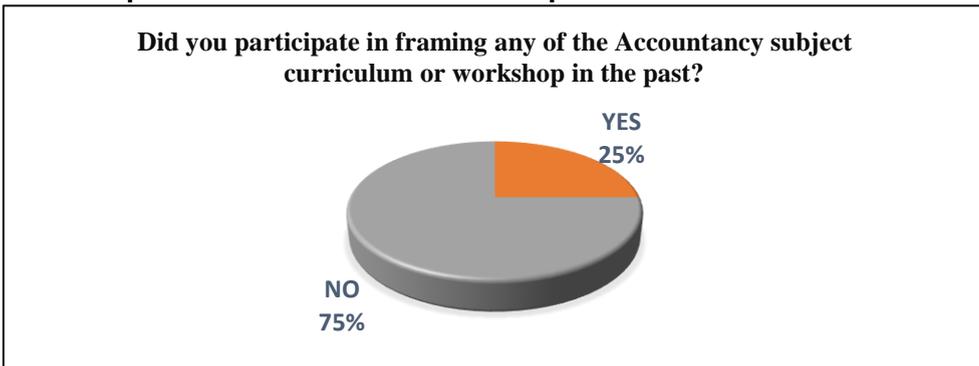
## 5. Participation in Curriculum Workshop



**Did you participate in framing any of the Accountancy subject curriculum or workshop in the past?**

YES
25%

NO
75%

Figure 5: Participation in curriculum workshop

Figure 5 represents number of teachers involved in curriculum workshop by DCPD. 75% (n=51) of the accountancy teachers have not participated in any of the accountancy curriculum workshops while 25% (n=17) of accountancy teachers have participated in curriculum workshops conducted by the Department of curriculum and Professional Development.

## 6. Participation in BCSEA workshop



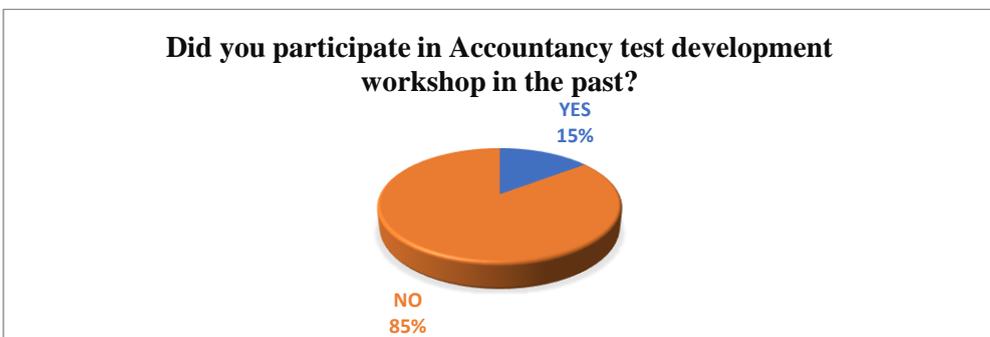**Did you participate in Accountancy test development workshop in the past?**

YES
15%

NO
85%

Figure 6: Participation in Test Development

Figure 6 represents the number of teachers involved in test development workshop by BCSEA. There are 15% (n=10) of the teachers who have participated

in the accountancy test development workshop while 85% (n=58) of the teachers have not been involved in the test development workshop.
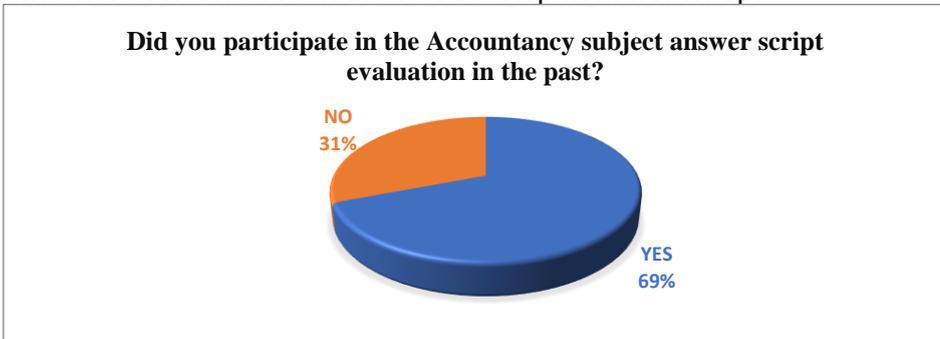


Figure 7: Participation in Evaluation

Figure 7 represents the number of teachers involved in answer script evaluation by BCSEA. 69% (n=47) of the teachers have participated in accountancy subject answer script evaluation while 31% (n=21) of the teachers have still not availed the opportunity.

## 7. Relationship between teachers' participation in BCSEA workshop and students' performance

Figure 8 represents the relationship between fail % of students taught by teachers who attended and not attended test development workshop by BCSEA. The performance of the students taught by teachers who attended the test development workshop outperformed the performances of students taught by the teachers who did not attend the test development workshop.
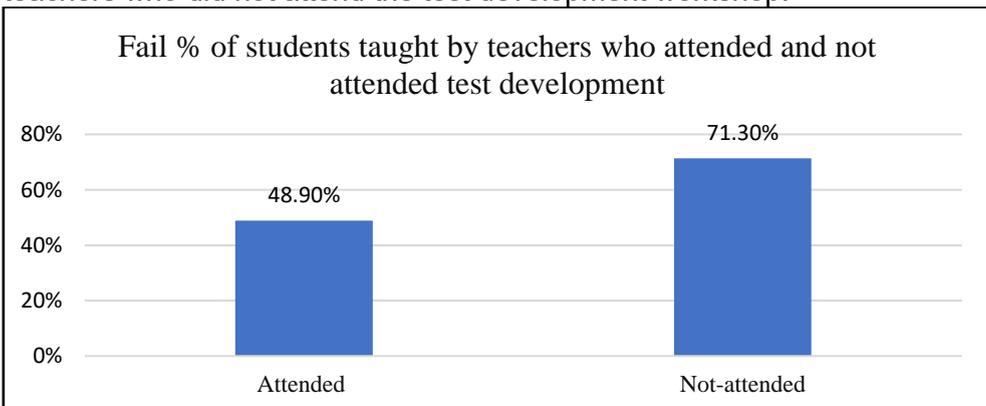


Figure 8: Relationship between teachers' participation in BCSEA workshop and students' performances

It was learnt that 48.9% of the students taught by teachers who participated in the test development workshop and 71.3% of the students taught by the teachers who did not participate in test development workshop failed in exam.

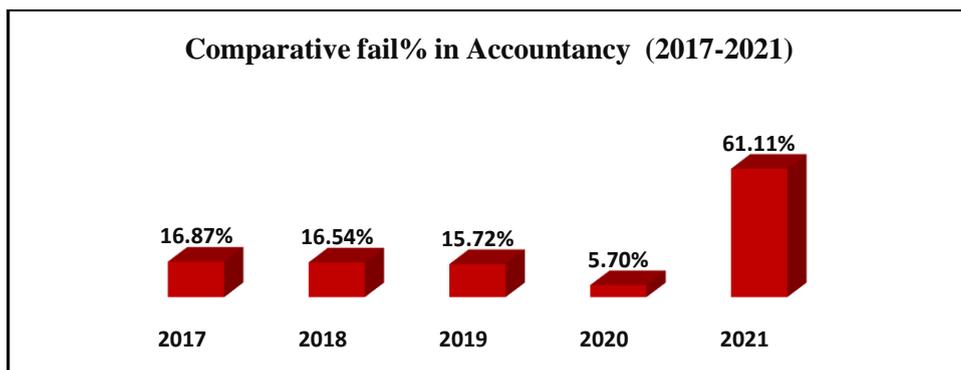## 8. Commerce students' performances in Accountancy subject in BHSEC



Figure 9: Comparative fail% in accountancy

Figure 9 shows failed% of students in last five years. In the 2021 academic year, only 39% (n=1919) of 4,934 class XII students who appeared for the Accountancy exam passed. In other words, 61% (n= 3015) of class XII students failed in the Accountancy subject which is the highest percentage of failure so far which has prompted to find out the causes of high percentage of failure. In the last five years, fail percentage in 2020 was lowest at 5.7% while it has remained stable at 15-16% in 2017-2019.

## 9. School-wise fail percentage in Accountancy in 2021
There are more than 50% of students who have failed in accountancy in 62 schools which offered accountancy subject and it is alarming to notice that the schools with fewer students have more than 90% students failed in accountancy. It is observed that 47% (n=34) schools have students fail percent above 70% in Accountancy subject (see annexure 1).
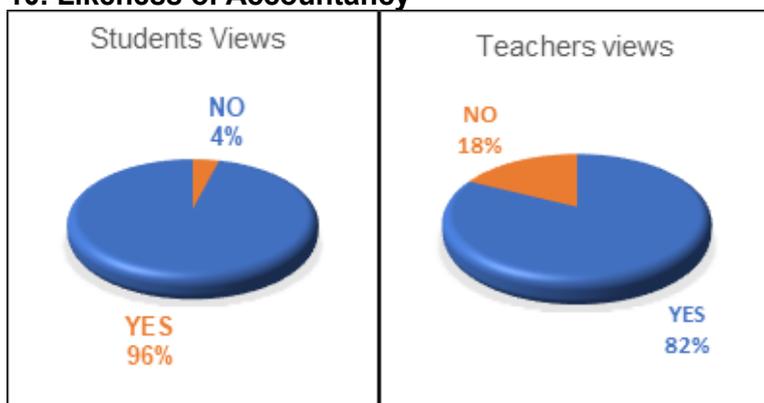
## 10. Likeness of Accountancy



Figure 10: Students and teachers views on accountancy

Figure 10 represents students and teachers views on how many percentages of students like accountancy. 96% (n=4737) of the class XII students indicated that they liked Accountancy and 4% (n=197) disliked the subject. While teachers indicated that 82% (n=4046) of the students liked and 18% (n=888) disliked Accountancy.

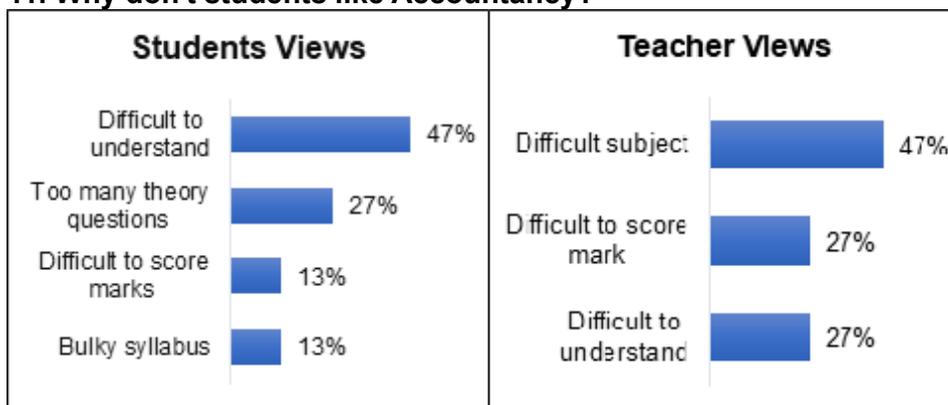## 11. Why don't students like Accountancy?



Figure 11: Why students don't like accountancy

Figure 11 represents students and teachers views on why students don't like accountancy. Students dislike Accountancy as it is found to be difficult to understand (47%), too many theory questions (27%), difficult to score marks (13%) and bulky syllabus (13%) while teachers mentioned that students dislike

Accountancy as it is considered difficult subject (47%), difficult to score mark (27%) and difficult to understand (27%).

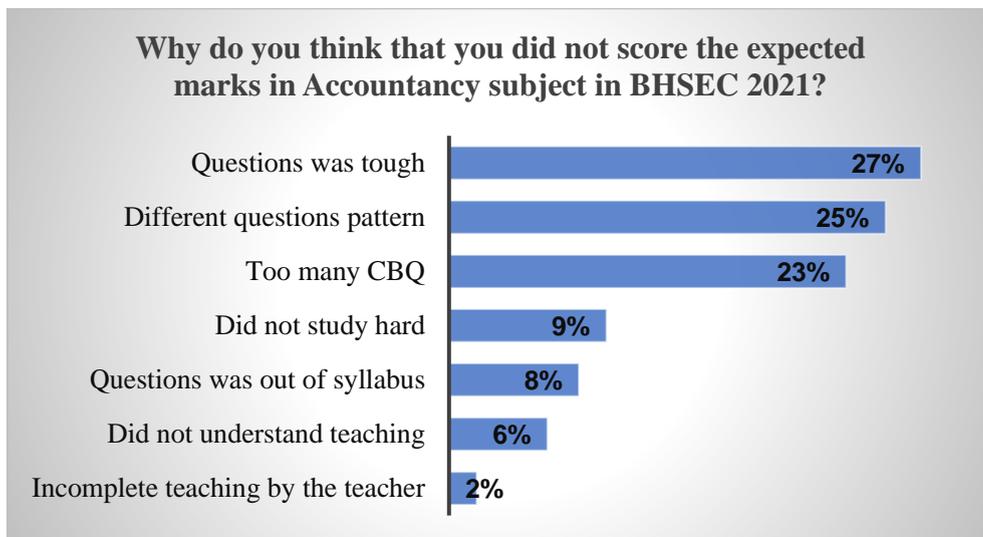## 12. Student's perspective in not scoring expected marks in accountancy subject examination 2021



Figure 12: Reasons for not scoring expected marks

Figure 12 shows the reasons provided by the students for not scoring expected marks in accountancy exam. The students indicated various perspectives on why they were not able to score expected marks in Accountancy. The majority of the students 27% (n=1332) mentioned that it was due to tough questions, 25% (n=1234) said it is due to different question pattern, 23% (n=1134) attributed to too many CBQ, 9% (n=444) said it is because of the students not studying hard, 8% (n=395) said it was because the questions were out of syllabus, 6% (n=296) did not understanding teaching and incomplete teaching by the teacher 2% (n=98) for poor performances in Accountancy.

## 13. Remedial class to weaker students

Figure 13 represents remedial measure taken up by teachers to help students in accountancy. There are 87% (n=4293) of the students who responded that their Accountancy teacher conducted remedial measures to help them in Accountancy. However, 13% (n=641) of the students responded that their Accountancy teacher did not conduct any remedial measure to help in the subject.
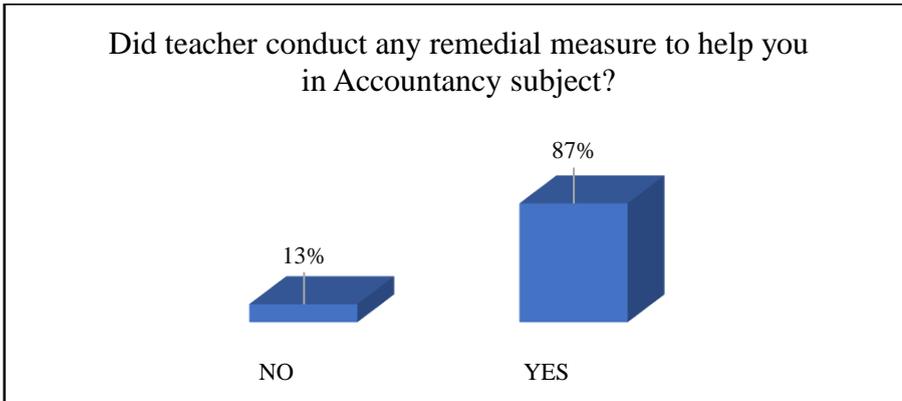
Figure 13: Remedial measure

## 14. Teachers' view on why students performed poorly in Accountancy in the 2021 examination.



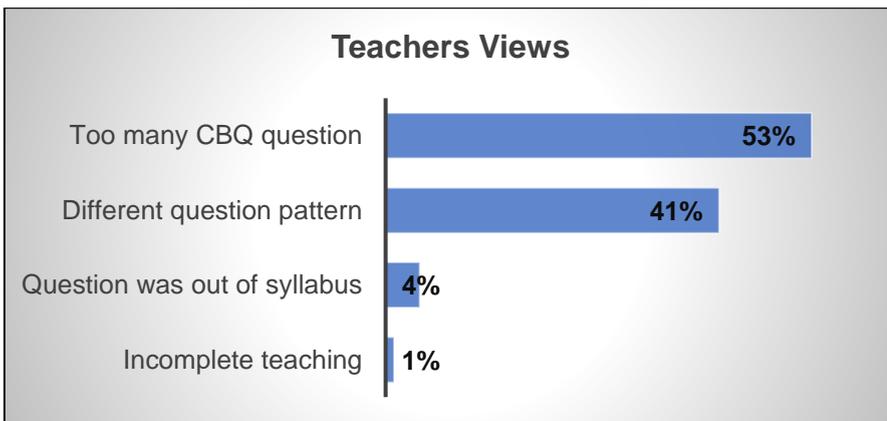Figure 14: Teachers views on students performing poorly in accountancy

Figure 14 represents reasons provided by the teachers on poor performances in accountancy by the students. Teachers indicated various reasons for the students' poor performance in Accountancy in 2021 such as too many CBQ questions (53%), different question pattern (41%), question out of syllabus (4%) and incomplete teaching (1%).

**Discussion**

This study found that the BHSEC 2021 recorded the lowest performances in Accountancy with 61% (n=3010) of class XII failing the exam. It was observed that there were five schools in which 90% of the students have failed in Accountancy. Therefore, this paper examined the factors which caused a high number of failures in Accountancy in BHSEC 2021 in Bhutan.

The performance of learners depends on their readiness and commitment. According to Hendriks and Dunn (2021), effective learning happens only when the learners are motivated and undisrupted learning continues. Similarly, the study concluded that students disliked Accountancy as they find it difficult to understand, the question paper contains too many theory questions and bulky syllabus. This finding is concurrent to Velasco (2019) who proclaimed that since the accounting subject is procedural in approach and topics are sequential in nature, students cannot catch up if the basic skills are not developed. The study concluded that the teachers' preparedness and teachers' participation in test development have contributed to the poor performance in Accountancy in BHSEC 2021.

It was observed that 75% of the teachers have not participated in any of the Accountancy curriculum workshops and only 15% of teachers have participated in Accountancy test development workshops. The performance of students taught by teachers who attended the test development workshop outperformed the performance of students taught by the teachers who did not attend the test development workshop which indicates that every teacher should be cognizant on the change of curriculum and question patterns. Moreover, teachers should be oriented or involved in the test development process by the BCSEA. However, teachers' teaching experiences of the subject was negatively correlated to the performances of the students. The majority of the student respondents also reported that they couldn't score the expected marks in Accountancy since questions were tough and students found the question pattern different than the patterns they were taught in the school.

Moreover, the students reported that the main challenge in learning Accountancy is in memorizing Bhutan Accounting Standard (BAS), rules/concepts and understanding accounting terminologies. The paper also uncovered the existence of the gap between the curriculum and assessment. The teachers claimed that there were many Competency-based questions (CBQ) and the question patterns were different from the past years. This finding indicate that students used inappropriate learning approach because Bryne, Flood and Willis (2002) mentioned that deep and strategic learning methods improve accounting marks. Moreover, Davidson (2002) found that accounting performance is affected by deep-study approach when questions become complicated.

Teachers reported that the poor performance of students in Accountancy subject was due to inclusion of some of the questions in BHSEC which was completely out of the syllabus. Based on the students' failure to grasp CBQ which mostly consist of case study, the teachers' attribution of failure to students' skills and capabilities is affirmed. The Bhutanese students are challenged on theoretical questions like case study which may be caused by poor understanding and comprehension in English. However, there is mix reaction for the requirement of competence in English. For instance, Aidoo-Buameh and Ayagre (2013) argues that accounting subject is predominantly concerned with calculations rather than comprehension and posits that students can still perform better without a good score in English. On the contrary, Harb and El-Shaarawi (2009) mentioned that students' language competence in English and classroom participation is found to be significant for students' performance in subjects like Accountancy (Harb & El-Shaarawi, 2009). However, there is no specific statistical evidence from this study to support this. Thus, a need for a more comprehensive study is highly evident.

## Conclusion and Recommendation

The findings from the study indicated that the change in question pattern and too many CBQ has affected the students' academic performance in accounting. There were only a few teachers engaged in the BCSEA test development workshop who were aware of the change in question pattern while many teachers kept on referring to past question papers which mostly consist of practical questions. Therefore, it has appeared imperative to include more teachers in the process of curriculum reforms and test developments. Moreover, the concerned agencies like BCSEA and DCPD should provide equal opportunities to schools based on region and revisit the existing criteria. Moreover, BCSEA needs to orient all accountancy teachers whenever question patterns are changed and bridge the gap between what students are taught (curriculum) in the classroom and what they are assessed for (questions in exams).

According to Velasco (2019), accounting is inherently a challenging subject, and it is highly advisable for teachers to focus on reinforcing fundamental skills-building strategies to enhance students' comprehension of the subject. Moreover, teachers should focus on CBQ and gear towards teaching competency-based curriculum instead of letting students memorize theories and making students learn through traditional drill and practice methods.

The more detailed study is recommended to analyze both the demographic profile of the students and their performance in accounting to determine its correlation. This study is a prelude to a higher analysis and focused only on the response received from the teachers and students of academic year 2021. A large-scale study can be conducted in order to validate the present study.

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## Annexure 1: School Wise Fail Percentage in Accountancy 2021

| School Wise Fail Percentage in Accountancy 2021 |
|---|---|---|---|---|
| Sl | Dzongkhag / Thromde | School | Total Std | FAIL% |
| 1 | Zhemgang | Zhemgang CS | 32 | 96.9% |
| 2 | Wangdue Phodrang | Samtengang CS | 30 | 96.7% |
| 3 | Lhuntse | Tangmachu CS | 32 | 93.8% |
| 4 | Samtse | Samtse HSS | 37 | 91.9% |
| 5 | Thimphu Thromde | Pelkhil School | 130 | 91.5% |
| 6 | Paro | Yoezerling HSS | 52 | 90.4% |
| 7 | Sarpang | Sarpang CS | 68 | 89.7% |
| 8 | Dagana | Daga CS | 75 | 89.3% |
| 9 | Trashigang | Trashitse HSS | 46 | 89.1% |
| 10 | Samdrup Jongkhar Thromde | Dungsam Academy | 34 | 88.2% |
| 11 | Thimphu Thromde | Kelki HSS | 152 | 87.5% |
| 12 | Sarpang | Pelrithang HSS | 23 | 87.0% |
| 13 | Trashigang | Bartsham CS | 46 | 87.0% |
| 14 | Gelephu Thromde | Gelephu HSS | 105 | 86.7% |
| 15 | Phuntsholing Thromde | Norbu Academy | 47 | 83.0% |
| 16 | Trashigang | Jampeling CS | 46 | 82.6% |
| 17 | Pemagatshel | Yelchen CS | 62 | 82.3% |
| 18 | Bumthang | Jakar HSS | 105 | 81.9% |
| 19 | Tsirang | Mendregang CS | 38 | 81.6% |
| 20 | Paro | Shari HSS | 48 | 81.3% |
| 21 | Samtse | Tendruk CS | 41 | 80.5% |
| 22 | Mongar | Yadi CS | 25 | 80.0% |
| 23 | Chukha | Gedu HSS | 34 | 79.4% |
| 24 | Dagana | Gesarling CS | 71 | 78.9% |
| 25 | Paro | Rigzom Academy | 47 | 78.7% |
| 26 | Lhuntse | Lhuentse HSS | 36 | 77.8% |
| 27 | Wangdue Phodrang | Gaselo CS | 62 | 77.4% |
| 28 | Pemagatshel | Nganglam CS | 66 | 77.3% |
| 29 | Thimphu | Wangbama CS | 63 | 74.6% |

| 30 | Trashiyangtse | Tsenkharla CS | 35 | 74.3% |
|----|---------------|---------------|-----|-------|
| 31 | Samdrup Jongkhar | Karmaling HSS | 34 | 73.5% |
| 32 | Thimphu Thromde | Babesa HSS | 35 | 71.4% |
| 33 | Trashiyangtse | Bayling CS | 31 | 71.0% |
| 34 | Trongsa | Tshangkha CS | 31 | 71.0% |
| 35 | Phuntsholing Thromde | Phuentsholing HSS | 87 | 70.1% |
| 36 | Mongar | Sherub Reldri HSS | 53 | 69.8% |
| 37 | Dagana | Drukjegang CS | 36 | 69.4% |
| 38 | Mongar | Kidheykhar CS | 19 | 68.4% |
| 39 | Zhemgang | Sonamthang CS | 33 | 66.7% |
| 40 | Sarpang | Norbuling CS | 35 | 65.7% |
| 41 | Bumthang | Sonam Kuenphen HSS | 23 | 65.2% |
| 42 | Wangdue Phodrang | Bajothang HSS | 37 | 64.9% |
| 43 | Punakha | Dashiding HSS | 31 | 64.5% |
| 44 | Paro | Drukgyel CS | 73 | 64.4% |
| 45 | Mongar | Drametse CS | 25 | 64.0% |
| 46 | Thimphu Thromde | Rinchen HSS | 52 | 63.5% |
| 47 | Chukha | Chukha CS | 73 | 61.6% |
| 48 | Paro | Shaba HSS | 26 | 61.5% |
| 49 | Thimphu Thromde | Nima HSS | 122 | 60.7% |
| 50 | Samdrup Jongkhar | Minjiwoong CS | 33 | 60.6% |
| 51 | Gasa | Bjishong CS | 45 | 60.0% |
| 52 | Samtse | Dorokha CS | 37 | 59.5% |
| 53 | Thimphu Thromde | Yangchenphug HSS | 184 | 57.6% |
| 54 | Thimphu Thromde | Druk School | 7 | 57.1% |
| 55 | Thimphu Thromde | Motithang HSS | 189 | 56.6% |
| 56 | Samdrup Jongkhar | Orong CS | 76 | 55.3% |
| 57 | Chukha | Pakshikha CS | 53 | 54.7% |
| 58 | Tsirang | Damphu CS | 79 | 54.4% |
| 59 | Paro | Utpal Academy | 78 | 53.8% |
| 60 | Gelephu Thromde | Kuendrup HSS | 67 | 52.2% |
| 61 | Phuntsholing Thromde | Yonten Kuenjung Academy | 143 | 51.7% |

| 62 | Haa | Gongzim Ugyen Dorji CS | 41 | 51.2% |
|----|-----|------------------------|-----|-------|
| 63 | Punakha | Punakha CS | 72 | 50.0% |
| 64 | Mongar | Gyalpoizhing HSS | 21 | 47.6% |
| 65 | Thimphu Thromde | Dechhenchoeling HSS | 38 | 44.7% |
| 66 | Gelephu Thromde | Losel Gyatsho Academy | 176 | 44.3% |
| 67 | Haa | Jampel HSS | 143 | 44.1% |
| 68 | Trashigang | Rangjung CS | 35 | 42.9% |
| 69 | Thimphu | Desi High School | 463 | 30.9% |
| 70 | Mongar | Mongar HSS | 73 | 28.8% |
| 71 | Punakha | Ugyen Academy | 160 | 13.1% |
| 72 | Paro | Karma Academy | 143 | 12.6% |
| 73 | Pemagatshel | Nangkor CS | 34 | 11.8% |

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