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Validation of Wagner's Law in the context of the Bhutanese Economy

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Abstract

Over the years, the public spending, along with the GDP has been rising in Bhutan. For instance, the public expenditure in Bhutan rose to Nu. 56331.357 million in the Fiscal Year 2018/19 from Nu. 49,966.611 million in the previous year (AFS 2017-18). This paper attempts to validate Wagner's law against the Keynesian hypothesis in the context of the Bhutanese economy from 1991 to 2019. Wagner's law of government expenditure and real income is opposite to the Keynesian hypothesis. In Wagner's postulation, the causal relationship runs from real income to real government expenditure and it is reversed in the case of the Keynesian hypothesis. The two-way granger causality test result indicated that Wagner's law does not hold and the evidence supports the Keynesian proposition. This is because Bhutan is more of a public-led welfare state and with its sluggish private sector growth, the economy requires the substantial support of the government. To assess the association of government expenditure with other macroeconomic variables such as inflation and unemployment, correlation and regression tests was conducted. The result showed that both consumption and capital expenditure positively influence inflation. The rising consumption expenditure has a positive relationship with unemployment; however, the capital expenditure can reduce unemployment.

Keywords: expenditure, Wagner's law, unemployment, inflation

Introduction

Over the decades, there has always been a debate on whether government plays a vital role in the macroeconomic outlook of the countries in the world or just as the classical economist suggests about the free market and its natural balance. Keynesian economics emerged after the Great Depression in 1929/30, while most theories of classical theories failed to explain the situation during the depression. Keynesian economics stresses government's contribution to the macroeconomic parameters of the country. The government stimulates the economy through different instruments to influence macroeconomic parameters. Wagner's law is a widely used model for determining public spending, and the relationship between the public expenditure and real national income is used in many policy actions by the countries.

Wagner's law stands contrary to the Keynesian Hypothesis. These are the two significant stands on the government expenditure and real income in the country. According to Adolf Wagner, government activities as a means of government spending rise due to economic growth. In contrast to Wagner's law, the Keynesian Hypothesis says that, with the increase in the government expenditure, there will be a multiplier effect that would lead the real income growth. Public expenditure is a critical instrument under the fiscal policy to influence the country's economic growth. Wagner's law was primarily tested post the Second World War because, after the Second World War, the public consumption dropped down in many countries where the private consumption was rising faster.

Wagner has supported his law for the three primary reasons: (1) during industrialization, the real income of the country increases, and it will require more expenditure for administrative and regulatory functions of the state. (2) the increased growth of the economy would require more expenditure for the providing increased culture and welfare services to the people, and (3) as the country becomes more industrialized, it would need a massive budget to finance the large projects in terms of technology procurement and capital funds since the private sector lacks in such capacity.

Significance of the Study

There are different studies done on this hypothesis and tested in several economies across the globe. However, there is no exact relationship established between the variables. This paper attempts to add to the general body of knowledge with an empirical test from a small developing country like Bhutan. As Bhutan has embarked lately on research and development, there is limited literature in the context of the Bhutanese economy. Such studies would enable learners to better understand the economy and related theories.

This study ascertains the causal relationship between government expenditure and income. More specifically, the paper also provides evidence of how government expenditure in turn influences other macroeconomic variables. This is because government expenditure is often used as a policy tool in many countries to accelerate overall economic growth and solve unemployment issues. However, unchecked government expenditure can lead to larger fiscal deficits. The fiscal deficit of Bhutan in the fiscal year 2019-20 was Nu. 6, 578.110 million, which was 3.04 percent of GDP (MoF, 2019).

Literature Review

The Kingdom of Bhutan is a small country located in the eastern Himalayas. It has a population of 735,553 people and 38,394 km² of total land area. The altitude ranges from 160 meters to 7000 meters above sea level. The urban and rural population composition is 62.2% and 37.8%, respectively. Bhutanese economy is a largely rural and agrarian economy. The agriculture sector employs 49.9% of the total labour force (Labour Force Survey Report, 2010), while only 3% of the whole land is cultivated (GNHC, 2018).

Government has critical roles in the economy besides its function as an administrative body. The economic developmental activities are accompanied by substantial government expenditures, which are expected to generate national income through the multiplier effect. Government expenditures and taxes are used as policy tools by the government to influence the economy. Unlike the other economies, owing to the size of the economy and the consumer's purchasing power, the Bhutanese Economy could not take off on its own. The growth is triggered by the exploitation of natural resources and the government expenditure to generate consumer demand. The Gross Domestic Product (GDP) is USD 2.5 billion in 2019, an average growth rate of 6.75% in the last decade. The major contributing sectors to the GDP are tourism, hydropower, and construction (NSB, 2020).

Public spending has been rising over the last decades in Bhutan. For instance, the public expenditure in Bhutan rose to Nu. 56,331.357 million in the Fiscal Year 2017/18 from Nu. 49,966.611 million in the previous year (AFS 2017-18). Such a rise in public expenditure can be explained by the growth in developmental activities in the country. As the countries advance with increased income, the demand of people becomes complex and enormous. The rising income and purchasing power of the people have led to the demand for better and advanced public utilities such as roads, bridges, and other recreational facilities simultaneously.

This correlation between government expenditure and national income was first observed by Adolf Wagner, a German Political Economist in the 19th Century. According to his law, economic progression brings expansion in the public sector (Wagner & Weber, 1977). Wagner's law has been tested in many economies using the cointegration test and the granger causality test; however, the results vary across the economies. For instance, a study in Odisha has concluded a long-run

relationship between total expenditure and total revenue expenditure (Ceft, 2015). Nevertheless, a study on the Greek economy found no long-run relationship between government expenditure and national income in Greece (Ogbonna, 2015).

Further, a past study on the Indian economy supports Wagner's law. It has considered the structural breakdown. The results showed that there is a long-run relationship between the government expenditure and the GDP. The study also observed that public spending is growing more rapidly than the income in the economy. It was concluded that the increased share of public expenditure to GDP was a result of the increased and continuous growth of public expenditure (Verma & Arora, 2010). However, the relationship between government expenditure and income was established for the Indian economy using the data from 1970 to 1999. The Error Correction Model (ECM) has revealed the bi-directional causality in absolute terms. This means it has supported both Wagner's law and the Keynesian hypothesis (Sahoo, 2001).

Wagner's law of government expenditure and real income is opposite to that of the Keynesian hypothesis. Government expenditure can be treated as an endogenous variable or an outcome, or in the latter case, the Keynesian proposition treats government expenditure as an exogenous factor that influences the national income. To study the causality of the two variables, causality runs from national income to public expenditure in Wagner's Law whereas, causality runs from public expenditure via domestic demand to national income in the Keynesian hypothesis (Afonso & Furceri, 2008 as cited in Ogbonna, 2015).

A similar study was also conducted in the Nigerian agriculture sector. Cointegration and Granger causality tests were used, and the result showed that there is a long-run relationship between various items of agriculture expenditure and the agricultural contribution to the Gross Domestic Product. Therefore, the granger causality test confirmed the validity of Wagner's law in the Nigerian agriculture sector whereas, the Keynesian hypothesis of government spending as a policy instrument was not supported (Bassey & Ibok, 2014).

A study done in Pakistan to validate Wagner's law found that the elasticity of public expenditure to real income was found to be greater than 1 which is clear evidence of the existence of Wagner's hypothesis in Pakistan's economy (Cheema & Iqbal, 2017). Further, Wagner's law was also examined in US and German states. The

study provided strong evidence to support the law in US but was not supported in German states. The study also indicated that some of the balanced budget requirements weaken the validity of Wagner's law in the US (Yoshito & Hiraga, 2016). Wagner's law has been tested in many developed and developing countries.

Methodology

Data and Model Selection

To examine the relationship between real government expenditure and the growth in real income, this paper adopts Peacock and Wiseman's (1961) version of the functional form of Wagner's law which examines the relationship between government expenditure and real income. This can be written in linear regression form

$$GE = a_1 + b_1GDP + u_{1t}$$

Where: a_1 is the constant term, b_1 is the elasticity, GE is the real government expenditure, GDP is the real GDP and the u_i is the stochastic error representation. If the coefficient of real income is positive and the elasticity of government expenditure concerning real income exceeds unity, Wagner's hypothesis holds.

The secondary data was used for this study. The data on the government expenditure which is a composite of consumer and capital expenditure, GDP, and other macroeconomic variables were extracted from the national statistical yearbooks published annually by National Statistical Bureau.

Unit Root Test

The variables considered are put into a unit root test to check for the stationarity of the variables. This is because, data points are often non-stationary or data have trends, random walks, and cycles present in them. Any analysis done on the non-stationary data will lead to bias estimation (Granger & Newbold, 1974) or spurious results. Therefore, a unit root test was conducted on the variables using Augmented-Dickey-Fuller (ADF). The ADF test is one of the commonly used statistical tests to check whether the time series data are stationary or not.

Granger Causality Test

This study mainly deals with two variables, which are public expenditure and Gross Domestic Product (GDP). The bivariate Granger causality test is used to establish the long-run causal relationship between the two variables. Granger causality is a

statistical hypothesis of causality that is based on prediction or determining whether a time series is useful for forecasting another. If the probability value is less than alpha, the hypothesis would be rejected at that level.

According to Granger causality, if GDP Granger-cause or G-cause a Government Expenditure, the past values of GDP should contain information that helps predict Government Expenditure beyond. Its mathematical formulation is based on linear regression modelling of stochastic processes (Granger, 1969).

To quantify Granger's prediction, we employ the univariate Autoregressive model and the Bivariate Autoregressive model. Firstly, the GDP is regressed on its past values excluding GE in the regressors. This is called the restricted regression from which the restricted sum of squared residuals is obtained and this is expressed in Model A. Secondly, a regression is run including the lagged GE. This is called the unrestricted regression from which the unrestricted sum of squared residuals is obtained as shown by model B. This is done to compare the variance of the two models.

The same procedure is applied to test the reverse Granger-causality test which is also testing the Keynesian hypothesis. This test helps us to break down and study the relationship in one-way pairs. Mathematically, it can be expressed as follows:

$$GE = \sum_{n=1}^k (a_n GE_{t-n} + e_t) \text{ Model A}$$

$$GE = \sum_{n=1}^k (a_n GE_{t-n} + b_n GDP_{t-n} + \varepsilon_t) \text{ Model B}$$

Studying the variance of the error term e_t and ε_t from the autoregressive model, we quantify the Granger's causality (GC) as follows:

$$GC = \text{Log} \left(\frac{\text{Var}[e_t]}{\text{Var}[\varepsilon_t]} \right)$$

If the variances are identical, the resulted log 1 which equals 0, will mean that the variable GDP does not Granger cause government expenditure.

Results and Discussion

Unit Root Test

The results of the unit root test in the Augmented Dickey-Fuller test indicated that the data is non-stationary. The non-stationary data are then converted into stationary through the differencing method. The variable GDP and GE were

converted into stationary after the first order differencing with the p-value of 0.05 and 0.01 respectively.

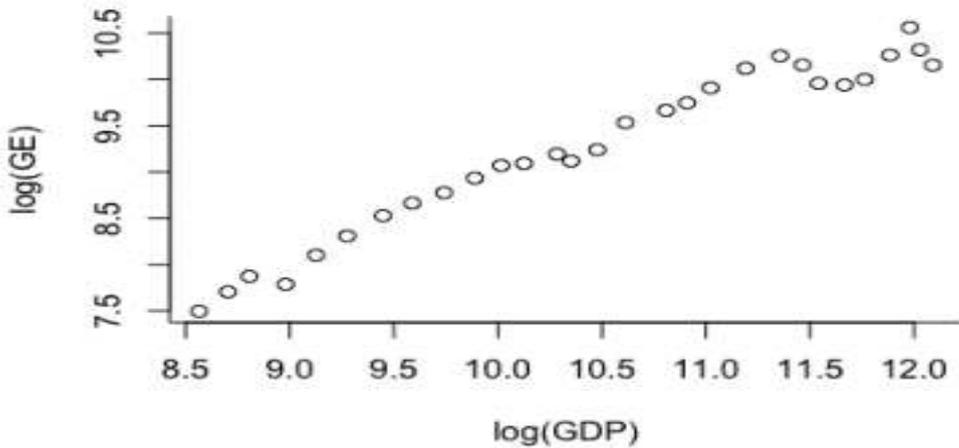
Table 1
Augmented Dicky Fuller Test

Variables	Augmented Dicky Fuller Test and the P-value First difference
GDP	0.05**
GE	0.01***

Signif. codes: 0.01 '**' 0.05 '***' 0.1 '*'

Granger Causality Test

Figure 1
Plots of the log(GDP) and log(GE)



The result of Granger causality is represented in the Table 2. To estimate the Peacock and Wiseman’s version, the following equation 1 is estimated and to see the reverse causality the equation 2 is estimated.

$$GE = \sum_{n=1}^k (\alpha_i GE_{t-n} + b_i GDP_{t-n} + \varepsilon_t) \dots\dots\dots (1)$$

$$GDP = \sum_{n=1}^k (\alpha_i GDP_{t-n} + \beta_i GE_{t-n} + \varepsilon_t) \dots\dots\dots (2)$$

The values of F-statistics suggest that the real GDP does not granger-cause the real government expenditure (GE), and real GE does granger-cause the real GDP as indicated by the F statistics in the table below. Thus, it can be argued that the past values of GE can contribute in the prediction of the present and future value of GDP. Therefore, with these evidences we can argue and conclude that Wagner’s law does not hold true to Bhutanese economy while Keynesian hypothesis does.

Table 2

Granger-causality Test

Equation	Lags	Obs.	F-stat	Prob.
1	2	28	0.72	0.50
2	2	28	5.57	0.03

*Signif. codes: 0.01 ‘**’ 0.05 ‘***’ 0.1 ‘*’*

Keynesian hypothesis is opposite of Wagner’s law where it sees a causal relationship from government expenditure to GDP. Keynesian formulation considers government expenditure as an exogeneous variable and government expenditure is often a policy instrument to accelerate economic growth in the long run. Bhutan being a developing country and its economy characterized by agrarian economy, sluggish private sector development and low-income level, the role of government in the economy is inevitable. The government invests in the basic physical and social infrastructure in the country which escalates the government expenditure. In the last decade i.e. from the year 2009 to 2019 the average government expenditure inclusive of its consumption and investment was Nu. 28626.954 million which is approximately 22% of the average GDP in the last decade (NSB, 2020; NSB 2016; NSB, 2012). Therefore, the empirical test result is more consistent with the Keynesian hypothesis in context of Bhutanese economy.

The Relationship between Government Expenditure and other Macroeconomic Variables

The test result of Granger causality showed that government expenditure granger-cause the GDP. This has motivated the further analysis to the relationship between the government expenditure and other macroeconomic variables. Government expenditure is a composite of governments consumption expenditure which is the recurring expenditure; and the capital expenditure which is a composite of

expenditure on construction and expenditure on procurement of machines and equipment.

In the attempt to study the relationship between the government expenditure and the other macroeconomic variables such as unemployment, inflation and fiscal position in the country, the result showed the existence of association between the government expenditure and macroeconomic variables. For instance, there is positive correlation coefficient of 0.47 between the overall real government expenditure and unemployment.

Table 3

Regression

Variables	Inflation	Unemployment
Consumption Expenditure	2.552e-04 (2.079e-04)	1.772e-04 (4.809e-05) ***
Capital Formation	5.645e-05 (1.570e-04)	-1.756e-05 (3.632e-05)
Total Government Expenditure	1.212e-04 (1.368e-04)	4.591e-05 (4.089e-05)
Observation	21	21

Note: Robust standard errors in parentheses, ***p<0.01, **p<0.05, *p<0.1

The regression analysis was applied to study the causal relationship among the variables. The regression results reported in Table 3 shows that only government's consumption expenditure and unemployment showed a positive and significant relationship at p-value less than .01. The government expenditure has positive relationship with unemployment, this might be because of the government expenditure not being able to translate into the employment generation opportunities. This finding is similar to the existing study in Sub-Saharan African Countries where the findings of the study revealed that an increase in government consumption expenditures results in an increase in unemployment whereas a rise in government investment expenditures results in a reduction in unemployment, holding all other variables constant (Fosu, 2019). Bhutan's consumption is import-oriented, where the consumer demand for food products and other capital goods

are imported from the neighboring states in India and countries other than India. Therefore, any rise in the consumption expenditure worsens the deficit trade balance in the external sector of the economy rather than creating demand for the domestically produced goods. These findings were consistent with the analysis done on public expenditure and economic growth in Sri Lanka (Kesavarajah, 2012).

The general economic theory postulates the growth as a function of investment and saving. However, the Bhutanese economy shows a lower level of investment expenditure from both government and private sectors in comparison to consumption expenditure. The causal relationship test result showed that capital formation did not significantly influence unemployment and inflation.

Further, the association of government expenditure and inflation has been broken down into short run and long run. Results indicated that there is negative correlation in short run and the positive in the long run. However, the regression test results are not statistically significant. The positive coefficient indicates a tendency of government expenditure to exert pressure on the general price level in the short run, which is consistent with the Keynesian economic theory.

However, in the long run, the government expenditure and inflation exhibit inverse relationship with coefficient of -0.233. This may be because of the volatility in government spending (Nguyen, 2014). The reason why inflation did not rise with rising in government expenditure in long run may be due to the continuous fiscal deficit of the country. Deficit financing mechanisms such as the sale of T-bills and bonds raises interest rate and reduces the overall money supply in the economy. This has also a negative impact on the consumption and investment demand which in turn maintains low inflationary pressure in the economy.

Conclusion

The Granger-causality test to check the plausibility of Wagner's law showed that GDP does not Granger-cause government expenditure. However, the result was statistically significant on a reverse test and that draws the conclusion that the Keynesian hypothesis does hold true for the Bhutanese economy. This may be due to the fact that Bhutan is a developing country and the government has a significant role to play in the economy. The nature of the economy being agrarian with sluggish private sector growth would require a higher level of both government investment and private investment for the growth to take place.

The result indicated that the causal relation runs from government expenditure to GDP and this has motivated further analysis of government expenditure and other macroeconomic variables such as unemployment, inflation, and fiscal position in the country. The result indicated a positive causal relationship between government expenditure and unemployment. Although capital formation has a negative coefficient, it did not significantly reduce unemployment and inflation rate in the country. This may be due to the government expenditure not being able to generate employment opportunities and also the impact of expenditure on education and health is realized only in the long run.

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Annexure**Table A1**

Data extracted from the Statistical Yearbooks published by National Statistical Bureau (NSB)

Year	GDP	GE	Population	PCI	PCGE
1991	5242.0	1802.9	534600	9805.46	3372.43
1992	6020.4	2221.8	534500	11263.61	4156.78
1993	6675.2	2627.8	532600	12533.23	4933.91
1994	7943.9	2410.4	531900	14934.95	4531.68
1995	9192.6	3298.4	534600	17195.29	6169.85
1996	10672.6	4062.6	541500	19709.33	7502.49
1997	12674.4	5060.7	551700	22973.36	9172.92
1998	14599.9	5790.6	564400	25868.00	10259.74
1999	17001.4	6484.9	577900	29419.28	11221.49
2000	19735.77	7579.8	591000	33393.86	12825.38
2001	22373.0	8699.3	603600	37065.94	14412.36
2002	24981.7	8889.7	616000	40554.71	14431.33
2003	29269.1	9839	627800	46621.69	15672.19
2004	31284.7	9112.8	638800	48974.17	14265.50
2005	35496.9	10308.6	648700	54720.06	15891.17
2006	40673.5	13833.78	657400	61870.25	21043.17
2007	49456.6	15757.21	664900	74382.01	23698.62
2008	54713.01	17101.75	671600	81466.66	25464.19
2009	61223.48	20120.3	678300	90260.18	29662.83
2010	72496.64	24861.15	685500	105757.32	36267.18
2011	85580.58	28363.6	693300	123439.46	40911.01
2012	95186.52	25719.85	701600	135670.64	36658.85
2013	102909.95	21091.28	710200	144902.77	29697.66
2014	116388.56	20750.6	719100	161853.09	28856.35
2015	128534.63	22040.75	727900	176582.81	30279.91
2016	145072.86	28650.62	736700	196922.57	38890.48
2017	159571.7	38644.51	745600	214017.84	51830.08
2018	167339.97	30346.75	754400	221818.62	40226.34
2019	178201.81	25680.13	763100	233523.54	33652.38

Performance of Common Stock Market and Relationship between Common Stock Return and Inflation: A Bhutanese Case Study

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Abstract

The stock exchange of Bhutan is considered one of the smallest stock markets in the world with market capitalization of BTN 49 billion¹. Since the inception of the stock exchange in 1993 to facilitate trading of both equity and debt securities, the performance of stock market with respect to the macroeconomic variables have not been studied by academicians and researchers in Bhutan. Similar to the asset-inflation relationship studies conducted in different countries, the objective of this research is in providing insights on the hedging features of the common stock returns against inflation as per the classical Fisher hypothesis postulated by Irving Fisher in 1930s. For this study, we selected nine different companies listed on the stock exchange and grouped them into banks, insurance and industry sectors. The data on the monthly consumer price index inflation rates is retrieved from the website of the National Statistics Bureau of Bhutan, and daily market closing price from website of the Royal Securities Exchange of Bhutan. To test the hypothesis, we used bivariate regression analysis for different groups of sectors. Other relevant information on the descriptive statistics of the nominal common stock returns and its variability with respect to the inflation is also discussed. Our result shows that the nominal common stock return does not act as a hedge against inflation. In addition, our study indicates a weak inverse relationship between the nominal common stock return and inflation, though the result is not statistically significant to support the negative relationship between the two.

Keywords: common stock return, inflation, Fisher hypothesis, bivariate regression

Introduction

Several studies conducted shows that the macroeconomic variables such as interest rate, foreign exchange rate, and inflation rate influence the performance of the stock market. Such variables are key indicators for the stock market participants to think about the assessments of the returns from the stock market. Vast studies have been devoted in studying the relationship between the asset return and these macroeconomic variables since 1950s. According to Fisher

¹As of December 2021, 1 BTN = 0.013250 USD

hypothesis, the nominal common stock return has a potential to act as a hedge against inflation. It implies that according to Irving Fisher who postulated the Fisher hypothesis in 1930s, the common stock return is a protection against inflation, and investors are compensated with higher returns during high inflation, and with lower returns during the lower inflation situation. The Fisher hypothesis can be tested by regressing the common stock return on inflation. Using various regression methodologies, the positive coefficient for inflation should be the assessment of the hedging property of the common stock return. Therefore, although the relationship between the common stock return and inflation have been empirically tested in other developed, emerging and developing markets, the influence of inflation on the common stock returns have not been undertaken so far in Bhutan with an equity market size of just over BTN 49 billion (i.e. US\$ 649 million as of December 2021).

For this study, the relationship between common stock return and inflation will test Fisher's hypothesis that the nominal common stock returns of the banks²; insurance firms³; and industries⁴ are hedged against inflation. The contribution of the study is firstly to provide insights about the common stock returns-inflation nexus over a medium-term from 2014 to 2021, and secondly no such studies on this topic have been conducted in Bhutanese equity market so far.

Literature Review

As per Fisher hypothesis, it suggests that the return on equities are a good hedge against inflation as they represent claim to real assets (Bodie, 1976). As per Bodie (1976), there are two definitions of the security as an inflation hedge, firstly, it should offer protection against inflation meaning elimination or at least reduction of the possibility of the real rate of security's return falling below some specified floor value such as zero, and secondly, the security is inflation hedge if and only if its real return is independent of the rate of inflation. In a regression with nominal rate of return as dependent variable, the coefficient of the rate of inflation as independent variable should be one indicating a zero correlation between the real rate of return on common stock and rate of inflation.

²Bhutan National Bank Limited, Druk Punjab National Bank, and Tashi Bank Limited

³Royal Insurance Corporation of Bhutan, GIC-Bhutan Reinsurance Co. Limited, and Bhutan Insurance Limited

⁴Druk Ferro Alloys Limited, Penden Cement Authority Limited, and Dungsam Polymer Limited

Studies conducted by Choudhry (2001) on the relationship between stock returns and inflation in four high inflation Latin and Central American countries shows that there exists one-to-one relationship between nominal stock return and inflation implying stocks as a good hedge against high inflation rates. Similarly, empirical studies conducted in Pakistan to understand the relationship between the stock returns and consumer price index using the frequency-based causality and continuous wavelet transform method indicate that the consumer price index inflation and stock returns are found to be independent (Tiwari, Dar, Bhanja, Arouri, & Teulon, 2014). From the result of this empirical study, it is worth noting that in the midst of the economic issues related to energy supply shortages and security issues, and Pakistan as one of the highest inflation countries, the inflation does not erode the stock market return in their country.

In Sri Lanka, an empirical study conducted by Samarakoon (1996) using the data from 1985 to 1996 provides empirical evidence on the generalized Fisher hypothesis that the nominal returns on common stocks are positively related to expected inflation suggesting that stocks in Sri Lanka are an effective hedge against expected inflation, while on other hand the stock returns and unexpected inflation are inversely related indicating stocks not as a hedge against unexpected inflation.

However, contrary to this Fisher hypothesis, studies conducted by Fama and Schwert (1977) and Lintner (1975) have shown that the rates of return on assets are negatively correlated with the expected rate of inflation. Also, a study conducted in Greece by Spyrou (2001) indicates that the relationship between the stock returns and inflation is negative and significant until 1995, and beyond 1995, the relationship is statistically insignificant which the author argued that it may be due to the increased role of monetary fluctuations. Also, it is now well-established concept through various studies that the sustained inflation has a detrimental effect on the development of both private credit market and equity market, and many quarters of inflation are associated with “crisis” impacting the economy (Barnes, Boyd, & Smith, 1999).

In order to understand asset-return relationship, myriads of exhaustive studies have been conducted since 1953, and one such study has indicated that the monthly returns to a broad group of New York Stock Exchange common stock returns for an example are negatively related with both expected and unexpected component of the consumer price index inflation rate (Bodie, 1976; Fama &

Schwert, 1977; Nelson, 1976). The substantial modification and developments in the financial systems are now required in our generally accepted models of security returns and capital market equilibria to deal with the impacts of inflation on the market performance.

Bruno (1993) and Pindyck and Solimano (1993) examined that the high level of inflation can induce frequent changes in prices which may be costly for firms that can ultimately reduce the optimal cash holdings of the consumers required for trading in common stock market. The fall in the level of per capita income may result in lower cash holding in the consumers forcing them to sell short their tradable shares thereby impacting the stock returns and leading to price instability (Feldstein, 1999). The higher inflation rate will increasingly impact the financial market frictions, reduce liquidity and extend credit, and reduce capital investment (Barnes, Boyd, & Smith, 1999). Furthermore, such level of inflation can cause error in forecasting as a result of price information distortion, which can lead to economic agents to spend more time and resources in gathering information and protecting themselves against the negative implication of the price instability, thereby endangering the efficient allocation of resources.

Methodology

As per Irving Fisher (1930), the nominal interest rate is the sum of an expected real return and an expected inflation rate. If the market is efficient or rational processor of the information available at time $t - 1$, it will set the process of any asset j so that the expected nominal return on the asset from $t - 1$ to t is the sum of the appropriate equilibrium expected real return and the best possible assessment of the expected inflation rate from $t - 1$ to t as provided below:

$$E(\tilde{R}_{jt}|\phi_{t-1}) = E(\tilde{i}_{jt}|\phi_{t-1}) + E(\tilde{\Delta}_t|\phi_{t-1}) \quad (1)$$

Equation (1) can be rewritten as,

$$E(\tilde{\Delta}_t|\phi_{t-1}) = E(\tilde{R}_{jt}|\phi_{t-1}) - E(\tilde{i}_{jt}|\phi_{t-1}) \quad (2)$$

Here, $E(\tilde{\Delta}_t|\phi_{t-1})$ is the best possible assessment of the expected value of the inflation rate $\tilde{\Delta}_t$ that can be made on the basis of set of information ϕ_{t-1} available at $t - 1$, \tilde{R}_{jt} is the nominal rate of return on asset j from $t - 1$ to t , $E(\tilde{i}_{jt}|\phi_{t-1})$ is the appropriate equilibrium expected real return on the asset implied by the set of information ϕ_{t-1} available at $t - 1$ and tildes denote random variables.

Fisher hypothesized that the expected real return in equation (1) is determined by real factors such as productivity of capital, time preferences of investor, and risk tastes, and that the expected inflation rate and expected real return are not related. Such assumption developed by Fisher has helped us study the inflation-asset return relationships without having to introduce a complete general equilibrium model for expected real returns in a similar manner considered by Fama and Schwert (1977). To test the hypothesis that the expected real return and expected inflation rates vary independently, and that market is efficient, the regression model in equation (3) is employed.

$$\tilde{R}_{jt} = \alpha_j + \beta_j E(\tilde{\Delta}_t | \phi_{t-1}) + \tilde{\epsilon}_{jt} \quad (3)$$

Where, α_j is regression constant of asset j , β_j is an estimate of the regression coefficient of asset, and $\tilde{\epsilon}_{jt}$ is the error term.

We employ the consumer price index inflation rate determined by the National Statistics Bureau of Bhutan, and daily closing share price of the most traded stocks uploaded on the website of Royal Security Exchange of Bhutan from 2014 to 2021. The selection of publicly listed firms is based on the availability of share price information and the percentage share of the total market capitalization⁵. The background information of the selected listed companies is as shown in Table 1.

Table 1

Information of Selected Publicly Traded Companies as of Dec 2021

Listed Companies	Year of Est.	Sector	Paid-up Shares	Market Cap (BTN)
Bhutan National Bank Limited	1980	Banks	395,032,311	12,309,206,810
Druk Punjab National Bank	2008	Banks	84,002,022	5,598,734,766
Tashi Bank Limited	2010	Banks	60,025,223	2,581,084,589
Royal Insurance Corporation of Bhutan	1975	Insurance	140,000,180	9,940,012,780
GIC-Bhutan Reinsurance Co. Limited	2013	Insurance	110,000,000	3,223,000,000

⁵ The nine public listed companies represent 86 percent of the total market capitalization of BTN 49 billion⁵ as of December 2021

Bhutan Insurance Limited	2009	Insurance	30,000,000	1,800,000,000
Druk Ferro Alloys Limited	2009	Industry	28,977,620	2,694,918,660
Penden Cement Authority Limited	1974	Industry	34,000,070	3,570,007,350
Dungsam Polymer Limited	2010	Industry	60,025,223	251,993,775

Source: Obtained from Royal Securities Exchange of Bhutan

Using the share price information, the daily return on common stock is calculated by the change in the share price from time $t - 1$ to t during the period. From the daily returns, we then calculate the monthly average common stock return for each individual sector. Once we compute the monthly average return and the consumer price index inflation, we employ equation (3) developed by Irving Fisher (1930) to conduct bivariate regression and correlation analysis to study the relationship between the nominal common stock return and inflation for three different sectors (i.e., banks, insurance and industry).

Results

To test the prediction of the Fisher hypothesis, monthly average common stock returns of banks, insurance and industry sectors is regressed on the monthly rates of inflation measured by the consumer price index. Under this section, firstly, the descriptive statistic such as minimum, maximum and mean monthly average common stock returns is discussed. Secondly, brief discussion is made on the variability of the monthly average common stock returns against the inflation for the three different sectors. Finally, the correlation matrix and bivariate regression results are highlighted.

Descriptive Statistics

Table 2 contains the monthly average (along with minimum and maximum) of all three sectors in Bhutan. During the observed period, the minimum and maximum monthly inflation rate is 2.01% and 10.03% respectively with average of 4.74%. Over a period from 2014 to 2021, banks have earned a maximum monthly average stock returns of 6.54 % and suffered minimum loss of 15%. The mean monthly average stock return is 0.02% with standard deviation of 2.05%. However, insurance sector earned a maximum monthly average return slightly lower than banks of 6.16% and suffered a monthly average loss slightly higher than banks by

0.91 %. The mean monthly average common stock return is 0.35 %, higher for insurance sector than banks with standard deviation of 2.41%.

Similarly, the mean monthly average return for industry sector of 0.13% is slightly higher than the banks, however, lower than what the insurance sector earned on average. The maximum monthly average return of industry sector is in the same range with that of banks and insurance sector; however, the minimum monthly average loss was lower than other two sector.

Table 2
Summary of Descriptive Statistics

	N	Min	Max	Mean	Std. Dev.	Skew	Kurtosis
Inflation Nominal Monthly Average Return	96	0.0201	0.1003	0.0474	0.0231	0.7430	-0.7780
Banks	96	-0.1500	0.0654	0.0002	0.0205	-3.9890	30.8520
Insurance	96	-0.1591	0.0616	0.0035	0.0241	-3.0160	21.7430
Industry	96	-0.1291	0.0651	0.0013	0.0250	-1.0880	8.0800
Valid N (listwise)	96						

Source: Obtained from SPSS

Variability of the Return against Inflation

Figure 1-3 represent the nominal monthly average returns against inflation for banks, insurance and industry sector. The variation in the maximum and minimum value of the monthly average return for banks with respect to the consumer price index inflation rate is slightly lower compared to insurance sector. In other words, the monthly return for banks was much stable than other two sectors. However, the variation in the monthly average return with respect to the inflation is much prominent for industry sector as seen in Figure 3.

Figure 1

Monthly Average Nominal Return against Inflation for Banks

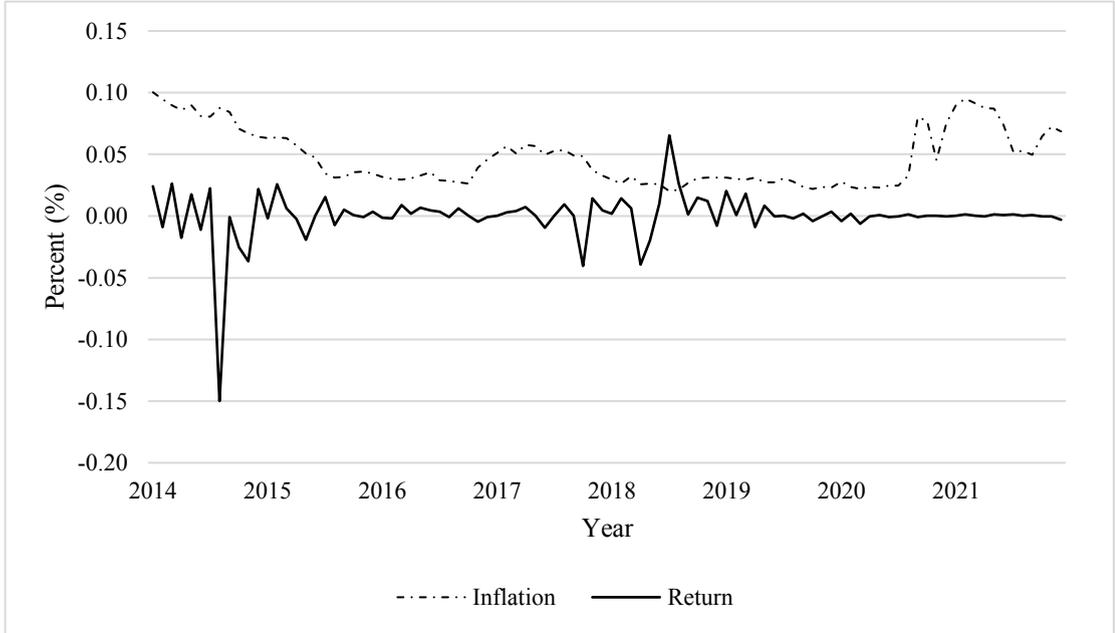


Figure 2

Monthly Average Nominal Return against Inflation for Insurance

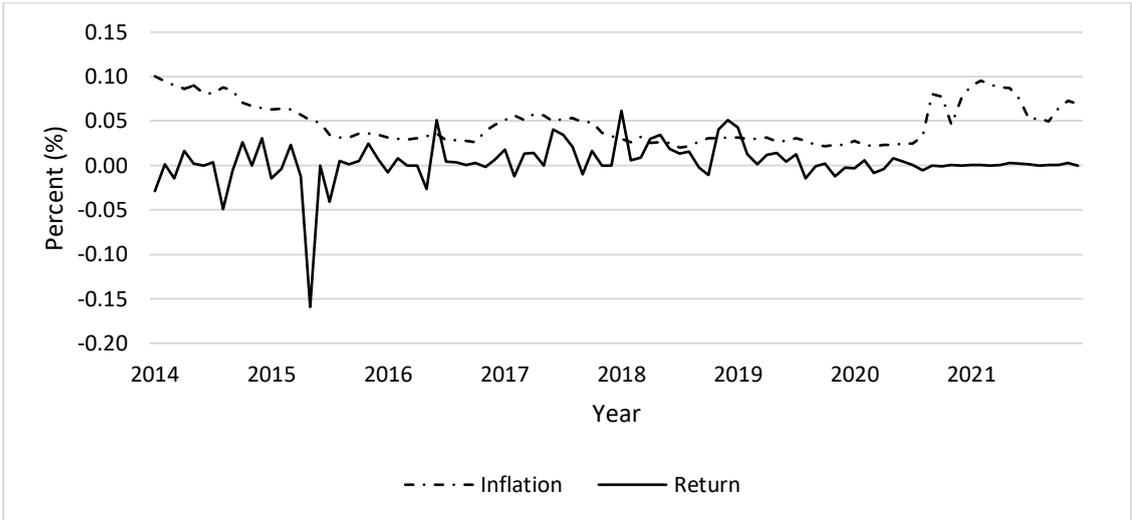
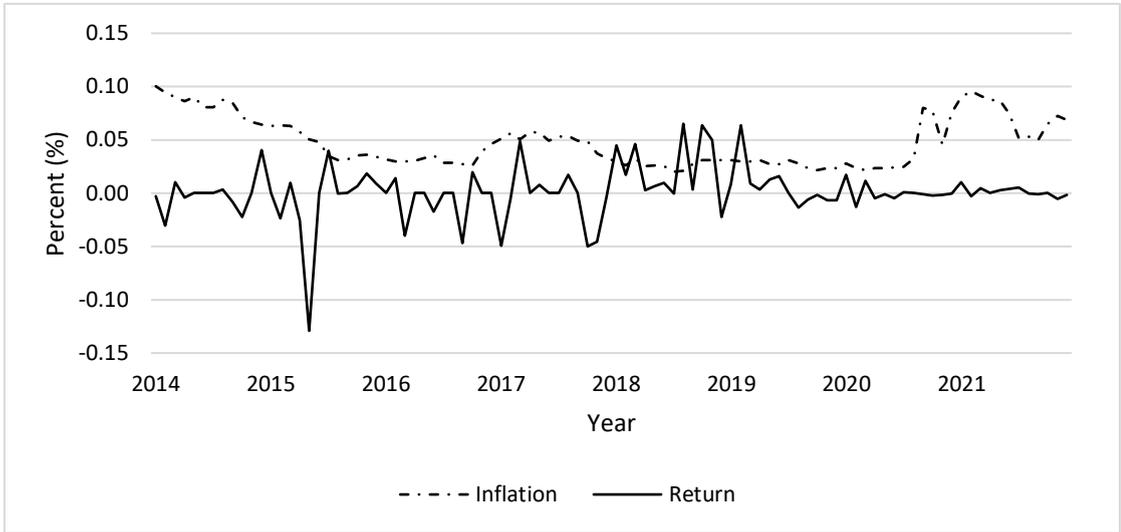


Figure 3

Monthly Average Nominal Return against Inflation for Industry



Correlation Matrix and Regression Result

As indicated in Table 3, the nominal common stock returns for all sectors shows a weak negative correlation with inflation. For the banks and insurance sector, the Pearson correlation coefficient between the common stock return and inflation is in the same range of negative 0.16. However, the correlation coefficient for industry sector is about negative 0.14.

Table 3

Correlation Matrix

	Inflation	Bank	Insurance	Industry
Inflation	1			
Bank	-0.168	1		
Insurance	-0.167	0.185	1	
Industry	-0.142	0.191	.440**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Obtained from SPSS

The parameters of the bivariate linear regression analysis such as, α_j regression constant, β_j regression coefficient or slope estimate, $\tilde{\epsilon}_{jt}$ error term, R^2 , t – statistics, and significance (p – value) are presented in Table 4.

Table 4
Regression Statistics

Coefficient estimates	Banks	Insurance	Industry
α_j	0.0073	0.0118	0.0085
β_j	-0.1491	-0.1740	-0.1537
R^2	0.0281	0.0278	0.0201
$\tilde{\epsilon}_{jt}$	0.0203	0.0239	0.0249
$t - statistics$	-1.6478	-1.6390	-1.3900
$p - value$	0.1304	0.1045	0.1678

Source: Obtained from SPSS

The output in Table 4 indicates that for banks the R square of 3.9% shows that the model approximated 3.9% variation in dependent variable with standard error of 11.3%. Similar weak relationship between the independent and dependent variables is observed with the insurance and industry sector. Although the regression coefficient shows a weak negative relationship between the nominal monthly average return and consumer price index inflation rate, the result is not statistically significant, as the p-value is greater than .05.

Discussion

We test the relationship between the nominal common stock return and inflation for banks, insurance and industry sector using the bivariate regression and correlation analysis. To test the hypothesis that the nominal common stock returns on all three sectors are hedge against inflation, the dependent variable stock return is regressed on independent variable inflation. From the regression result, there exists a weak negative correlation between the stock return and inflation for all three sectors, however depicting insufficient evidence to claim that the inverse correlation exists between the nominal common stock return and inflation for all three sectors ($p > .05$).

The regression coefficient results for all three sectors rejects the null hypothesis that nominal common stock return acts as a hedge against consumer price index inflation. Furthermore, the inverse relationship between the return and inflation implies that the investors are not compensated for increase in general price level through corresponding increase in the nominal stock market returns, thereby

failing to support the Fisher hypothesis i.e., null hypothesis. This negative relationship between the common stock return and inflation are similar to the finding of Shanmugam and Mishra (2009), who empirically tested this relationship in Indian economy from 1980 to 2004. However, Park and Ratti (2000) argue that monetary policy generates statistically significant movements in the inflation and expected real stock returns in the opposite directions, causing negative correlation between the inflation and stock returns. Similarly, Li, Narayan, and Zheng (2010), empirically suggested that the UK stock market fails to hedge against inflation in the short term, and the relations between the stock return and inflation behaves differently in the medium term and during different inflationary regimes.

Conclusion

In conducting this research, we used the bivariate regression to examine that the nominal return on common stock is hedged against consumer price index inflation rate. The study of the relationship between the two are tested using the monthly average return for banking, insurance and industry sectors. As per the Fisher theory, no significant relationship exists between real return and inflation. However, an inverse relationship between real stock return and expected (and unexpected) inflation is possible as per Lintner (1975). Our results support Lintner's findings, although the evidence to support this claim is very insignificant (i.e., Fisher's hypothesis is rejected). Furthermore, the results picked by the regression methodologies might be spurious to support the idea that nominal common stock returns are hedge against inflation.

The usefulness of our findings is limited by several factors, including relatively short time period, stagnation of the market price, and infrequent trading by market participants. More insights for studying the relationship between the common stock return and inflation might be gained by including other macroeconomic variables using advanced regression methodologies. These limitations suggest that further research in this area will be needed before a definitive conclusion on the idea that nominal common stock returns are hedged against inflation. Hopefully, other researcher and academicians in Bhutan will take up similar research study for contribution on the performance of the common stock market out of such simple study findings.

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Does Qualification count for Managing Financial Products and Services? A Study of identified Blocks in Bhutan

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Abstract

This paper explores managing financial products and services by Bhutanese in some of the identified blocks (Gewogs) in Bhutan. It investigates various skills of managing financial products and services primarily on four financial management dimensions namely, Perception of General Financial Knowledge (PGFK), Perception of Savings and Borrowings (PSB), Perception of Insurance Planning (PIP) and Perception of Making Investment (PMI). The research is based on the baseline data collected from the respondents. Data were collected with the help of structured schedule. A total of 537 respondents were included from two blocks of Chukha district (rural) Thimphu, the capital city of Bhutan (urban). The data were analysed and interpreted based on qualifications of the respondents. Mean and standard deviation were used to describe the characteristics of the data. In addition, ANOVA was used to test the research hypotheses. The inferences of the study reveal current scenario of managing financial products and services among the Bhutanese. It portrays cases that people with higher education level obtained higher financial skills in almost all the dimensions (except that of PMI). The post-hoc tests, however, do not support research hypotheses in the study. The study is purely based on primary data and is expected to have some positive bearing on the key stakeholders of the country including that of policy framing agencies. Besides, the study may be taken as a case teaching material and may act as significant supplementary reference in the classroom teaching.

Keywords: perception, financial skills, financial products and services, qualification, Bhutan

Introduction

Financial literacy (FL) becomes an inevitable agenda for economic development of many nations. Since last decade, G20 nations have been giving adequate consideration in consolidating financial education, consumer protection and financial inclusion to reinforce the financial system and enhance the financial wellbeing of individuals. Many researches have been conducted to understand the importance of financial literacy where they show various implications of financial behaviour of an individual. Besides other implications, a low financial literate individual is most likely to have problems with managing debt (Lusardi & Tufano, 2009) and less likely to plan for the future (Stango & Zinman, 2007). Hence,

acquiring adequate knowledge of financial literacy is considered as an important element to make sound financial decisions in the economic life of every citizen (Bernanke, 2006).

Financial skills of individuals are vital for determining their personal wellbeing. Many countries are developing apposite strategies to promote financial literacy to educate their citizens (Bhushan & Medury, 2013). The wide range of initiatives to impart financial education includes recognition of training needs of beneficiaries and broadcasting the same through different media. These initiatives have come from the government, financial regulators, and the intermediaries. Furthermore, law on exclusion of France and “no frills” accounts and “General Credit Cards” in India are some of the legislative measures initiated to facilitate efficient and effective allocation of productive resources, provide access to financial needs, and reduce mushrooming informal financial sectors.

Despite many concerted efforts of the government in developed and developing economies, financial literacy level is not reaching to its expected rate. Contemporary world has witnessed the introduction of several financial products and services across all economies. However, such products were not effectively used by the customers to their advantage (Ansong & Gyenare, 2012). Financial literacy is low among every segment of the population. The young adults who are the future citizens of the world are found possessing low financial education. A study by Lusardi et al. (2010) delineates that less than one-third of young adults in the world obtain basic knowledge of interest, inflation and portfolio risk. Bhutan is no exception to endeavour for enhancing financial literacy in the country. The Royal Monetary Authority (RMA) which is the central bank of the country has been leading in framing appropriate strategies to enhance financial literacy in the country. However, despite various efforts, the perception of banking products vary greatly across all 20 Dzongkhags (districts). Similarly, the disbursement of financial services is found concentrated in a few Dzongkhags where Thimphu and Chukha are prominent (Dorji, 2017). Dasho Penjor, the Governor of the Central Bank often reminded financial institutions the role in providing finance to the potential areas mostly covering disadvantageous sections of the society.

Literature Review

Discussion on financial literacy is increasingly gaining importance and has become one of the significant policy priorities across the globe. Financial literacy is better understood as acquiring knowledge of financial matters so as to take effective

financial decisions that fulfils the goals of an individual, family and global community (NFEC, 2018) Among numerous definitions, this study makes reference to the definition by Remund (2010), in which financial literacy is realised as the known financial concepts that help in taking effective financial decisions in changing economic conditions. Degree of financial knowledge, as acquired by an individual, helps him in explaining different financial or economic behaviour. Prior studies assert that financial literacy among people enhances their propensity to engage consciously in prudent financial decisions. The number of people with bank accounts and access to credit products is rising rapidly, as governments in many countries push to boost access to financial services (Klapper et al., 2015). Financial literacy enhances people's skills for better financial planning, saving, investments and risk diversification (Abreu & Mendes, 2010).

Globally, a large disparity persists among countries in financial literacy irrespective of the level of economic development. Both advanced and developing economies confront financial literacy challenges. For instance, 60 percent of adults in the United States use credit cards (Klapper et al., 2015), whereas in China, 50% of credit card holders can perform simple interest calculations (ibid). In Europe, when governments call older adults to participate in retirement planning, 47% were found acquiring basic knowledge of financial terminology (ibid). In most of the cases, challenges of financial literacy lie on account of the inability of understanding the financial products (Guiso & Jappelli, 2008), lesser volume of stock participation (Van Rooij et al., 2007), and lack of post-retirement preparedness (Lusardi & Mitchell, 2007b).

The socio-demographic characteristics of people among economically advanced countries have strong correlation with their financial skills. The financial literacy of citizens may enhance with their educational journey, income and age and the other common characteristics such as gender and geography. In major advanced economies, 73% of adults are financially literate and in poorer economies such as Afghanistan and Albania, financial literacy is as low as 14% among adult population (Klapper et al., 2015).

People with higher level of qualifications are found aware of financial products in better terms, especially in terms of their better living standards (Truett & Truett, 1990). Cole et al. (2011) provided evidence that higher level of schooling and greater per capita expenditures is related with higher level of financial literacy. Parental education is yet another variable that determine the financial literacy of

children (Lusardi et al., 2010). Further, there is a geographical mismatch in many countries with financial literacy being higher in urban areas as compared to rural (Klapper & Panos, 2011). Furthermore, income level also determines the level of financial literacy. 31% of the rich in BRICS economies are financially literate as compared to 23% of the poor (Klapper et al., 2015).

Age is also one of the important determinants of financial literacy. The older people are more concerned with their retirement planning and attempt to be financially literate than the younger. On an average, 56% of young adults below the age of 35 are found financially literate, compared to 63% of those between the age bracket of 35 to 50 years. In a study on financial literacy of five countries namely, Turkey, Mexico, Colombia, Lebanon and Uruguay, the women were among the low financial literacy groups because of lower income levels when compared with men, and education was another important determinant of the same (Karakurum-Ozdemir et al., 2019).

Bhutan is among the small developing economies. Like any other developing economy, it aspires to be economically self-reliant. In the first Financial Inclusion (FI) summit held in Thimphu, Dasho Penjor, the Governor of RMA, stated that 54% of financial services are concentrated to five Dzongkhags and 53% of credit allocations are concentrated towards four Dzongkhags, indicating disproportionate banking services in the country (Dorji, 2017). Despite several efforts of enhancing financial literacy in the country, much is required to be done to feel the pulse of significant impacts. One survey result shows that saving habit and long-term financial planning is lacking among Bhutanese (Kuensel, March, 2016). The slow growth of recurring and fixed deposit schemes in the financial institutions indicates poor saving habits and long-term financial goals among the people (ibid). Moreover, it revealed that 78% of the respondents had limited financial management skills. Considering the visible gap between the financial inclusion initiatives and financial literacy among the people, there is a requirement of an in-depth study. The study has, however, limited its scope to four variables. These variables are Perception of General Financial Knowledge (PGFK), Perception of Savings and Borrowings (PSB), Perception of Insurance Planning (PIP) and Perception of Making Investment (PMI). All these mentioned variables/dimensions are framed based on above mentioned reviewed literatures and tried to contextualise in the case of Bhutan.

Objectives

The objective of this study is to investigate the perception of financial literacy among the Bhutanese in Chukha and Thimphu. It primarily aims to find out the perception of financial literacy on the identified dimensions based on respondents' qualification.

Hypotheses

Based on the objective above, the following working hypotheses were developed and tested:

H₁: Respondents' qualifications (No formal education, below 10th standard, up to 12th standard, graduates, and above graduates) have significant bearings on PGFK.

H₂: Respondents' qualifications (No formal education, below 10th standard, up to 12th standard, graduates, and above graduates) have significant bearings on PSB

H₃: Respondents' qualifications (No formal education, below 10th standard, up to 12th standard, graduates, and above graduates) have significant bearings on PIP.

H₄: Respondents' qualifications (No formal education, below 10th standard, up to 12th standard, graduates, and above graduates) have significant bearings on PMI.

Research Methodology

Scope and Coverage

All individuals residing in the capital city of Thimphu and Bongo and Darla blocks of Chukha districts are considered as the total population of the research. Study samples were calculated using Krejcie and Morgan (1970) formula of determining sample size. Only those respondents who had some means of access to financial services (having saving, current or fixed deposit A/c) were considered as samples. Thimphu city and two blocks of Chukha district were considered as urban and rural areas of the research respectively.

Sources of Data

The baseline data were collected from the respondents with the help of structured schedule. The data were collected in two sections. The first section contains demographic profiles of the respondents such as gender, age, qualification, income, bank A/c, areas they live in, whereas, the second section includes perception items/questions on financial literacy based on five-point Likert scale (varying from strongly agree to strongly disagree). Besides, secondary data were accommodated to support various inferences drawn from baseline data. The

secondary sources such as, National Financial Literacy Strategy of 2018-2023, developed by RMA, newspaper publications, and published and unpublished journal articles were used as per the need of the study.

Population and Sample Details

A total of 1,30,001 individuals were traced as total population for the study in which Thimphu consists of 1,14,551 individuals (88%) whereas Bongo and Darla consist of 6,950 and 8,500 individuals representing 5% and 7% of the total population respectively. Sample determination by population proportion suggests 337 (88%) from Thimphu alone. However, this share is very less in case of Bongo and Darla, that is 20 (5%) and 26 (7%) respectively. A study by Borg and Gall (1979) suggests a few criteria of sample determination in the research (cited in Cohen et al., 2000, p. 93) in which he mentioned sample size of 30 for relational survey design, more than 50 samples for causal-comparative and experimental studies and 100 samples for survey research. Hence, to make the sample size more representative, samples of 100 each were collected from Darla and Bongo blocks. This makes the total sample size of 537 that is, 337 from Thimphu and 100 each from Darla and Bongo.

Tools of Data Analyses

Research questions, types of research and data types were considered for selecting statistical tools for data analyses (Parikh et al., 2010). Various statistical tools were used to analyse the data and drawing of inferences from the research. Frequency, mean and standard deviations are used to describe the research data. On the other hand, t-test and Analyses of Variance (ANOVA) are used to test the research hypotheses. SPSS software (version-22) is used to obtain the results from the available data.

Discussion and Findings

Reliability Constructs (RC)

Reliability test was run after reversing the scale of a few negative items. The test was run for all four dimensions separately. Generally, a Cronbach alpha value of 0.7 and above is better. However, the value of 0.5 to 0.7 is also acceptable (Cronbach, 1951). The values so demonstrated show good consistency among items in the questionnaire with Cronbach Alpha value of .743 and .864 in case of first and overall dimension. However, for the remaining 3 dimensions, the Cronbach alpha values are above 5. It is in an acceptable range as the number of items in these dimensions is less than 10.

Table 1*Reliability Statistics*

Research dimensions	No. of items	Cronbach's Alpha
PGFK	11	.743
PSB	7	.637
PIP	7	.687
PMI	7	.561
Overall perception of financial literacy	32	.864

Source: Source: Calculated from primary data

Note: PGFK = Perception of general financial knowledge, PSB = Perception of savings and borrowings, PIP = Perception of insurance planning, PMI = Perception of making investment.

Perception of Financial Literacy (PGFK, PSB, PIP and PMI) based on Respondents' Qualification

The mean scores of above 3 (Table 2) delineate satisfactory level of financial literacy among all qualification groups towards all four dimensions. The highest mean score of 3.79 was represented by those respondents who possessed highest qualification (above graduates) whereas the least mean score was reported by no formal education group (3.34) towards PGFK. Lack of minimum formal education could be the plausible arguments for low level of financial knowledge among respondents. PSB of the financial products among respondents was highest among above graduates (3.64) followed by the least among no formal education group (3.47). Similar result has been reported in PIP. Higher qualification of the respondents may be one of the primary reasons of acquiring more knowledge on the financial products and services. A study on college students (Jorgensen, 2007) revealed gradual increase of financial knowledge among students from 1st year to master level. Students of higher class/semester in the college obtained more financial knowledge as compared to those from lower class (Danes & Hira, 1987). Further, implementation of financial literacy-based curriculum, along with other regular subjects at school and college level, show positive impact on financial literacy among students. Studies conducted by Danes and Haberman (2007) and Danes et al. (2013) showed improvements in the financial behaviour because of financial education.

Compared to PGFK, PSB and PIP, the mean score of PMI was reported the highest (3.62) by low 10th standard group and the least being by above graduate

respondents (3.34). Highly educated people may not possess high knowledge and skills in every matter. Remund (2010), in his studies, suggests that FL does not just mean understanding the financial concepts but focused more on effective management of day-to-day finance by an individual.

Majority of the dimensions, as expected, mean score of no formal education group was reported the lowest. The level of FL is found more among educated youth. These people because of their education tend to use internet and mobile banking for certain level of financial transactions enhancing the outreach of financial services. Mobile transactions have the ability of widening outreach of financial services and reducing transaction costs for the financial institutions (Williams & Torma, 2017).

The ANOVA (Table 3) output reveals significant difference between different education groups towards PGFK, PIP and PMI ($p < .05$) in all three variables. The result, however, is not significant towards PSB ($p > .05$). The summary of ANOVA stands as follows:

For PGFK $F(4,532) = 3.487, p < .05 (.032)$

For PSB $F(4,532) = 0.884, p > .05 (.473)$

For PIP $F(4,532) = 4.531, p < .05 (.001)$

For PMI $F(4,532) = 2.815, p < .05 (.025)$

Multiple Comparison (Table 4) show group-wise relationship towards four dimensions. It demonstrates that no formal education group is significantly different from up to 12th standard, graduate and above graduate groups towards PGFK. However, this group does not differ from below 10th standard group. In case of PSB, none of the educational groups are different from each other in the study. Further, in PIP, no formal education group is found different from above graduate and similarly graduate group is found different from that of above graduate group. In case of PMI, one group that is, below 10th standard is found different from the above graduate group. Besides, all the above-mentioned groups, no significant difference was reported between any of the other groups towards any of the test variables as mentioned. From these findings, the alternate hypotheses H_1, H_2, H_3 and H_4 are partially accepted.

Table 2
Descriptive Statistics

Dimensions	Qualification group	N	Mean	Std. Deviation	Std. Error
PGFK	No formal education	20	3.3455	.59254	.13250
	Below 10th std	91	3.6753	.60411	.06333
	Upto 12th std	288	3.7143	.53256	.03138
	Graduate	95	3.7426	.51249	.05258
	Above graduate	43	3.7907	.52991	.08081
	Total	537	3.7051	.54728	.02362
PSB	No formal education	20	3.4714	.63567	.14214
	Below 10th std	91	3.6342	.66504	.06971
	Upto 12th std	288	3.5313	.59617	.03513
	Graduate	95	3.5504	.52591	.05396
	Above graduate	43	3.6478	.50300	.07671
	Total	537	3.5592	.59121	.02551
PIP	No formal education	20	3.3571	.68825	.15390
	Below 10th std	91	3.6515	.59102	.06196
	Upto 12th std	288	3.6801	.50275	.02962
	Graduate	95	3.5940	.50885	.05221
	Above graduate	43	3.9037	.39888	.06083
	Total	537	3.6659	.52707	.02274
PMI	No formal education	20	3.4714	.71368	.15958
	Below 10th std	91	3.6248	.56006	.05871
	Upto 12th std	288	3.5655	.54529	.03213
	Graduate	95	3.4707	.44491	.04565
	Above graduate	43	3.3389	.37412	.05705
	Total	537	3.5371	.53052	.02289

Source: Calculated from primary data

Table 3
ANOVA

Dimensions	Qualification	Sum of	Mean			
Group		Squares	Df	Square	F	Sig.
PGFK	Between Groups	3.141	4	.785	2.654	.032*
	Within Groups	157.397	532	.296		
	Total	160.538	536			

PSB	Between Groups	1.237	4	.309	.884	.473
	Within Groups	186.112	532	.350		
	Total	187.348	536			
PIP	Between Groups	4.905	4	1.226	4.531	.001*
	Within Groups	143.999	532	.271		
	Total	148.904	536			
PMI	Between Groups	3.127	4	.782	2.815	.025*
	Within Groups	147.730	532	.278		
	Total	150.857	536			

Source: Calculated from primary data

*The mean difference is significant at 5% level

Table 4

Multiple Comparison

Dimensions	Qualification		Mean Difference	Std. Error	Sig.
PGFK	No formal education	Below 10th std	-.32987	.13433	.103
		Upto 12th std	-.36888*	.12578	.029
		Graduate	-.39713*	.13382	.026
		Above graduate	-.44524*	.14722	.022
	Below 10th std	No formal education	.32987	.13433	.103
		Upto 12th std	-.03901	.06541	.976
		Graduate	-.06726	.07978	.917
		Above graduate	-.11537	.10066	.782
	Upto 12th std	No formal education	.36888*	.12578	.029
		Below 10th std	.03901	.06541	.976
		Graduate	-.02825	.06436	.992
		Above graduate	-.07637	.08893	.912
	Graduate	No formal education	.39713*	.13382	.026
		Below 10th std	.06726	.07978	.917
		Upto 12th std	.02825	.06436	.992
		Above graduate	-.04811	.09997	.989
Above graduate	No formal education	.44524*	.14722	.022	
	Below 10th std	.11537	.10066	.782	
	Upto 12th std	.07637	.08893	.912	
	Graduate	.04811	.09997	.989	
PSB		Below 10th std	-.16279	.14607	.799

PIP	No formal education	Upto 12th std	-.05982	.13677	.992	
		Graduate	-.07895	.14551	.983	
		Above graduate	-.17641	.16009	.805	
	Below 10th std	No formal education	.16279	.14607	.799	
		Upto 12th std	.10297	.07113	.597	
		Graduate	.08385	.08676	.870	
	Upto 12th std	Above graduate	-.01362	.10945	1.000	
		No formal education	.05982	.13677	.992	
		Below 10th std	-.10297	.07113	.597	
	Graduate	Graduate	-.01913	.06998	.999	
		Above graduate	-.11659	.09670	.748	
		No formal education	.07895	.14551	.983	
		Below 10th std	-.08385	.08676	.870	
	Above graduate	Upto 12th std	.01913	.06998	.999	
		Above graduate	-.09746	.10871	.898	
		No formal education	.17641	.16009	.805	
		Below 10th std	.01362	.10945	1.000	
		No formal education	Upto 12th std	.11659	.09670	.748
			Graduate	.09746	.10871	.898
			Below 10th std	-.29435	.12848	.149
Upto 12th std			-.32292	.12031	.058	
Below 10th std		Graduate	-.23684	.12800	.346	
		Above graduate	-.54651*	.14081	.001	
		No formal education	.29435	.12848	.149	
		Upto 12th std	-.02857	.06256	.991	
Upto 12th std		Graduate	.05751	.07631	.944	
		Above graduate	-.25216	.09628	.068	
		No formal education	.32292	.12031	.058	
		Below 10th std	.02857	.06256	.991	
Graduate		Graduate	.08607	.06156	.629	
		Above graduate	-.22359	.08506	.067	
		No formal education	.23684	.12800	.346	
		Below 10th std	-.05751	.07631	.944	
Above graduate		Upto 12th std	-.08607	.06156	.629	
		Above graduate	-.30967*	.09562	.011	
		No formal education	.54651*	.14081	.001	
	Below 10th std	.25216	.09628	.068		
		Upto 12th std	.22359	.08506	.067	

		Graduate	.30967*	.09562	.011
PMI	No formal education	Below 10th std	-.15338	.13014	.764
		Upto 12th std	-.09405	.12185	.939
		Graduate	.00075	.12964	1.000
	Below 10th std	Above graduate	.13256	.14263	.885
		No formal education	.15338	.13014	.764
		Upto 12th std	.05933	.06337	.883
	Upto 12th std	Graduate	.15413	.07730	.270
		Above graduate	.28593*	.09752	.029
		No formal education	.09405	.12185	.939
	Graduate	Below 10th std	-.05933	.06337	.883
		Graduate	.09480	.06235	.550
		Above graduate	.22661	.08615	.066
	Above graduate	No formal education	-.00075	.12964	1.000
		Below 10th std	-.15413	.07730	.270
		Upto 12th std	-.09480	.06235	.550
	Above graduate	Above graduate	.13181	.09686	.653
		No formal education	-.13256	.14263	.885
		Below 10th std	-.28593*	.09752	.029
	Upto 12th std	-.22661	.08615	.066	
	Graduate	-.13181	.09686	.653	

Source: Primary data

*Mean difference is significant at 5% level.

Conclusion

Higher qualification of the respondents was found supporting for achieving higher FL in most of the dimensions. Inferences of this study may help fulfilling research gap and provide a few insights for financial educators and policy makers which may be supportive for increasing financial literacy and wellbeing of the people. It adds knowledge on the existing literature of financial literacy with a special reference to Bhutan.

Limitations and Future Scope of the Study

- a. The samples of the study were drawn from Thimphu and two blocks of Chukha district. Collection of samples would have been more representative in case of inclusion of a greater number of cities and blocks.

- b. The items in the questionnaire were translated into local language Dzongkha to obtain responses from less literate and illiterate respondents. This might have brought some differences in the responses.

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Outreach, Sustainability and Efficiency of Microfinance Institutions in Nepal

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Abstract

Microfinance Institutions (MFIs) provide financial services to those who have no access to finance and are hence considered a tool for poverty alleviation. However, the clear relationship between the depth of the MFIs and their sustainability is still lacking as there is an ongoing debate on whether the two components complement each other or whether there exists a tradeoff. This study applied the panel regression analysis to the data from 44 MFIs of Nepal from 1999 to 2019 and explored the inter-relationship between depth and sustainability of MFI in the Nepalese context. In addition to the two variables of interest, this study further analyses the interaction effect of operational efficiency. The findings show a significant tradeoff relationship between outreach and sustainability at a 99% confidence interval, further moderated by operational efficiency. As a result of increased operational efficiency, MFIs can have better outreach and sustainability. These findings can thus provide a better policy prescription that promotes operational efficiency and ultimately improve both the outreach and sustainability of MFIs.

Keywords: microfinance institutions, depth of outreach, financial sustainability, operational efficiency, Nepal

Introduction

Microfinance Institutions play a significant role in poverty reduction by reducing the gap between formal financial institutions and the poor (Cull et al., 2018). Microfinance pioneers believe that financial access can significantly help in reducing poverty (Dunford, 2006; Littlefield et al., 2003). Access to financial tools can help in increasing investments, diversifying savings, accumulating assets, and contributing to empowering women, the poor, the underprivileged, and the uneducated (Hermes & Lensink, 2011).

MFIs differ from the contemporary financial institutions because it exhibits dual nature, namely, social and for-profit (Molinero et al., 2006). Social nature mainly focuses on poverty alleviation, financial access and empowerment, whereas for-profit nature focuses on increasing profitability and efficiency. Proper alignment of the social and for-profit nature is the primary objective for any MFI. The dimension

of social impact is proxied through the depth of the outreach, while profitability and efficiency can be proxied through financial sustainability.

Outreach is principally defined in terms of breadth (how many poor) and depth (how much poor) (Rhyne, 1998; Okumu, 2007; Yaron, 1994). Woller and Schreiner (2002) proposed six dimensions of measuring outreach; depth, worth to users, cost, width, length and scope. The concept of outreach incorporates both qualitative and quantitative, and so do its indicators. However, they are relatively simple to collect and provide a good proxy (Ledgerwood, 2000). On the other hand, the sustainability of MFI is considered to its ability to cover all of its costs with the revenue it earns without relying on donor funding (Ledgerwood, 2000). According to Degefe (2009), as cited in Rao and Fitamo (2014), if subsidies fully or partially recover the costs and expenses, it does not imply that MFI is financially and operationally viable; it means they are not sustainable. Operational efficiency is MFIs' ability to meet certain standards or benchmarks, thus lowering its cost. According to Bos and Millone (2015), MFIs that have a greater depth of outreach are more effective in addressing their goals.

Table 1

Status of Microfinance as of 2021

Particulars	Value
No. of MFIs	78
No. of Branches of MFIs	4018
Total Members of MFIs	4,886,881
Total Capital Fund of MFIs (NPR)	32,228,856
Total Loan and Advances of MFIs (NPR '000)	1,462,160,550
Total Savings in MFIs (NPR '000)	112,933,518
Total Loan Loss Provision of MFIs (NPR '000)	8,865,977
No. of Total Staff	19,058

Source: (NRB, 2021)

As an outreach of MFI attempts to address the amelioration of poverty while sustainability is concerned with profitability, there persists an ongoing debate on the nature of the relationship between these two seemingly opposing goals. Some studies show no real relationship between these factors (Nurmakhanova et al., 2015), whereas some studies show a tradeoff between the two (Hermes & Lensink, 2011). This debate ultimately attempts to find the solution on whether, in

the future, MFI should be a profit-oriented, self-sustaining, privately funded, or socially subsidized non-profit organization (Morduch, 2000). Thus, from a perspective of policy development, it is imperative to understand the nature of financial sustainability, outreach, and efficiency of the institutions to formulate accurate praxis that will set the course for future actions of MFI.

In Nepal, microfinance has been officially recognized as a tool for poverty alleviation since the country's Sixth Plan (1980/81-1984/85), and it gained momentum in the 1990s after the restoration of democracy. Currently, the competition in microfinance has been increasing as many clients in rural areas have more outstanding options than the MFI (Risal, 2018).

As of mid-October 2020, 78 MFIs are operating in Nepal. Although there is a decline from 90 in 2019, considering that there were only two operational MFIs in 1993, the number of MFIs has considerably risen along with the number of centers and branches over the years (NRB, 2021; Shrestha, 2019). The financial inclusion and access ambition of NRB is well aligned with the mission of the MFIs. In Nepal, there are both retail and wholesale MFIs, and four of them are depository institutions. The number of bad debts and non-performing loans has been well under control, at around 2% of the total loans. However, this could mean that the institutions have not been effective in reaching the depths of real poverty. To fulfill the social aim, the status of the depth of outreach of MFIs should always be considered during the policy-making process.

So far, very few studies have investigated the relationship between financial sustainability, outreach, and efficiency in Nepal. For instance, Jha (2017) has shown that good corporate governance practice is conducive to improving the MFIs' social mission and its financial sustainability. On the other hand, Adhikary and Papachristou (2014) have found that in South Asia, including Nepal, the outreach's depth and breadth are positively associated with profitability, and the depth further reduces the risk than breadth.

This study examines the relationship between these two dimensions, namely outreach and sustainability, in the context of Nepalese MFIs. In this study, savings and credit cooperatives are also included as they were registered under NRB (Nepal Rastra Bank) under a limited banking operation license till July of 2018 with similar objectives to MFIs. These saving and credit cooperatives are formed under the cooperative model of MFIs. Moreover, this study further examined the role of

operational efficiency in the relationship. Outreach, sustainability, and efficiency are widely used in microfinance, and some studies use them even without a clear definition (Ledgerwood, 1998; Hulme & Mosley, 1996). There are various indicators for measuring outreach, financial sustainability, and operational efficiency based on their concepts (Schreiner & Yaron, 1999; Ledgerwood, 1998; Yaron, 1994), and studies have used a variety of indicators to study the relationship (Nurmakhanova et al., 2015; Hermes & Lensink, 2011; Okumu, 2007).

Literature Review

Sustainability has been defined in various concepts, and different studies use different terms based on their concepts, such as profitability, self-sufficiency, financial self-sufficiency, and viability (Ledgerwood, 1998; Rhyne, 1998; Yaron, 1994; Schreiner, 2001; Paxton, 2002). Rhyne (1998) has defined sustainability as the permanent existence of organizations meeting the specified objectives, inferring that the institution must be sustainable to meet the objective of poverty alleviation and reaching the poor. According to Woller and Schreiner (2002), the two concepts of depth of outreach and financial self-sufficiency are not mutually exclusive, and with the proper approach and strategy, both are jointly obtainable. In this regard, there are two schools of thought on improving the standards of the poor, namely, the poverty approach and the sustainability approach (Rao & Fitamo, 2014). The poverty approach focuses on reaching the poorest of individuals regardless of the cost, and the additional cost incurred, as poor clients are costly to serve, should be covered through donations. In the sustainability approach, the institutions focus on reducing the cost to insure that revenue can cover the cost in the long term, and the donation is used to cover start-up costs (Schreiner, 2002).

The belief of a tradeoff relationship between financial self-sufficiency and depth of outreach can be true when the focus on financial self-sufficiency will divert the MFIs' attention from poverty alleviation or reaching the poor because of the higher cost per dollar associated with lending to the poor (Woller & Schreiner, 2002). Hermes et al. (2011), with a relatively greater dataset, found convincing evidence on the tradeoff relationship between sustainability and outreach, and this finding is well supported by Zainuddin et al. (2020), Awaworyi Churchill (2020), Cull et al. (2007), and Makame and Murinde (2006). However, Nurmakhanova et al. (2015) showed minimal empirical evidence that the tradeoff relationship exists. At the same time, Quayes (2012; 2015) found a complementary relationship between

these two variables meaning that reaching out to the poor can bolster financial sustainability.

Table 2
Major Studies and their Findings

Authors	Methodology	Region	Sample	Findings
Hermes et al. (2011)	Stochastic Frontier Analysis	Global	435	Tradeoff
Quayes (2012)	Panel Analysis	Global (83 countries)	702	Complementary positive relationship
Paxton (2002)	Correlational	Latin America and Africa	18	Tradeoff
Quayes (2015)	Panel Analysis	Global (87 countries)	764	Positive Relationship
Churchill (2018)	3 stage least square	33 African Countries	206	Tradeoff
Sim and Prabhu (2014)	Black Sholes Model	India	32	Positive Relationship
Nurmakhanova et al. (2015)	Panel Analysis	Global (71 countries)	450	No tradeoff
Cull et al. (2007)	Comparative Study	Global (49 countries)	124	Tradeoff
Olivares-Polanco (2005)	OLS regression	Latin America	28	Tradeoff
Makame and Murinde (2006)	Panel Analysis	East African (5 countries)	33	Tradeoff
Gonzalez and Rosenberg (2006)	Panel Analysis	Global	2600	No tradeoff
Hudon and Traca (2011)	OLS regression	Global	100	Positive Relationship
(Sheremenko et al., 2017)	2 Stage least Square	Eastern Europe and Central Asia	160	Tradeoff

(Mia & Chandran, 2016)	Panel Analysis	Bangladesh	163	Tradeoff
(Fadikpe et al., 2022)	GLS regression	Sub-Saharan Africa	105	Tradeoff
(Purwanto et al., 2020)	Data Envelopment Analysis	Indonesia	40	Tradeoff
(Postelnicu & Hermes, 2018)	Panel Analysis	Global	6934	Conditionally Positive
(Zainuddin et al., 2020)	Correlated Random Effects	Global	1232	Tradeoff
(Nyanzu et al., 2019)	Multilevel Analysis	Global	1237	Conditionally Positive
(Awaworyi Churchill, 2020)	3 stage least square	Global	1595	Tradeoff
(Wry & Zhao, 2018)	GLS regression	Global	2037	Tradeoff

Better operational efficiency is indicated by the lower operating costs to reduce the cost of the borrower, which affects the sustainability and outreach of MFIs (Gonzalez, 2007). Operating Expense Ratio (OER) is taken as an indicator of operational efficiency in this study as OER has a linkage with the interest rate, which affects operational self-sufficiency (Gonzalez, 2007). Studies have found a significant negative relationship between operational efficiency and depth of outreach (Hermes et al., 2011). Along with that, Zeller and Johannsen (2008) find that attributable to the spill-over effect, those MFIs that go all-out for efficiency have a lower score on outreach to the poor but eventually cause higher poverty reduction than MFIs that score higher on indicators of outreach. Thela (2012) found that microfinance institutions that demonstrated highly on outreach fell behind in sustainability due to operational inefficiency. Abate et al. (2014) attribute the lack of cost-efficiency (financial sustainability) to the inherent ability of microfinance and cooperative institutions. MFIs can have any priority, be it financial sustainability or outreach, which directly affects the production function of any MFI, which in turn also affects the norms of efficiency, making efficiency a distinct and important dimension (Balkenhol, 2007). Based on these evidences, the interaction effect of operational efficiency is taken into consideration.

Although debated for a long time, the relationship has not been established and remains a gap in the study of MFIs (Awaworyi Churchill, 2020; Postelnicu & Hermes, 2018; Wry & Zhao, 2018). This study contributes to the current status quo of the debate and aims to provide evidence and support the findings that this study shows without any preconceived biases. Many findings have shown positive relationships based on many other external criteria (Nyanzu et al., 2019; Postelnicu & Hermes, 2018), which this study addresses by including operational efficiency in the model.

Theoretical Framework

In this study, the relationship between financial sustainability and depth of outreach is examined independently and with operational efficiency as an interacting variable.

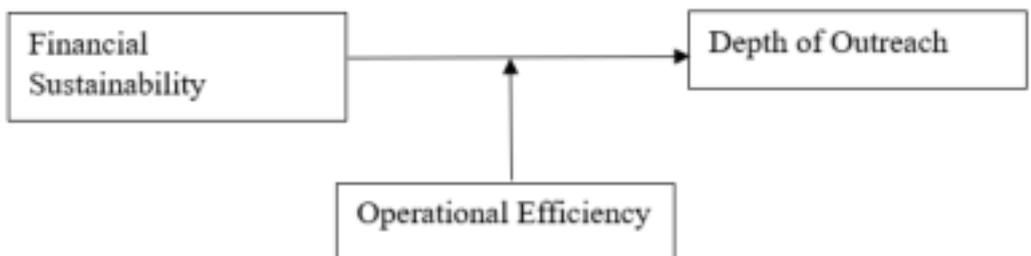
Figure 1

Conceptual Framework 1



Figure 2

Conceptual Framework 2



Methodology

Data

Data for this study is extracted from the MIX market (Microfinance Information Exchange, 2019), and the data regarding GDP per capita is extracted from the database of the World Bank. MIX market is the microfinance data service operated by the Microfinance Information Exchange. The data is available on the World

Bank's data catalog for public use, licensed under CC-BY 4.0. This study includes 44 MFIs, which is about 57% of total MFIs, as a sample of this study, and the data collected are an unbalanced panel. The sample was decided based on data available on the MIX market as the MIX dataset is used as the MFI communities universally accept it. Further, though data from 2016 to 2019 is available on the Nepal Rastra Bank website, they are not complete and do not furnish an annual report of each MFI. Figure 3 shows the distribution of sample data, and a major part of the data is concentrated from 2008 to 2015 because most of the MFIs started their operation in this timeframe.

Figure 3
Distribution of Sample Data with Time

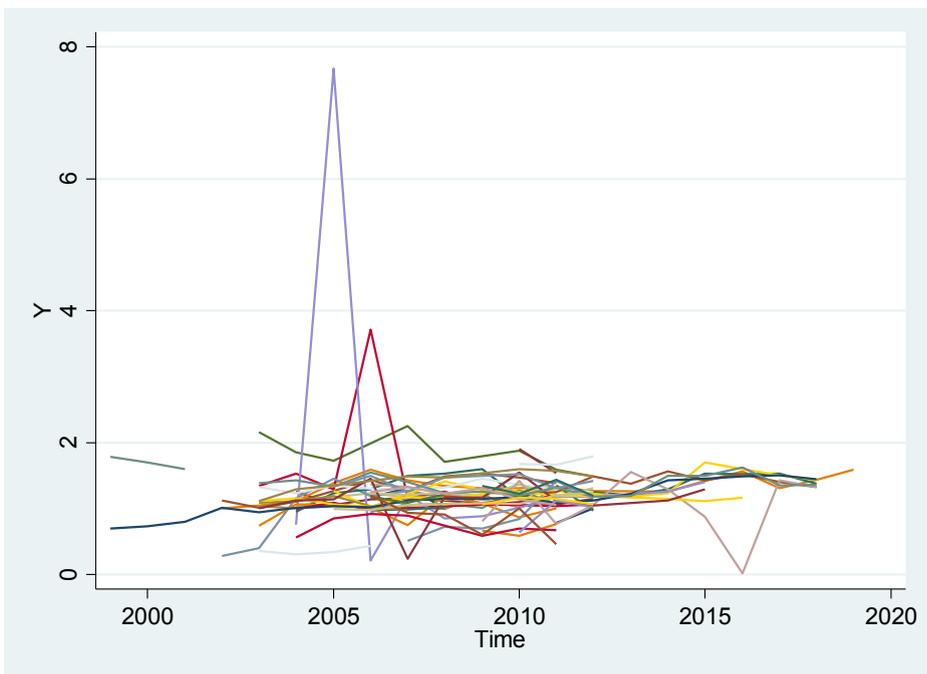


Table 3 shows the number of MFIs included each year in our sample. Our data has only 2 MFI data from 1999-2001; the number of MFI increases along with more MFIs in operations.

Table 3

Description of Panel (No of MFIs per year)

Year	Number of MFIs for which we have data in a particular year	Year	Number of MFIs for which we have data in a particular year
1999	2	2010	35
2000	2	2011	36
2001	2	2012	24
2002	4	2013	6
2003	15	2014	10
2004	22	2015	10
2005	27	2016	8
2006	33	2017	7
2007	32	2018	7
2008	31	2019	1
2009	27	Total	341

Variables

The following proxies are used for the depth of outreach, sustainability and operational efficiency.

Dependent Variable:

Operational Self-sufficiency (OSS)

Operational Self-sufficiency helps to measure whether MFIs are generating enough operating revenue that is required to offset operating expenses, financial costs and loan loss provision or not. If the MFI does not reach its operational self-sufficiency, losses will reduce its equity, resulting in a smaller share available for loans to borrowers (Ledgerwood, 1998).

Independent Variables:

Average Loan Size divided by the GDP per capita (AGDP)

Average loan size per purchasing power is the most common proxy for the depth of outreach (Schreiner, 2002). Although not the perfect measure for the current poverty level, AGDP is a great proxy for the depth of outreach as there is a strong correlation between income level and the size of loans (Quayes, 2012).

Operating Expense Ratio (OER)

The Operating Expense Ratio measures the efficiency of MFIs by comparing the operating cost associated with the portfolio size.

Table 4 shows the formula and significance of the variable/indicator used in this study.

Table 4

The formula of the selected indicators

Indicator	Formula	Significance
Dependent Variable		
OSS	Operating Revenue/(Financial expense + Loan-loss provision expense+ Operating expense)	Measures how well an MFI covers its cost through operating revenues. This variable is a proxy for the sustainability of the MFI
Independent Variables		
AGDP	Average Loan Balance per Borrower/ GDP per Capita	Compares the average loan balance of borrowers as a percentage of GDP per capita to access the reach of MFIs. This variable is a proxy for the depth of the outreach.
OER	Operating Expense/Average gross loan portfolio	Measures the efficiency of MFIs by comparing the operating cost associated with the portfolio size

Source: (Christen et al., 2003)

Regression Model

There are two models examined in this study. The first model will investigate the relationship between OSS and AGDP, and the second model considers the moderating effect of the previous relationship.

Model 1:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + c_{it}$$

Where,

α_i = Unknown intercept for each entity

Y_{it} = Operational Self-sufficiency where i = Entity and t = time

β_1 = Coefficient relating to the independent variable, X_1 , to the outcome, Y .

X_{it} = Average Loan size divided by the GDP per capita and,

c_{it} = Error Term

Model 2:

$$Y_{it} = \alpha_i' + \beta_1' X_{1,it} + \beta_2' X_{2,it} + \beta_3' X_{1,it} X_{2,it} + c_{it}$$

Where,

α_i = Unknown intercept for each entity

Y_{it} = Operational Self-sufficiency where i = Entity and t = time

$X_{1,it}$ = Average Loan size divided by the GDP per capita

$X_{2,it}$ = Operating Expense Ratio,

β_2' = Coefficient relating the moderator variable, to the outcome.

β_3' = The regression coefficient for the interaction term, provides an estimate of the moderation effect.

Results

Descriptive Statistics

Table 5 provides a descriptive analysis of the chosen variables. OSS ranges from as low as 0.0144 to 7.6754, with an average of 1.2156. At the same time, the average loan size by GDP per capita has a maximum value of 1.1126 and an average of 0.1076. Moreover, on average, MFIs have 0.4768 of the operating expense ratio, and a successful MFI has OER between 13%-21% (Ledgerwood, 1998), so MFIs of Nepal do not stand in good health in terms of operational efficiency.

Table 5

Descriptive Statistics

Variable	Observation	Mean	SD	Min	Max
Dependent Variable					
OSS	329	1.2156	.4852	.0144	7.6754
Independent Variables					
AGDP	281	.1076	.0870	.0197	1.1126
OER	311	.4768	.6539	.0004	6.9821

Correlation

Table 6 shows the correlational analysis between the dependent variable and explanatory variables. It shows a statistically significant negative relationship with a coefficient of -0.3598 between sustainability and depth of outreach. The correlational coefficient between operational efficiency and depth of outreach is also statistically significant, with the value of -0.2199 showing a negative relationship. The relationship between operational efficiency and sustainability is nearly nonexistent but cannot be concluded due to a lack of statistical significance.

Table 6*Correlational Analysis*

Correlation	OSS	AGDP	OER
OSS	1		
AGDP	-0.3598***	1	
OER	0.0241	-0.2199***	1

Note: ***: Significant at a 99% confidence interval

Pooled Regression

The pooled regression results of all the data using all the MFI show that the model is statistically significant at a 99% confidence interval with F statistics of 6.09, and an R-squared value of 0.5481 shows that the independent variables significantly explain the dependent variable.

Wald test for joint effects (Wald, 1943) is done to check if the pooled regression is free from joint effects, but the results show an F statistic of 5.05, confirming that the pooled regression is not free from joint effects. This makes the pooled regression technique obsolete, making the fixed effect model or random effect model a better alternative.

Test for Multicollinearity

To test for multicollinearity, the variance-inflating factor (VIF) is calculated. VIF shows the extent to which the presence of multicollinearity inflates the variance of an estimator. The VIF test shows that explanatory variables included in the study have no multicollinearity problem as the tolerance value is above 0.10, and the VIF is below 10 (Gujarati, 2004).

Test for Normality

The normality test for variables is done with the help of the Shapiro-Wilk test for normal data (Shapiro & Wilk, 1965). Normality ensures that the residuals of variables have minimum variance (Baltagi, 2008). Test results show that all the variables have a p-value of 0.0000, meaning that variables are not normal.

Test for Serial Correlation

Serial correlation in the panel data models biases the standard errors, and it is essential to find the serial correlation in the idiosyncratic error terms (Drukker, 2003). This study uses the Wooldridge test for autocorrelation to test the serial correlation as it is an application for both fixed and random models (Wooldridge,

2002). The results of the test show F statistics of 1.418 and a p-value of 0.244, meaning that the null hypothesis stands and there is no serial correlation in the model.

Hausman Test

With the availability to run a fixed-effects model and a random-effects model, both the regression models are run and subjected to the Hausman test. Hausman test uses two different estimators for the parameters of panel regression, in this case, fixed effect estimators and random effect estimators, and compares which of the two estimators are consistent and efficient (Hausman, 1978). The results of the Hausman test show a chi-square value of 35.87, where a p-value of 0.0000 is achieved, so we reject the null hypothesis meaning that the fixed effects model is a preferred model (Greene, 2012).

Test for Heteroscedasticity

Datasets are further tested for the presence of heteroscedasticity with the help of a modified Wald test for group-wise heteroscedasticity in a fixed effect regression model. The results of this test show a p-value of 0.0000, so we reject the null hypothesis. Hence, the dataset suffers from heteroscedasticity.

Fixed Effect Model Estimation

The analysis shows that our dataset has no autocorrelation but suffers from heteroscedasticity. The variables, although not normal, do not suffer from multicollinearity. So, with the Hausman test showing the fixed effect model as the preferred model, the fixed-effect model of regression has been run. The regression table was then corrected using White's heteroscedasticity-corrected standard errors (robust standard errors) as they can be used to get estimates of the true parameter values (White, 1980), which rules out the problem of heteroscedasticity (Hoechle, 2007).

Tables 7 and 8 provide us with the analysis of the regression of sustainability and depth of outreach of MFIs of Nepal (model 1). The model is statistically significant at a 99% confidence interval, and both the coefficients and intercepts are statistically significant at a 99% confidence interval. The independent variable, depth of outreach, explains 34% of the variation of a dependent variable, sustainability. The study shows a significant tradeoff relationship between sustainability and depth of outreach. The coefficient of the explanatory variable is -3.974, which means one unit increase in depth of outreach has a nearly four-fold

opposite effect on sustainability. The intraclass correlation (ρ) is 67%, meaning 67% of the variance is due to the difference across panels. Moreover, this rules out the idiosyncratic error in the regression results.

Table 7

Fit Statistics for Fixed Effect Regression of Model 1

Fit Statistics			
R-Square	0.3481	F-stat	67063
Rho	0.6727	p-value	0.0000

Table 8

Parameter Estimates for Fixed Effect Regression of Model 1

Parameter Estimates				
Variable	Coef.	Robust Std. Err.	t-value	p-value
Intercept	1.658086***	0.4832495	-8.22	0.0000
AGDP	-3.9742***	0.0520131	31.88	0.0000

Note: ***= Significant at 99% confidence interval

Tables 9 and 10 provide the regression results of sustainability, outreach, efficiency, and interaction between outreach and efficiency (model 2). The model and all the variables are statistically significant, and independent variables explain 34% of the variation of the dependent variable. Both depths of outreach and operational efficiency negatively affect sustainability, with coefficients of -4.445 and -0.126. A unit change in AGDP has a 4.445 negative change in sustainability with the efficiency included in the model. So, with operational efficiency in the model, the coefficient of the depth of outreach, even when operational efficiency is zero, has increased.

Furthermore, the interaction effect has a positive effect on sustainability so that whenever the operational efficiency increases, the strength of the negative relationship between sustainability and depth of outreach decreases. This result shows that operational efficiency moderates the relationship between sustainability and depth of outreach. Moreover, a 67% intraclass correlation rules out the idiosyncratic error in the regression results.

Table 9*Fit Statistics of Fixed Effect Panel Regression of Model 2*

Fit Statistics			
R-Square	0.3427	F-stat	107.61
Rho	0.67101	p-value	0.0000

Table 10*Parameter Estimates for Fixed Effect Panel Regression of Model 2*

Parameter Estimates				
Variable	Coef.	Robust Std. Err.	t-value	p-value
Intercept	1.665192***	0.2686733	-16.55	0.0000
AGDP	-4.44745**	0.0529315	-2.38	0.0220
OER	-0.12606**	1.251794	2.23	0.0310
AGDP*OER	2.797717***	0.0404463	41.17	0.0000

Note: *** = Significant at 99% confidence interval, ** = Significant at 95% confidence interval

Discussion

This paper includes the data solely from the MFIs of Nepal to study the status of the ongoing debate on sustainability and outreach. This study also adds operational efficiency to the model to understand the importance of day-to-day operations in reaching out to the poor and remaining sustainable. The descriptive statistics show a large variation in OSS, which can be attributed to the fact that some MFIs have a wide span of coverage up to 77 districts while some are operational only in 2 districts. On average, the financial sustainability of the MFIs of Nepal is well over par as the MFIs have generated enough revenue to cover their direct costs. Moreover, it can be suggested that although microfinance is supposed to target the underprivileged community, the reach of microfinance may not have reached the poorest of the poor. This is because the literature shows that in Nepal, the richest 20% hold 56.2% of all wealth and the poorest 20% hold 4.1% of total wealth, and on average, 28.6% of the total population is multidimensionally poor, and the richest 10% earn three times more than three times the poorest 40% (HAMI & Oxfam, 2019). Overall, operational efficiency and sustainability are on a safer side than the industry standards (Consultative Group to Assist the Poor (CGAP), 2003).

Operational efficiency was found to be negatively related to sustainability. Even financially sustainable institutions could face lower operational costs due to efficiency and contextual factors like higher population density, the higher debt absorption capacity of clients, homogenous clients, group liability, and greater competition. Along with that, financially sustainable institutions are technically inefficient because of grants and subsidies (Balkenhol, 2007), and access to capital funds is found to be adequate in Nepalese MFIs (Dhakal, 2007). Nevertheless, the interaction of outreach and operational efficiency shows a positive relationship; this can be explained as the cost of smaller loans to the impoverished clientele is higher, and the revenues fall shorter. Hence, to increase sustainability, either fund needs to be increased using the subsidy or cost needs to be decreased, increasing the efficiency, and this can be achieved only by ensuring that at the outreach level, the cost is reduced. These findings were in alignment with the findings of Cull et al. (2007), Awaworyi Churchill (2020) and Zainuddin et al. (2020).

In contrast to Nurmakhanova et al. (2015), the results of this study show that focusing on increasing the depth of outreach has a significant negative effect on the sustainability of the MFIs. The empirical results also show a tradeoff between operational efficiency and sustainability, but the interaction of outreach and operational efficiency positively affects sustainability. So, increased outreach with increased operational efficiency positively affects sustainability. Hence, given that the MFIs have good operational efficiency, the win-win situation of sustainability and outreach can be accomplished.

The tradeoff relationship between sustainability and outreach could be attributed to the increased cost of reaching poor clients. The establishment of new centers and branches in remote areas have greater operating cost for MFIs; Besides, the greater small average loan balance per borrower also adds to the greater processing costs and, in turn, affects sustainability. However, with better operational efficiency, these costs can be cut down and, in turn, aid in the sustainability of the organization. Better operational efficiency cuts down the processing time of loans, thereby decreasing the cost per loan, and also monitors whether the loans are utilized productively or not. So, the positive relationship between outreach and sustainability could be achieved by maintaining a better operational efficiency of the organization. This finding is aligned with Purwanto et al. (2020) and Zeller and Johannsen (2008), which show that MFIs that focus on

operational efficiency have a large spill-over effect resulting in higher poverty reduction at the macro level.

However, the depth of outreach indicator shows room to improve. Given the negative relationship between sustainability and outreach, sustainability well over par the industry standards provide a way to improve the depth of outreach of MFIs in Nepal. These findings have major policy implication as it provides concrete evidence that the target of MFIs should not be limited to the only dimension like that of reaching out to the poor since it has a significant effect on sustainability. Hence, before enforcing policies in reaching the poor, operational efficiency standards should be maintained to make sure sustainability is impacted positively.

Limitations

The major limitation of this study is the lack of Nepal's MFIs in the dataset. Out of all the MFIs in Nepal, about 57% of the total MFIs have been used in this study. For this study, the fixed-effects model has been used, limiting the study to the time-invariant variables; time-variant variables are not included as a dummy variable to reduce the noise in the model. This study has not considered the coronavirus impacted years as they are subject to a different study to find out how the pandemic impacted the debated relationship between outreach and sustainability.

Conclusion

The policymakers have recognized Microfinance Institutions in Nepal as a tool for poverty alleviation. To fulfill the aim of poverty reduction, the social mission of MFIs to reach the underprivileged has implications for the sustainability of MFIs. Therefore, the regulators need to understand the status of these essential dimensions and the relationship between them to formulate to meet their aim. Furthermore, the policymakers need to ensure that their regulatory standards consider the interaction of other dimensions, such as operational efficiency.

It is recommended that further study be carried out using composite indicators incorporating other essential indicators of sustainability, depth of outreach, and operational efficiency. In addition to controlling the influence of external factors such as governmental policies, economic situation, and geography, the regional distribution could help isolate the actual impact of these variables. This study did not venture into these variables as the richer dataset needed for the investigation was hitherto unavailable. Further, the impact of COVID-19 on the relationship could be studied for immediate policy actions.

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Zeller, M., & Johannsen, J. (2008). Is there a difference in poverty outreach by type of microfinance institution? Country studies from Asia and Latin America. *Savings and Development*.

HRM-Firm Performance Linkage: Unpacking the Black-Box

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Abstract

The objective of the study is to bring out the linkages between HRM practices and organizational performance that continue to enthuse the researchers and practitioners as there are mediating and interacting variables in this relationship of distal nature. The black-box model approach was adopted to keep the options open for the researchers to unpack the box with intervening variables. In evaluating the extant literature, the methodology of the study, and intervening variables that link the relationship are derived from the organizational behavioural processes of individual, group, managerial and organizational structures and functions. The structural and functional integration suggested bridging the gap between HRM practices and performance.

Keywords: HRM-performance, HRM practices, OB processes, Strategic HRM, Black-Box Model

Introduction

HRM practices are generally underlined by the patterns of employee utilization in achieving the strategic goals of the organization. In this strategic perspective, HRM can be conceptualized as bundles of practices, HR configurations or contingency-based HRM (Delery & Doty, 1996). However, the interaction between HRM and firm performance remains elusive as the interrelationships are confounded. Researchers have attempted to delineate the confounding variables of interrelationships that link HRM practices with firm performance (Messersmith et al., 2011; Savaneviciene & Stankeviciute, 2010). The clarity required evades the researcher as HRM practices are sometimes distal or proximate in their effects. The inability to decode the inter-relationships between HRM and firm performance has led researchers to label it the black box (Becker & Gerhart, 1993). This paper attempts to delineate the relationship using a conceptual approach based on the extant literature.

Literature Review

The causal link between HRM practices and organizational performance has not been comprehensively explained by researchers as most of the studies use certain individual level or group-level variables or different approaches (Guest, 1997).

Even when researchers can provide evidence, more specifically correlational ones “there is almost no evidence to document that the causal relationship is of the form, HR-business performance rather than some other causal form” (Gerhart, 2005, p. 177). These unknown and/or unexplained processes or mechanisms in the HRM-performance link are labelled in the literature as the HRM “black box” (Becker & Gerhart, 1993, p. 793). This is the critical missing link in the explanation of HR practices leading to organizational performance (Harney & Jordan, 2008; Purcell & Hutchinson, 2007). In other words, in the absence of a direct relationship between HRM practices and organizational performance, or when “the specific causal model remains unclear” researchers are to search for the mediating and the moderating variables that influence the HRM-performance link (Becker & Gerhart, 1993, p. 793).

What can be called the clouded effect, the relationship between HRM and performance is due to several factors and processes, the nature of which is clouded. The black box is first of all because of the confusion surrounding the interpretation of HRM outcomes and performance wherein the former is equated with individual and group-based processes and the latter denotes company indicators (Guest, 1997). Secondly, it is argued that the invisible hand of HR gestalt is responsible for the linear and the non-linear relationship where the whole is different from the parts (Paauwe, 2004). The third issue concerns whether the HRM practices are additive in the nature of more practices producing more outcomes or multiplicative in the nature of non-linear combinations of cause and effect (Wall & Wood, 2005).

The fourth issue of relating HRM with performance is that of the lack of agreement on identifying the correct “fit” among which the three fits are internal, organizational and strategic fits (Wall & Wood, 2005, p. 431). The fifth issue surrounds the relation of HRM to outcomes/performance. There is no consensus as to what constitutes HRM in the organizational settings and the multiple interpretations are more so when it comes to the measurement of independent and dependent variables of HRM-performance linkages which make it “multidisciplinary” in nature (Boselie et al., 2005, p. 72) with a “collection of multiple, *discrete* practices with no explicit or discernible link between them, or the more strategically-minded *system* approach (that) views HRM as an integrated and coherent “bundle” of mutually reinforcing practices (Boselie et al., 2005, p. 73). The sixth issue relates to the “opportunity for multidisciplinary as well as multilevel research” (Guest, 2017, p. 6).

The seventh issue that requires consideration is the less importance attached to the influence of the context which can be business strategy, employee attributes, institutional setting, and related environmental influences, in influencing HR-performance linkages (Gerhart, 2005). The eighth issue concerns the lack of consensus on the contents of the “black box” in the HRM-performance linkages including the number of known and unknown boxes that supposedly explain the linkage (Savaneviciene & Stankeviciute, 2010). In the ninth issue, Wright and Nishi (2004) bring out the contradictions found in theory versus practice in that there are always differences between intended HRM, actual or implemented HRM and perceived HRM and when it comes to the measurement process of performance aspects, there is every possibility of contaminated data being analysed.

Finally, Jackson and Schuler (1995) confirm that theories as divergent as general systems theory, theory of role behaviour, institutional theory, theory of resource dependence, human capital theory, transaction cost economics, and agency theory besides other perspectives put forward strong to weak relationships between HRM practices and performance. It is in the background of these inadequacies, contradictions and incompatible views that a black-box model is proposed as filling the gap between HRM and firm performance.

Conceptual Framework of the Study

The extant literature “can be generally categorized as optimistic concerning the potential for progressive HRM practices to enhance the performance of employees and organizations” (Deleaney & Huselid, 1996, p. 950). However, the general view is that HRM practices per se cannot bring about the employee/organizational performance as there are always organizational and behavioural processes involved in the *real practice* of HR practices themselves (Boselie et al., 2005; Messersmith et al., 2011). “...Conceptually organizational performance does not stem from the HR practices themselves but rather from the human efforts that result from using HR practices” (Messersmith et al., 2011, p. 1107).

The interaction between HRM and firm performance is mediated by a host of organizational, managerial and behavioural variables (Guest, 1997; Boselie et al., 2005). HR practices are to be aimed at “building the human capital pool” and “stimulating the kinds of human behaviour that constitute an advantage” or effecting the same in the organizational activities (Boxall & Steeneveld, 1999, p. 445; Boselie et al., 2005). The key issue here is that of identifying the processes, the mechanisms and the context in which the same is affected. The major

implication of unpacking the black box is that of identifying the mediating and the moderating variables given the set or the bundles of best/progressive HR practices and the targeted performance.

The HRM-performance linkages and the mechanisms that are involved in these relationships are approached from the three different theoretical perspectives, true to the nature of a scientific inquiry that is still progressing (Paauwe, 2004; Guest, 1997). Delery and Doty (as cited by Paauwe, 2004) refer to the three ways of theorizing to explain the HRM-performance linkages: the universalistic, the contingent and the configuration mode. The universalistic perspective focuses on the application of best practices and the creation of high-performance work systems to show the relationship. The assumptions that guide this perspective include the linear relationship between HRM and organizational performance, the success of best practices across a wide variety of situations and the performance is equated with financial indicators. Otherwise labelled the normative view, these theories prescribe the best practices without adapting them to the necessary conditions.

In the contingent relations complex interactions between HRM variables, contingency variables like company size and age, the management style practised, the technology used, the extent of trade union activities, the nature of the industry, the strength of the capital, the ownership culture, and the location and performance variables are supposed that sums up the entire relationship between the three groups of variables (Paauwe, 2004). More similar to the contingency perspective, strategic theories of HRM-performance linkages are “concerned with the relationship between a range of possible external (as well as internal) contingencies and HRM policy and practice” (Guest, 1997, p. 264). These are the contingencies that take on strategic dimensions in aligning corporate strategy with HRM strategy.

In the configurational pattern, it is the internally consistent bundle or system of HRM practices that affect the performance which again depends upon the way it is configured with other organizational processes (Paauwe, 2004). This group of theories according to Guest (1997) is called descriptive as these generally describe the input-output relations in the broad domain of HRM activities in their configurational patterns.

These differing conceptualizations including that of Jackson and Schuler (1995) can be collapsed into the triadic model of ability, motivation and the opportunities in the explanation of HRM- performance linkages (Deleaney & Huselid, 1996). In Jackson and Schuler's (1995) interpretation of the internal context of HRM that subsumes the linkages, it can be further drawn that it is attuned to the triadic model, wherein human capital resources, organizational structure, work structure, strategies, employer-employee relations and the related HRM practices hold the key. This is the so-called "AMO" theory put forward by Appelbaum et al., (as cited in Boselie et al., 2005) wherein "Performance = f (employees' Ability, Motivation, and Opportunity to participate)" (Boselie et al., 2005, p. 5). The problem with the equation is that of not delineating the creation/development of abilities, motivational processes and the opportunities that facilitate the organizational performance. Given that the selected employees are capable, the next question is what the mechanisms that facilitate further development of employee skills before the employees become under-skilled in the organization are. The HRM practice of training and development in itself does not tell the whole story of employee development (Deleaney & Huselid, 1996). The nature of opportunities or the context capital that acts as the catalyst for performance is also not specified in this explanatory equation.

In the AMO framework, the motivation and the workplace structure and the processes which are instrumental in finally determining the firm performance, the mechanisms of which are still in the nascent stage (Deleaney & Huselid, 1996). The discretionary behaviours that become the employee behaviours in the AMO framework must be an outcome of Behaviour = f (Person, Environment) wherein the focus now shifts to deciphering the organizational, managerial and individual-based processes of firm performance (Guest, 2017; Paauwe & Boselie, 2005; Boselie et al., 2005). It is in this context that the use of macro HRM and micro HRM by Wright and Boswell (2002) becomes significant as this leads to a better understanding of HRM that is now internally contextualized. Macro HRM can stand for the broader and the strategically determined HRM practices and the micro HRM can represent the individual and the group-level variables and processes (Wright & Boswell, 2002; Guest, 2017). In other words, the individual level and the group processes are the content processes and the organizational and the managerial processes are the contextual processes of HRM (Mathews et al., 2020).

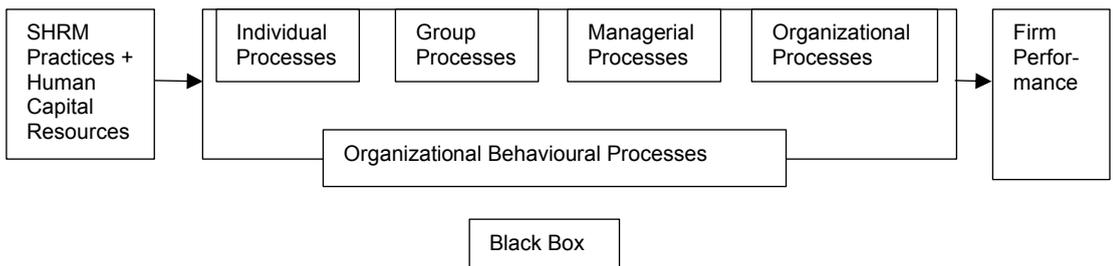
The conceptual framework of the study thus “integrates features of the macro strategic perspective with the more micro-level perspective typically adopted by psychologists” in its attempt to unpack the black box of the HRM-performance link (Guest, 2017, p. 4). In the changing interdisciplinary influences, HRM is now integrated with the work/organizational psychology or organizational behaviour thereby HRM practices have shed the old way of treating HRM as an administrative function and it has taken on the new dimensions of behavioural management of employees signalling the change that HRM practices and its interaction with other systems of the organization are to be analysed in the organizational, managerial and behavioural framework (Guest, 2017; Boselie et.al., 2005; Purcell & Hutchinson, 2007). The mechanisms/linkages mediating the relationships are endowed with the individual-managerial-organizational processes as HRM practices are active not in a “decontextualized vacuum” but a contextualized integrative-interaction frame between the variables and the processes of human capital resources and the contextual variables. The individual-managerial-organizational processes (Boselie et al., 2005, p. 6) result in the emergence of a “synergistic whole” of performance (Boselie et al., 2005, p. 7) and an HR “gestalt” (Guest, 2017, p. 4).

General Black-Box Model of HRM-Performance Linkage

The several empirical and conceptual studies reported in the literature (for e.g., Subramony, 2009; Guest, 1997) attempt to unpack the black box, highlighting the interacting behavioural processes of employees and managers and the situational processes that influence the firm performance. The suggested general black-box model of HRM-performance linkage, Fig. 1, depicts the boxes that mediate or link HRM practices with firm performance.

Figure 1

The General Black-Box Model



Strategic HRM Practices

“The strategy literature... provides a theoretical context for examining the implications of HR for firm performance” (Becker & Huselid, 2006, p. 900). A key feature of SHRM practices is the bundling of practices that are mutually reinforcing, complementary and interconnected and which evolve into synergic sets of enhanced firm performance (Dyer & Reeves, 1995). Following Delery and Doty (1996) the seven practices considered strategic are: internal career opportunities, formal training systems, appraisal measures, profit sharing, employment security, voice mechanisms, and job definition. Even when there can be differences of opinions about these practices along the lines of adding more and/or revising the existing ones (e.g. Akhtar et al., 2008), the fundamental assumption is that HR practices that are out of alignment with the strategy, are doomed to lower the firm performance as long as *the strategy* guides the entire organization.

Human Capital Resources

All human work-related resources of static and dynamic nature that add value to the organization can be characterized as human capital resources (Mathews et al., 2020). Dealing with the general patterns of skills of employees, Carmeli and Tishler (2006) group them into generic skills, sector-related skills (or specific skills), specific skills required for each organization and industry-related skills required at the industry level like computing skills for the IT sector all of which becomes functional in the creation of values. Wright and Mc Mahan (2011) refer to the micro-foundational basis of human capital wherein it is implied that the unique combination of individual processes of cognitive and non-cognitive nature, structure the individual human capital. The psychological view of human capital is that it “originates in the cognition, affect, behaviours, or other characteristics of individuals” (Kozlowski & Klein, 2000, p. 55; Wright & Mc Mahan, 2011).

The cognitive and the non-cognitive abilities/traits/processes/interests and even values of individual employees have the nature of capital in their contribution to organizational outcomes (Ployhart & Moliterno, 2011; Mathews et al., 2020). The intangible resources like cognitive abilities, problem-solving skills, analytical ability, reputation, culture and networks are resources in the proper sense of productivity enhancement (Hall, 1992; Ployhart & Moliterno, 2011). Similarly, “proactiveness, striving aspirations, a teamwork approach, dilemma resolution and a learning capability”, risk-orientation and self-motivation, are resources (Connor, 2002, p. 308; Amabile, 1988). In Hansen and Wernerfelt’s model (1989)

behavioural processes “explain about twice as much variance in profit rates as economic factors” (Hansen & Wernerfelt, 1989, p. 406). In the AMO model of organizational performance, the motivational processes occupy a central position as it is the level of motivation that drives the employees to performance and the level is dependent on the organizational and behavioural practices (Guest, 2017).

Organizational Behavioural Processes

All HRM practices are to take shape from the specific human processes since the interventions are to be mediated through them and its success finally rests on the behaviour of employees (Paul & Garg, 2014). Humans are not just resources in the way of material resources, instead, they are dynamic entities wherein employee perceptions, emotions, attitudes, perceptions, motivations and cognition and attributions, to name just a few, are seen as mediators or intrinsic to the very process of HRM practices/interventions (Dries, 2014). The contemporary view is that of psychology taking precedence in the actual implementation and evaluation of the success of HRM practices and thereby administrative and management approaches adopt a secondary role and there is a paradigm shift from *control* HRM to *commitment/entrepreneurial* HRM (Guest, 1994; Shipton et al., 2017). HRM theory and practice draw upon much of the behavioural theories that explain the organizational behavioural dynamics (Böckerman et al., 2012; Pardo & Moreno, 2009).

Individual and Group-level Processes

Messersmith et al. (2011) place the employee attitudes and behaviours in the centre of the black box of the HRM-performance linkages. Attitudes are essentially composed of cognitions, affect and behaviours which then imply that the nature of employee cognitions, affect and behaviours play a significant role in impacting employee performance and organizational performance.

Brymer et al. (2011) refer to the nature of cognition as: “Cognition involves the mental processing that uses, changes, enacts, recalls, stores, sense, and transforms knowledge in a dynamic, recursive manner (p. 159). Cognition is the processing of information and creation of knowledge that makes use of the cognitive structures like schemata, scripts, belief systems, values, memory networks and related processing apparatus (Levy et al., 2007). The employee cognitions in the form of recipes or specific cognitive constructs spur the activity of the members in the desired direction (Uotila, 2015). These performing

cognitions are constructed among employees in the interaction with the work environment.

Employee emotions, the processes that attract or repulse employees to different work settings or individuals determine the way they perform in the organizations. The experience of positive emotions attracts individuals to the corresponding settings or individuals and the experience of negative emotions distances the employees from the same such that their performance impact becomes minimum. Interactive relationships between the leaders and the employees can result in the development of emotional contagion that can promote greater performance and commitment which is attitudinal (Zhou et al., 2014; Mercurio, 2015).

A related theoretical position that has clear implications for performance is the affective events theory which is both attitudinal and behavioural. It is shown that the emotions and moods that employees experience in the organization in response to work events have a clear impact on organizational outcomes (Ashton-James & Ashkanasy, 2008). Emotions with their motivational and behavioural processes impact the employee performance in positive and negative ways and further advances are being made in this direction (Gooty et al., 2009; Lindebaum & Jordan, 2012).

The final component of attitude is the corresponding overt behaviour that takes one to the fact that cognition, affect and behaviour of overt nature interact between themselves that in the activation of cognition and affect, overt behaviour is a sequential process. In other words, employees are having the corresponding attitudes when the three components about objects, persons or practices are in a state of mutual influence.

Employee attitudes toward job satisfaction (Lhamo, 2019), commitment, adjustment and empowerment are found to be significant predictors of individual-level and organizational-level performance (Ostroff, 1992; Messersmith et al., 2011). It is through the behaviours of favourable attitudes that the employees bring productive and value-enhancing behaviours to work. Favourable attitudes to work/job can produce behaviours of attachment, performance and citizenship (Ostroff, 1992).

Even though job satisfaction is widely cited in the discussion on firm performance, Wright and Cropanzano (2000) prefer to use the term psychological wellbeing

(PW) since the construct involves certain technical elements of the job that may confound the very state of job satisfaction. The commitment of the employee to the task and the organization arises out of the involvement and the identification that can take behavioural and attitudinal forms (Mercurio, 2015). In the behavioural commitment, the individual gets “locked into” the organization and the behaviours are centred on the organizational processes (Mowday et al., as cited by Mercurio, 2015, p. 394). Psychological empowerment is the “sense of voice in helping to mould and influence organizational activities” (Messersmith et al., 2011, p. 1109). The level and the nature of empowerment influence employee and firm performance (Messersmith et al., 2011).

Another OB process that becomes significant concerning HRM-performance linkage and which is mediated through perception and attitude is employee involvement defined as “visible extra-role or role-expanding opportunities for individuals or groups at a lower level in the organization to have a greater voice in one or more areas of organizational performance” (Phipps et al., 2013, p. 110). Generally considered employee involvement involves higher levels of employee participation and empowerment aimed at improving performance at the individual and organizational levels (Sofijanovaa1 & Zabijakin-Chatleska, 2013).

In the application of behavioural theories to understand the employee behaviours and the organizational dynamics of performance, employee perceptions are analyzed to bring out their importance in employee involvement, satisfaction, commitment and organizational performance (Pardo & Moreno, 2009). Two distinct and also related perceptual processes studied are perceived organizational support and leader-member exchange wherein the former represents the employee’s perception of the organization and the extent to which it is favourably perceived, termed perceived organizational support (POS) and the latter represents employee perception of the supervisor termed leader-member exchange (LMX) (Wayne et al., 1997). POS and LMX are conceptually distinct but empirically related (Wayne et al., 1997). The higher the POS the employees perceive the higher the performance implications. The mutual perception that the leader and the follower initiate and cultivates determines the course of outcomes in the organization. A high-quality relationship facilitates greater performance (Casimir et al., 2014).

Attribution, yet another individual process is the process of perceiving/infering the motives or causes of behaviour patterns of individuals or groups and the same

holds in employees' perception of HR practices (Guest, 2017). Researchers in this area find out the patterns of employee attribution concerning the adoption of HRM practices and how the attribution changes their work processes and outcomes (Guest, 2017; Nishi et al., 2008). "HR attributions refer to employees' causal explanations for HR practices to which they are exposed on an ongoing basis" (Nishi et al., 2008, p. 7) can be performance-focused attributions of the pattern of high managerial expectations that produce job strain and attributions of employee-well-being HR practices that lead to the attitudinal response of high commitment (Van De Voorde & Beijer, 2014).

Another attitudinal and behavioural component of employees that mediates the relation between strategic HRM practices and firm performance is employee engagement (Macey & Schneider, 2008). It becomes attitudinal in the satisfaction, involvement, commitment, passion and enthusiasm of employees and behavioural in working long hours, working hard, focused effort and producing accomplishments (Little & Little, 2006; Macey & Schneider, 2008). Being considered an individual-level and group-level construct, the engagement of employees can be actively engaged, engaged, non-engaged and actively disengaged (Little & Little, 2006; Macey & Schneider, 2008). There is mounting empirical evidence that supports the mediating relation between employee engagement and organizational performance (Tensay & Singh, 2020). Finally, high-performance work systems also labelled bundles of HR practices of different combinations and configurations are distinctive patterns that yield high performance in the organization besides promoting cohesion in the team (Guest, 1997; Shipton et al., 2021).

Managerial Behavioural Processes

In an explanation of the linkages between HRM and organizational performance, managerial behaviour assumes critical importance as they are the ones who manage and enact HR practices (Purcell & Hutchinson, 2007; Sadler-Smith et al., 2003). Following the view of Purcell and Hutchinson (2007), the wide gap that exists between the espoused and the enacted HR practices point to the fact that management/leaders is/are rather negligent about the implementation of the practices besides attesting to the fact that managers are responsible for steering the organization to goal accomplishment by the strategic use of HRM practices.

Managerial behavioural processes are directly linked to firm performance in that the key managerial functions of leadership, decision-making, communication,

conflict management and motivation are the medium through which HRM practices become implemented and results achieved (Sadler–Smith et al., 2003; Garvin, 1998). The pattern of managerial behavioural processes determines the way the goals are accomplished in the organization which in other words become people management activities that define the nature of the organizational performance (Purcell & Hutchinson, 2007). “Behavioural processes are the sequences of steps used for accomplishing the cognitive and interpersonal aspects of work” (Garvin, 1998, p. 6). In the opinion of Garvin (1998), behavioural processes provide one of the keys to opening the “black box” of the organizational and management process underlying firm performance (p. 1).

The key behavioural processes practised in the organization include leadership (Purcell & Hutchinson, 2007), decision-making process (Kroon et al., 2013) communication (Garvin, 1998), learning processes (Garvin, 1998) and conflict management (Cogburn et al., 2014) besides other intra-personal, interpersonal and group processes. The leadership process of leader-member exchange greatly enhances the effectiveness of HRM practices and the same is mediated by interpersonal relationships and people management practices (Purcell & Hutchinson, 2007). The significance of decision-making in HRM-related practices is underscored by Kroon et al. (2013).

The process of communication is anything but simple (Garvin, 1998). Communication involves “facts, feelings, perceptions, innuendoes, and various other things all in the same ‘simple’ message” (Garvin, 1998, p. 9). Communication that is open, inclusive, strategic, results-driven, multichannel-based and interactive shows greater organizational performance (Kibe, 2014). The process of organizational learning that involves the acquisition of new knowledge and using the available knowledge most innovatively applies in the formulation and implementation of HRM practices. Learning-oriented HRM promotes greater self-renewal and organizational performance (Jaw & Liu, 2003). The relation between the level of conflict and the management of conflict and organizational performance is well-documented that high levels of conflict produce dysfunctional outcomes and that constructive conflict management facilitates greater employee involvement and performance (Cogburn et al., 2014).

Organizational Processes

HRM practices can never be a practice in a decontextualized way and it has to be integrated with the organizational processes wherein lies its fruition (Pardo &

Moreno, 2009). Organizational processes can generally become equivalent to the O in the AMO model in that these are the opportunities provided to the employees to show forth their performance. Following the conceptualization of Kroon et al. (2013), O specifically can be interpreted concerning the job characteristics of Hackman and Oldham and the empowerment culture that prevails in the organization. The opportunity to perform can be created through work committees, employee involvement measures and making workers autonomous as far as possible (Kroon et al., 2013).

O can also denote organizational culture influences and predict organizational performance and the relationship is so intrinsic that as cultural elements or type varies performance also varies (Prajogo & McDermott, 2011). The research conducted by Prajogo and McDermott (2011) conclusively demonstrates the way different types of cultures predict organizational performance. In the realm of organizational processes, the structural configuration also becomes decisive in the relation between HRM practices and performance (Pardo & Moreno, 2009). Finally, HR climate defined as employees' shared perceptions of the five Ps of HRM do impact organizational performance (Bowen & Ostroff, 2004).

Integrating Strategic HRM Practices and OB Processes

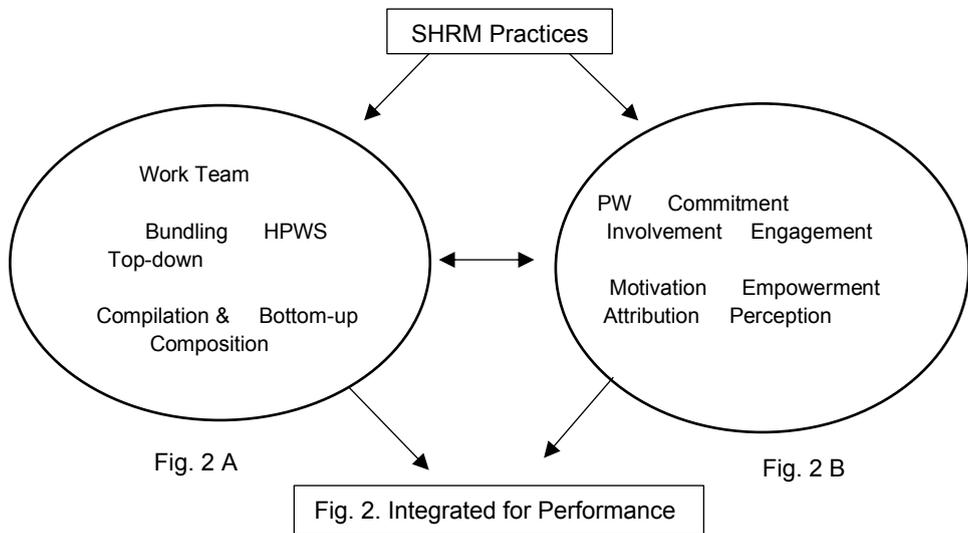
"...Existing theory and research in SHRM have ignored (via assumption) the individual variance and processes that are necessary for HR practices to impact organizational performance" (Wright & Nishi, 2007, p. 20). Organizational behaviour being the field of study that examines the entire individual, group and organizational behaviour at the micro, meso and macro levels, it goes without saying that the behavioural dynamics of HRM practices and the way it impacts the organizational performance requires the consideration of the psychological processes that mediate the individual, group and organizational functions at the same levels, a fact identified by Guest (2017) besides other researchers like Wright and McMahan (2011) and Ployhart and Moliterno (2011). With the Hawthorne effect continuing to challenge the HRM practices, the recent research and practice in HRM promote much of individual-centred and group-centred behaviours leading to a micro-level focus in the formulation and implementation of HRM practices (Guest, 2017). For Wright and McMahan (2011), the transformational performance enhancement is contingent on unique employee behaviour patterns that spring not from HRM practices per se but from employees' own mediated and moderated psychological processes which are also determined by the environment (Jian-Qun et al., 2012). These discretionary behaviours of

productivity stem from a combination of individual propensities and environmental features (Jian-Qun et al., 2012). For Ployhart and Moliterno (2011), it is the “the emergence enabling states” of varying psychological states and traits in the organizational context that define the human capital resources of organizational performance (p. 135).

It is in the integration of the organizational/group/individual processes with the strategic HRM practices that a comprehensive explanation of organizational performance can be derived (Wright & Nishi, 2005; Becker & Huselid, 2006; Pardo & Moreno, 2009). Neither the HRM practices nor the OB processes themselves provide the link between HRM and firm performance. The integration of the HRM practices with the people management practices clinches the deal in terms of improved performance (Bartram et al., 2007). The interaction between organizational behavioural processes and strategic HRM practices generates ensembles of HR practices and OB processes rather than limiting it to sterile HR bundles of practices devoid of behavioural processes, which finally results in the generation of emergents/HR gestalts collapsing one or more processes in an iterative manner which finally lead to impacting organizational performance. Two processes that are critical in the emergence of HR gestalt are “composition (a pattern that facilitates bottom-up emergence....), and compilation (a pattern of bottom-up emergence that reconciles divergent perspectives into a coherent whole)” (Shipton et al., 2017, p. 13). Top-down strategies are effective in “implementing predetermined innovation goals” and bottom-up strategies “unleashing (unleash) the innovative capabilities of its employees” (Zhou et al., 2021, p. 133)

Integration paves the way for “agile” HR systems and adaptive OB processes (Paauwe & Boon, 2009, p. 49). The strategic HRM-behavioural integration thus provides the keys to unpacking the black box of HRM-firm performance link. The integration of SHRM practices with the OB process can be analysed at the structural levels of the organization and behavioural or functional levels of employees (Guest & Peccei, 1994), as given in Fig. 2.

Figure 2
Integration of SHRM Practices



It is through these mechanisms of structural (Fig. 2A) and functional (Fig.2 B) integration (Figs. 2 A & B) that SHRM practices become effective in enhancing firm performance. The variables of structural and functional/behavioural levels identified above thus become the key ones that mediate/moderate the SHRM practices and firm performance. These OB processes are the nucleus of firm performance when SHRM practices are considered.

Conclusion

The proverbial “black box” connotes unknown and hidden things or processes concerning a phenomenon under study. The unpacking of the black box involves challenges in terms of finding new paths or relations so far undiscovered. The identified contents of the black-box of the HRM- performance linkages are largely derived from the OB processes at the levels of individual, group and organizational ones that supposedly and comprehensively establish the behavioural variables that mediate the relation between HRM-performance linkages.

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