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KORANGI CREEK, KARACHI-75190, PAKISTAN
UAN: (+92-21) 111-002-004, FAX: (+92-21) 35090968
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Correspondence:

Editor PBR
Institute Of Business Management (IoBM)
Korangi Creek, Karachi-75190, Pakistan
UAN: (+92-21) 111-002-004, Ext. 731
Email: editorpbr@iobm.edu.pk
Website: <https://pbr.iobm.edu.pk/>
<https://jmsnew.iobmresearch.com/>

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The Macro Determinants of the Drop in Pakistan's Long Run GDP Growth

Rabia Ikram Moazam* Moazam Mahmood**

Abstract

This paper attempts to address the long-run determinants of trend GDP growth in Pakistan for years 1973 till 2017. The theoretical framework chosen has been the Keynesian general equilibrium framework of aggregate demand, decomposed into the macro aggregates of consumption, investment, government expenditures, exports and imports (Keynes, 1937). The analytical strategy we have used is to establish first whether there has been a discrete drop in GDP growth at any particular break date. Establishing a break date allows us to define two periods of GDP growth, a higher growth period, followed by a lower growth period. The determinants of GDP growth can then be established, by looking for correlated changes in their behavior between the two time periods. Our findings suggest that high GDP growth in the first phase, pre-1992, is explained by high investment growth. Paired with a Marginal Propensity to Consume in this phase which is low. Making this high GDP growth phase investment led. Low GDP growth in the second phase, post-1992, is now explained by low investment growth. Paired with a Marginal Propensity to Consume, in this phase which is higher. Making this phase consumption-led.

Keywords: GDP; growth; investment; marginal propensity to consume.

JEL Classification: E200

*Assistant Professor, Economics University/Institute, City, Country Lahore School of Economics, Lahore, Pakistan. Email: rraby@hotmail.com.

** Professor, Economics Visiting Professor, Economics University/Institute, City, Country Lahore School of Economics, Pakistan, Capital University of Economics and Business, Beijing, China. Email: moazammahmood@outlook.com.

1. Statement of the problem

Pakistan's growth has lowered on trend in the past three decades. The earlier decades of the 60s, 70s and 80s saw trend GDP growth of over 6% per annum as Figure 1 shows, but from about 1990 onwards trend growth is observed to have lowered significantly to just above 4% per annum.

In addition to the concern of long-run trend growth, Pakistan has been subject to shorter-run shocks, with budgetary deficits creeping up to unsustainable levels, also fueling inflation, and equally unsustainable Current Account (CA) deficits. These imbalances on the budgetary and CA sides have required repeated recourse to the IMF Standby (SBA) and Extended Fund Facility (EFF) loans. Indeed, the frequency of Pakistan's recourse to IMF bailouts, 23 and counting, has pushed the recent debate entirely to an examination of shorter-run cyclicity in GDP, putting on the back burner, the earlier debate about longer run structural determinants of GDP growth.

So, there is a paramount need for an examination of the macro determinants of Pakistan's GDP growth in the longer run, over both the highs and lows, to see what has worked to raise it earlier, and lower it more recently.

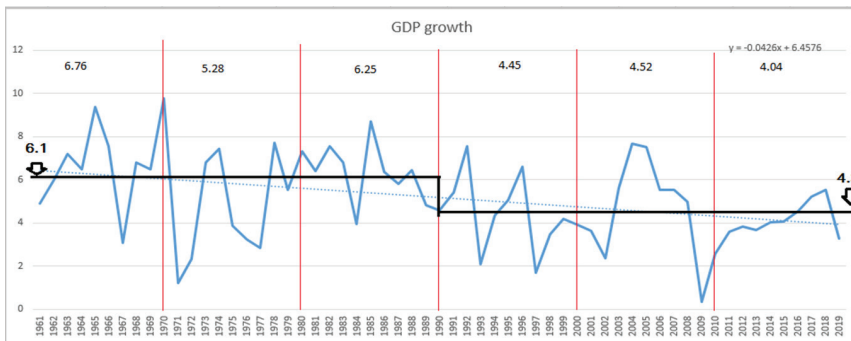


Figure 1: GDP Growth

2. A review of the structural literature on the macro determinants of growth of output

The structural literature takes two distinct approaches to explain the long-run pattern of output growth over time. One approach is based on supply-side growth accounting methodology, a production function approach, which uses the growth of input availability and total factor productivity growth to explain long run output growth. Another approach is based on Keynesian decomposition of demand into macro aggregates.

The production function approach is represented very well by Antolin-Diaz et al. (2017) which tracks the slowdown of GDP growth in the U.S. and other advanced economies. Similarly, Fernald and Li (2019) also explain the slower GDP growth of U.S. Both have identified total factor productivity growth as a major determinant of GDP growth. In the case of Pakistan as well, on the supply side, productivity growth has been identified as the major determinant of growth (Saleem et al., 2019; Siddique, 2020).

The Keynesian approach of decomposing demand into macro aggregates can be summed up by Clementi et al. (2015) and de Freitas and Dweck (2013), who give the most comprehensive set of determinants to explain output growth. Both the papers represent output growth as a function of consumption, investment, government expenditures, exports and imports. The recent literature explains output growth in relation to specific set of macro determinants. A study by Liao et al. (2019) explains the output growth in relation to consumption spending and a study by Connolly and Lai (2016) explains output growth as a function of government spending. The study by Mansoor et al. (2018) explains economic growth in Pakistan in relation to aid volatility. And Alam (2012) provides the empirical analysis of economic growth in Pakistan in relation to exports and imports.

For Pakistan, the review of the structural literature shows large explanatory bias towards the exogenous demand variables and the monetary variables rather than domestic demand variables to explain long run growth (Shahbaz et al., 2008; Khan & Jawed, 2019; Mahmood & Arby, 2012). The decomposition of domestic demand variables, into consumption and investment is consistently missing in the literature except in Choudhary and Pasha (2013) and Choudhary et al. (2017).

The methodology that stands out from the literature as the most comprehensive is by de Freitas and Dweck (2013) and Clementi et al. (2015). We aim to formulate our theoretical framework based on their established methodology.

3. A theoretical framework

So, we begin with the de Freitas and Dweck (2013) and Clementi et al. (2015) standard textbook mother equation in macroeconomics:

$$Y = C + I + G + X - M \quad (1)$$

(i) Assessing the impact of the quantum of the macro aggregates, on output Y.

First, on the right-hand side of the equation, the quantum of private consumption C, private investment I, government expenditure G, exports X, and imports M, will determine on the left-hand side of the equation the quantum of output.

(ii) Examining the relationship between the long run structural determinants themselves: consumption C, and investment I.

But the more complex relationships further lie on the right-hand side of the equation, between the determining variables themselves. It is these interactions between the determining variables, which give the final quantum on the right-hand side, determining on the left-hand side of the equation the quantum of output.

So, the second relationship is between the right-hand side of the equation's determinants of private consumption C and private investment I are the two structural determinants of output. In that the literature considers them to be slow movers over time, relatively less policy amenable in the short run, and therefore determinants of long run output and its growth.

Now investment I determines output growth ΔY , as given by the Harrod Domar model (Harrod, 1939; Domar, 1946), through a Capital Output ratio K/Y. So:

$$\Delta Y = I / K/Y \quad (2)$$

But the size of the Capital Output ratio K/Y, is not well explained by the Harrod Domar model (Harrod, 1939; Domar, 1946). It is simply attributed to the amount of capital stock K in the economy. And the capital stock K, in turn is some function of the accumulation of investment over time t:

$$K_t = f_n I \sum (I_{t_1} + I_{t_2} + \dots I_{t_{n-1}}) \quad (3)$$

So, it is not only the current level of investment, but also the past levels of investment, that determine output growth ΔY . As such the cumulative function of I, $f_n I$, is not well defined, in that we do not know what portion of I_t is to be cumulated. So, we have insufficient determination of the capital stock K_{tn} .

Indeed, in the Cambridge Capital controversy, Joan Robinson questioned the notion of the neoclassical construct of capital (Robinson, 1971). In the neoclassical model, the marginal product of capital is used to determine its price, given by the interest rate. But the problem for Joan Robinson was that the construct of capital had to be an accumulation of capital stock, and this accumulation of capital stock had to be through aggregated physical capital. Which in turn had to be priced, to be aggregated, requiring a price of capital, given by the interest rate. So, the dilemma of the neoclassical model is that it requires an interest rate, to aggregate capital, to determine its marginal product, to determine in turn the interest rate.

The bearing of the Cambridge Capital controversy (Robinson, 1971) for us here is that as the interest rate r varies over time t_1 to t_n , so the capital output ratio K/Y, has to adjust contra to r , to make it equal to output growth ΔY . So, in equation (3):

$$\Delta Y = I / K(r) / Y \quad (4)$$

As the interest rate r goes up for example, capital K will go up, as will the capital output ratio K/Y go up. So, the growth rate of output ΔY will drop. So, the capital output ratio K/Y, will go up and down with the interest rate r . Yet the capital output ratio K/Y is meant to

be a much more stable fraction fnI of accumulated investment over time as in equation (3), in which case it cannot be as volatile as the interest rate r .

So, the neoclassical construct of the capital output ratio, as given by the Harrod Domar model (Harrod, 1939; Domar, 1946), is not well defined.

But Lord Kahn and Keynes (Keynes, 1937) neatly step in here to add another macro variable to explain output Y and its growth over time ΔY , which is consumption C . And consumption C is used to estimate a more specific determination of a multiplier k , such that investment I times a multiplier k , gives output Y .

$$Y = I * k \quad (5)$$

The Kahn-Keynes model (Keynes, 1937) uses the marginal propensity of consumption MPC, to determine k , such that:

$$k = 1 / 1 - MPC \quad (6)$$

Which gives the Kahn-Keynesian (Keynes, 1937) alternative to the Harrod Domar model (Harrod, 1939; Domar, 1946) for determining output Y .

$$Y = I * (1 / 1 - MPC) \quad (7)$$

So, investment I determines output Y , but constrained by the share of incremental income that is consumed, which is the MPC

The Kahn-Keynes multiplier model (Keynes, 1937) thereby poses an interesting tradeoff between consumption driven growth and investment driven growth. Where investment I , determines output Y , but constrained by consumption C . So, a higher investment I will lead to a higher output Y . But the higher output Y , will be constrained by the lower consumption C , through a lower multiplier k . So, Consumption C and investment I , are tradeoffs.

In fact, these two long-run structural determinants of output Y , consumption C , and investment I , give two possible growth paths. Growth of output ΔY , can be an investment I led, or consumption C led.

We will focus on explaining the observed drop in Pakistan output growth between two time periods, pre-1990, and post-1990. We will do this by examining the impact on output, of the macro aggregate determinants of output growth. So, we will focus on examining the two relationships defined above by equations (1) to (7).

(i) The first relationship examined will be assessing the impact of the quantum of the macro aggregates, on output Y.

On the right-hand side of Equation (1), the quantum of private consumption C, the private investment I, government expenditure G, exports X, and imports M, will determine on the left-hand side of the equation the quantum of output Y.

Putting Equation (1) in terms of growth of output, ΔY , and its decomposition into growth in its macro aggregates, ΔC , ΔI , ΔG , ΔX , and ΔM

$$\Delta Y/Y = \Delta C/C + \Delta I/I + \Delta G/G + \Delta X/X - \Delta M/M \quad (8)$$

Now we can examine which growth determinants on the right-hand side of Equation (8) explain the higher output growth pre-1990 and lower output growth post 1990, on the left-hand side.

(ii) Examining the relationship between the long run structural determinants themselves: consumption C, and investment I, and their complex impact on output Y.

So, the second relationship is between the right-hand side of the equation's determinants themselves, of consumption C and investment I, and then their complex and joint determination of output Y.

Equations (2) to (7) develop this complex and joint determination by investment I, and consumption C, of output Y.

Equation (7) actually says that change in output Y on the left-hand side, will be determined jointly through a complex interaction between growth of investment I and growth of consumption C, on the right-hand side.

In sum, in this paper, our central problem is to explain the drop-in output growth in Pakistan, from 6% pa. in the 60s, 70s and 80s, to 4% from the 90s onwards. To explain this drop-in growth of output, equation (8) can be run separately for each of the two time periods. Showing growth in output over the period, on the left-hand side of the equation, as determined by growth in the macro aggregates, on the right-hand side of the equation.

This theoretical framework adopted gives a set of testable hypotheses. But a prior word is needed on data limitations, comparability and consistency over time, and according to data choices.

4. Data

The time series data for the macroeconomic aggregates for Pakistan, 1960-2017, has been obtained from the following sources:

- Pakistan Bureau of Statistics (PBS)
- State Bank of Pakistan (SBP)

It would have been good to be able to analyse the whole time series available from 1960 to 2017. But the data for pre-1971/72 includes two wings of the country, West Pakistan and East Pakistan, whereas the data from 1972/73 onwards includes just what was West Pakistan.

Therefore, for this reason of comparability, we have begun our analysis from 1972/73. Considering the time series up to 2017.

We have used the time series provided by the PBS and made consistent by the SBP, and the Ministry of Finance of the Government of Pakistan (GOP)¹. This time series also coincides with the series adopted by the International Monetary Fund's World Economic Indicators (IMF WEI).

5. Hypotheses explaining the drop in long-run growth between the two time periods

The central problem of the paper is to analyze and explain the long-run trend of GDP growth, which has been decreasing over time (Figure 1). Therefore, the need is to examine whether there has been a discrete reduction in GDP growth over time and identify the timing when the reduction has occurred. The first hypothesis is aimed at identifying this trend break in GDP growth.

Hypothesis 1: There has been a discrete reduction in GDP growth over the time period 1973-2017.

If there is a significant reduction in GDP growth, the next step will be to identify the timing of the discrete reduction. The discrete reduction in GDP growth at a particular time is called a structural trend break in GDP growth.

¹ We are thankful to Dr. Kalim Hyder at the State Bank of Pakistan for providing us with the consistent time series of the macro aggregates for Pakistan.

Based on our theoretical framework, GDP growth can be explained using Keynesian macro aggregates (Keynes, 1937). The macro aggregates considered in our theoretical framework are consumption growth, investment growth, government expenditure growth, export growth, and import growth. Of these variables, we will test to examine which of these macro aggregates significantly explain the drop in GDP growth. Particularly we would like to test the hypothesis that high investment growth explains high GDP growth in the first phase of growth, and a drop in investment growth explains the drop in GDP growth in the second phase.

Hypothesis 2a: There has been a significant drop in investment growth over the time period 1973-2017.

Hypothesis 2b: Investment growth significantly explains high GDP growth in the first phase and a drop-in investment growth explains the drop in GDP growth in the second phase.

Our Keynesian theoretical framework further drives GDP growth through two channels. One channel is through the quantum of investment. But the impact of investment on GDP growth is also determined through a second channel. The extent of the impact of investment on GDP growth is seen to be determined by the Kahn-Keynes multiplier (Keynes, 1937) based on the MPC. A rise in the MPC raises the multiplier, and so the extent of the impact of investment on GDP growth. So, we now have two major determinants of GDP growth. The quantum of investment determines GDP growth, but not unaided. The MPC determines the extent of the impact of the quantum of investment on GDP growth.

But our theoretical framework argues, that consumption and investment must not be taken as simple complements in an apparent Keynesian identity. Because a rise in MPC, and therefore in the share of consumption, while raising the multiplier, simultaneously lowers the share of savings. And savings are a major determinant of investment, potentially lowering the quantum of investment. Which gives an interesting tradeoff between the two major drivers of growth, consumption, and investment. Making it conceivable that GDP growth could be led episodically, some phases led more by consumption growth, and other phases led more by investment growth.

Hypothesis 3: Growth in output will be better explained episodically, some cycles being more investment-led, others more consumption-led.

Hypothesis 3a: High GDP growth in phase one, will not be equally explained by high investment growth and high consumption growth. If high GDP growth in phase one is explained well by high investment growth, then the Marginal Propensity to Consume, in this phase will be low.

Hypothesis 3b: Low GDP growth in phase two, will then equally not be explained by both low investment growth and low consumption growth. If low GDP growth in phase two is explained by low investment growth, then the Marginal Propensity to Consume, in this phase will be high.

6. Empirical Methodology for Testing Hypotheses

6.1 *Empirical Methodology for testing Hypothesis 1*

Hypothesis 1: There has been a discrete reduction in GDP growth over the time period 1973-2017.

This requires a methodology that can detect abrupt changes in the data series, called breaks. For this, a structural break analysis is based on linear regressions to detect discrete mean shifts in GDP growth.

Structural break analysis We propose to start our empirical analysis with the structural break analysis, using the procedures proposed by Bai and Perron (1998, 2003), (henceforth BP), Andrews (1993) and Chow (1960), and lastly using a dummy regression. A key feature of BP's (1998, 2003) procedure is that it allows us to test for multiple shifts in average growth at unknown dates. As compared to Andrews (1993) methodology which tests for a single shift at an unknown date and Chow (1960) which tests for an abrupt mean shift at a known date in the data.

All three procedures, BP (1998, 2003), Andrews (1993) and Chow (1960) can be applied using a multiple linear regression model for multiple breaks. For that we consider the structural change model specified by Clementi et al. (2015) based on the established methodology by BP with m breaks (or, equivalently, $m+1$ growth regimes) as,

$$g_t^Y = \beta_j + u_t, \quad t = T_{j-1} + 1, \dots, T_j, \quad j = 1, \dots, m + 1, \quad (9)$$

Where T is the sample size as $T_0 = 0$ and $T_{m+1} = T$. The model represents annual growth of GDP, g_t^Y , which equals the regime-specific mean growth rate β_j plus a stationary error term u_t . The aim of the analysis is to determine the optimal number and location of the structural breaks, along with estimating the mean shift parameter. But a prior standardized test needs to confirm whether structural change analysis is applicable on the GDP growth model in equation (9), for which we need to run a CUSUM test.

A CUSUM test for a structural break The cumulative sum test (CUSUM test) for parameter stability is used to test for the presence of structural change in the series. In order to perform CUSUM test in our case, the instability of the parameter β_j in equation (9) will be tested against the null posit of having no structural change. A forecast error greater than zero will indicate instability and therefore structural change in the model.

Bai and Peron's (1998) test for identifying multiple breaks at an unknown time Bai and Perron's (1998) method estimates the number and points of breaks in the data. We begin with finding the optimal number of breaks in the series. By default, when implementing BP's (1998) technique, it selects the optimal number of breaks as the one achieving the minimum Bayesian Information Criteria (BIC) score. BP (1998) suggests a method based on the sequential estimates of the breaks. For which SupFt (m) and expFt(m) sequential tests are used to test for no structural break versus multiple number of breaks.

Andrews (1993) test for identifying a single break at an unknown time Unlike BP (1998), Andrews (1993) procedure works to detect a single mean shift at an unknown time. But, BP (1998) performs better than any other method because it accounts for all the possible breakpoints while identifying the significant break.

Chow's test for a single break at a known time We also follow the Chow (1960) procedure to test the significance of a known break date. It tests the null hypothesis that there is no structural break against the alternative that there is a known structural break at a specified time.

Dummy regression to test for a known break date The direction of the break identified in the previous section can be tested using an intercept dummy in our structural change model, equation (1), using the following specification,

$$g_t^Y = \beta + \theta DU_t + u_t, \quad (10)$$

Where, g_t^Y represents real GDP growth and DU_t is the break dummy variable. The break dummy variable takes the following values $DU_t = 1$ if $t > 1992$ and $DU_t = 0$ otherwise. Equation (10) allows us to check whether GDP growth exhibits a downwards or upwards trend at the identified break point.

So these tests will give us a known break point in the GDP growth series, call it tB. Which will allow us to divide our entire series for GDP growth into say two time periods, pre tB and post tB. Since Figure 1 shows a downwards trend, and a conceivable break point, we can presume that our empirically identified break tB, can give us a time period pre tB which has high GDP growth, and a following time period post tB, with lower GDP growth.

The establishing of these two time periods, pre tB with high growth, and post tB with lowered growth, then becomes the foundation for our further investigation into seeking macro aggregates that correlate to the drop in GDP growth between these two time periods.

6.2 Empirical Methodology for testing Hypothesis 2

We now need to provide an empirical methodology to explain the drop in GDP growth using the macro aggregates from our theoretical framework, of consumption, investment, government expenditure, and exports.

Our Hypothesis 2a expects, however, that of the explanatory macro aggregates of consumption, investment, government expenditure, and exports, it is investment growth that will follow the pattern of the drop in GDP growth.

Hypothesis 2a: There has been a significant drop in investment growth over the time period 1973-2017.

To test this hypothesis requires a functional form that uses growth in each explanatory macro aggregate, consumption, investment, government expenditure, exports, and imports, and tests each for breaks, using structural break analysis. Testing whether the break in investment growth coincides with the break in GDP growth.

Our Hypothesis 2b goes on further to specify that of the explanatory macro aggregates, it is investment growth that will explain high GDP growth in the first pre tB period, and a drop in this investment growth will explain the drop in GDP growth post tB.

Hypothesis 2b: Investment growth significantly explains high GDP growth in the first phase and a drop-in investment growth explains the drop in GDP growth in the second phase.

Accordingly, one statistical test we will use will be based on a classical Chow (1960) test to check the shift in the series at a known break date. A second econometric test will be based on a dummy regression analysis, to test for the significance of the year 1992, as a broken dummy in the growth series.

A structural break test at a known break date for all explanatory macro aggregates In order to test our explanatory variables series for the single mean shift at a known break date, we use the model specified for GDP growth given by equation (11) which can now be specified for a known break date:

$$y_{it} = \beta_{ij} + \epsilon_t \quad \text{where } \beta_{i1} \neq \beta_{i2} \quad (11)$$

Where y_{it} represents growth in the variable i in time period t . β_{ij} is regime-specific mean growth rate of variable i . This model allows the coefficient β_{ij} to change after the break. If TB is the break date, the model is

$$y_{it} = \begin{cases} \beta_{i1} + \epsilon_t & \text{if } t \leq TB \\ \beta_{i2} + \epsilon_t & \text{if } t > TB \end{cases} \quad (12)$$

Chow's test (1960) for a known break date for all explanatory macro aggregates.

The Wald test for the known break date using Chow (1960)'s procedure will be performed, to determine a break in the growth of the explanatory variables

Dummy regression for testing a known break date in investment growth. The dummy regression model will now be used to test for the direction of the break in growth in the explanatory variables, particularly investment. The model is given as;

$$g_t^I = \beta + \theta DU_t + u_t, \quad (13)$$

Where, g_t^I represents real investment growth and DU_t is the break dummy variable. The break dummy variable takes the following values $DU_t = 1$ if $t > 1992$ and $DU_t = 0$ otherwise. Specification (13) allows us to check whether investment growth exhibits a downwards or upwards trend.

A test of GDP growth as a function of growth in all the explanatory macro aggregates, consumption, investment, government expenditure, exports, and imports Having provided statistical evidence in support of Hypothesis 2a, there has been a significant drop in investment growth, coinciding exactly with a significant drop in GDP growth. We can proceed to test our Hthesis 2b, which further specifies that GDP growth is explained well by investment growth.

We test this hypothesis using equation (8) from our theoretical framework above.

$$\Delta Y/Y = \Delta C/C + \Delta I/I + \Delta G/G + \Delta X/X - \Delta M/M \quad (8)$$

Where GDP growth, on the left-hand side, is explained on the right-hand side by investment growth, consumption growth, government expenditure growth, export growth and import growth. We expect higher investment growth to explain higher GDP growth in the first phase, pre tB . And a statistically significant drop in investment growth explaining the drop in GDP growth in the second phase, post tB .

Denoting equation (8) for brevity as GDP growth g_t^Y , as a function of growth in macro aggregates. The macro aggregates are consumption growth g_t^C , investment growth g_t^I , government growth g_t^G , export growth g_t^X , and import growth g_t^M .

$$g_t^Y = f(g_t^C, g_t^I, g_t^G, g_t^X, g_t^M)$$

The functional form will be estimated using the double log form as following;

$$\log y_t = \alpha_0 + \alpha_1 \log \text{real}C_t + \alpha_2 \log \text{real}I_t + \alpha_3 \log \text{real}G_t + \alpha_4 \log \text{real}X_t + \alpha_5 \log \text{real}M_t + \epsilon_t \quad (14)$$

where, $\log y_t$ represents log of real GDP, $\log \text{real}C_t$ represents log of real consumption, $\log \text{real}I_t$ represents log of real investment, $\log \text{real}G_t$ represents log of real government, $\log \text{real}X_t$ represents log of real export, and $\log \text{real}M_t$ represents log of real import. The double log form coefficients for equation (14) represents the same effect as if the equation was run as a growth equation.

We can run this equation independently for pre tB and post tB. The coefficients of the model are then tested for equality across the two time periods, pre tB and post tB.

Since our aim in this section is to explain the drop in GDP growth. And, since the break in investment growth coincided with the break in GDP growth. We would want our investment growth variable to significantly explain the drop in GDP growth variable, as stated in our Hypothesis 2b. Therefore, while estimating equation (14) we would expect the following propositions to hold:

- a. The investment growth coefficient α_2 , should be positive and significant for both the phases, pre tB and post tB.
- b. The investment growth coefficient α_2 , should have a higher value pre tB as compared to post tB.
- c. The investment growth coefficient α_2 , should significantly differ between the two phases.

6.3 Empirical Methodology for testing Hypothesis 3

Now recalling, our theoretical framework takes the economic argument for determination of GDP growth beyond just investment growth. It pairs investment growth with the share of consumption, specifically the Marginal Propensity to Consume (MPC).

This pairing is added by Hypothesis 3, and further nuanced. Because the hypothesis expects that long run GDP growth is better explained through the quantum of investment growth, paired with the marginal propensity to consume. Further, this Keynesian multiplier can be expected to work inversely with the quantum of GDP growth. The marginal propensity to consume being relatively lower when the quantum of investment growth is high, and the marginal propensity to consume being relatively higher when the quantum of investment growth drops. Therefore Hypothesis 3 expects that high GDP growth in the first phase, will be explained by high investment growth, paired with relatively lower marginal propensity to consume on average. While the drop in GDP growth in the second phase, will be explained by a drop in the quantum of investment growth, paired with a relatively higher marginal propensity to consume on average.

Estimating the Marginal Propensity to Consume The regression can be run independently for two time periods, pre tB and post tB. The coefficient of real GDP in each regression gives us the average value for the MPC for each time period, pre tB and post tB. The specification is given as:

$$realC_t = \alpha_{i0} + \gamma_{i1}realGDP_t + \epsilon_{it} \quad (15)$$

Where i represents two time periods, pre tB and post tB, *realC* represents real consumption and *realGDP* represents real GDP. Since, we will estimate the equation for two time periods, pre tB and post tB, we will have two estimated values for the MPC, represented as, $\gamma_{(pretB,1)}$ and $\gamma_{(posttB,1)}$. Where pre tB is considered as the high growth phase and post tB is considered as the low growth phase.

Accordingly, to support our hypotheses 3a and 3b, we expect the following propositions to hold true.

- a. The estimated MPC value for the pre tB, high growth phase, should be lower than the estimated MPC value for the post tB, low growth phase. That is $\gamma_{(pretB,1)} < \gamma_{(posttB,1)}$.
- b. In addition to proposition (a), the estimated MPC value pre tB should be significantly different from the estimated MPC value post tB. That is $\gamma_{(pretB,1)} \neq \gamma_{(posttB,1)}$

7. Empirical Results

7.1 *There has been a discrete reduction in GDP growth over the time period 1973-2017.*

We begin with our main variable, real GDP growth, observed over the years 1973 to 2017. We seek to provide econometric and statistical evidence for our first hypothesis in this section.

Hypothesis 1: There has been a discrete reduction in GDP growth over the time period 1973-2017.

Table 1
Structural break In Real GDP Growth Series 1973-2017

Result Using R 'strucchange' Package						
Unknown Break Date		Tests Statistics and Probability				
		Test	Statistics		P-Value	
Year 1992	supF _t (1)		12.84***		0.0073	
Year 1992	expF _t (1)		3.67***		0.0056	
	CUSUM		1.57***		0.0104	
	BIC selection		One selected: 1992	Break Year	Intercept Change: 1974-1992: 5.89% 1993-2017: 4.04%	
	Recursive F statistics		Maximum at Year 1992			
Results Using Stata						
Unknown Break date	Break at 1992±1	Year	Test Statistics and Probability			
			Test	Statistics	P-Value	
Year 1993			swald	12.84***	0.0069	
	Year 1992		LR	8.97***	0.0028	

The CUSUM test for a structural break Table 1 shows the result for the CUSUM test for our GDP growth model represented by equation (1). The test statistic takes the value 1.57 and is therefore highly significant. This rejects the null posit of having parameter stability and indicates a structural change in the data. It indicates that the decline in long run trend of GDP growth has not been gradual and that in fact there has been a discrete drop in the GDP growth series at some point in time.

Therefore, the CUSUM test identifies the existence of structural change for us but does not identify the particular point in time when the change might have taken place. Hence, our next set of analyses apply three different procedures, based on Bai and Perron (1998), Andrews (1993) and Chow (1960), which identify the location and number of optimal break points.

Bai and Perron's (1998) test for identifying multiple breaks at an unknown time

Bai and Perron's (1998) method estimate the number and points of breaks in the data series.

We begin with finding the optimal number of breaks in the series. By default, when implementing BP's (1998, 2003) technique, it selects the optimal number of breaks as the one achieving the minimum Bayesian Information Criteria (BIC) score.

The result in Figure 2, plots the BIC scores and the residual sum of squares (RSS). The BIC score is minimum at one break with a score of 184.39. Therefore, the program itself chooses one break point, the break date as year 1992, and exhibits a significant drop in the average GDP growth rate from 5.89 percent to 4.04 percent.

Figure 2: BIC and Residual Sum of Squares

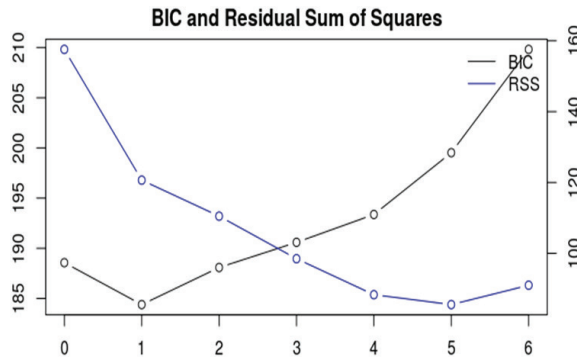


Figure 2: BIC and Residual Sum of Squares

The sequential test statistics, $\text{supFt}(m)$ and $\text{expFt}(m)$ values are reported in the table. Here, the $\text{supFt}(m)$ for $m=1$, where m is the number of breaks, takes the value 12.84 and is therefore highly significant for the presence of one break in the series. Similarly, $\text{expFt}(m)$ takes the value 3.67 and is significant. Both the forms of sequential tests are highly significant and choose one significant breakpoint in the data, after accounting for the possibility of multiple breakpoints. For better understanding, the sequential F-statistics can be plotted for each year.

Figure 3 shows the sequential F-statistics plot. The maximum value of the F-statistic of 12.84 is indicated by the peak in the plot. The value lies significantly above the critical region and identifies the year 1992, as the most significant break date in the series. Again, the sequential tests result favors our first hypothesis of observing a discrete change in GDP growth.

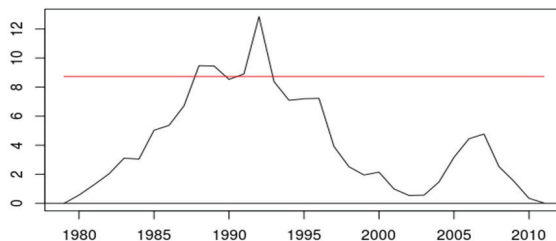


Figure 3: Recursive F-statistics

Therefore, the series of tests under BP's (1998, 2003) technique, all identify a single most significant regime-specific mean shift in GDP growth in the year 1992. And they show that average GDP growth dropped from 5.89 percent between 1973 and 1992 to 4.04 percent post 1992. BP's (1998, 2003) technique strongly supports our hypothesis of having a discrete drop in GDP growth. Accordingly, Figure 4 illustrates our hypothesis, showing the discrete drop in average GDP growth in year 1992, showing that average GDP growth drops from a higher value of 5.89 percent in the period 1973 to 1992, to a lower value of 4.04 percent post 1992. The discrete drop is well within the 95 percent confidence as shown by the interval line around the break date.

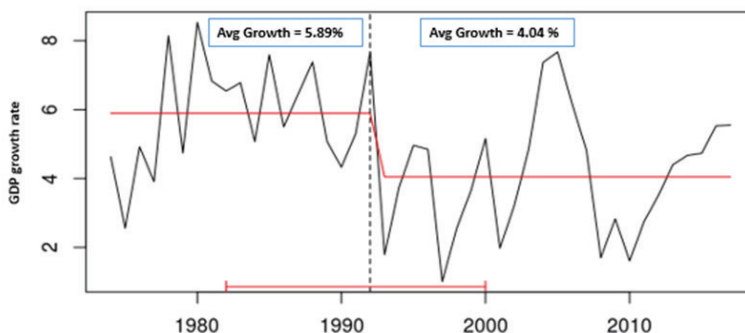


Figure 4: A Structural Break in GDP growth

Andrews (1993) test for identifying a single break at an unknown time Unlike Bai and Perron (1998), Andrews' (1993) procedure works to detect a single mean shift at an unknown time. We now validate our single break date result from the previous section using Andrews' (1993) procedure.

Andrews (1993) suggested using supremum tests based on maximum sample tests to detect a single break date. Stata identifies the year 1993 as a break date. Corresponding to the break date, the sup-Wald test statistic reported in Table 1 has a value 12.84 and is highly significant. The results using the supremum test to detect a single break date further supports our hypothesis of a discrete change in average GDP growth.

Having performed these tests to determine an unknown break date in GDP growth, we now proceed to testing for the identified known break date in 1992.

Chow’s test for a single break at a known point in time We follow the Chow’s (1960) procedure to test the significance of a known break date. We specify the break date as year 1992 and run the LR test. The reported LR test in Table 1 has a value of 8.97 and is highly significant. Therefore, the Chow (1960) type test confirms the year 1992 as a significant structural break in the GDP growth series. The results further add to support our first hypothesis of observing a discrete drop in GDP growth.

Dummy regression to test for a known break date The direction of the break identified in the previous section can be tested using an intercept dummy in our structural change model, equation (1), using the following specification,

$$g_t^Y = \beta + \theta DU_t + u_t, \tag{10}$$

Where, g_t^Y represents real GDP growth and DU_t is the break dummy variable. The break dummy variable takes the following values $DU_t = 1$ if $t > 1992$ and $DU_t = 0$ otherwise. Specification (2) allows us to check whether GDP growth exhibits a downwards or upwards trend.

Table 2 reports the results for specification (10). The dependent variable is GDP growth, and the explanatory variable is the break dummy for the year 1992. The coefficient of the break dummy variable, θ takes the value -1.84 and is highly significant. The coefficient shows that after 1992, on average the GDP growth drops by 1.84 percent.

Table 2
Dummy regression for testing a known break date

Variables	(1) Dependent Variable GDP growth	(2) Dependent Variable GDP growth
Dummy1992	-1.849*** (0.516)	-1.524** (0.572)
GDP growth _{t-1}		0.238 (0.148)
Observations	44	43
R-squared	0.234	0.291

a. Robust errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

b. Dummy variable *Dummy 1992* =1, for t>1992, $DU_t = 0$ otherwise. GDP growth_{t-1} is one time period lag of Real GDP growth

The extensive application of these procedures, Bai and Perron (1998), Andrews (1993), Chow (1960) and the dummy regression analysis, consistently choose the year 1992 as a break date in GDP growth. And they show that after 1992, GDP growth dropped significantly by 1.84 percent. Therefore, our first set of results in this section significantly support our first hypothesis, and we can conclude that there has been a discrete drop in GDP growth in the year 1992. That pre-1992 can be considered as a high GDP growth phase and post 1992 can be considered as low GDP growth phase.

7.2 The discrete reduction in GDP growth can be better explained by the macro aggregate of investment

Having established in the previous section that there has indeed been a statistically significant drop in Pakistan's GDP growth from 1992, we now seek to explain the drop in GDP growth using the macro aggregates from our theoretical framework, of consumption, investment, government expenditure and exports. The series for the macro aggregates will therefore also be observed over the time period 1973-2017, as our GDP growth series.

Our Hypothesis 2a expects, however, that of the explanatory macro aggregates of consumption, investment, government expenditure, and exports, it is investment growth that will follow the pattern of the drop in GDP growth.

Hypothesis 2a: There has been a significant drop in investment growth over the time period 1973-2017.

To test this hypothesis requires a functional form that uses growth of each explanatory macro aggregate, and tests each for breaks, using structural break analysis. That is indeed our aim in this section, to test whether the break in investment growth coincides with the break in GDP growth.

Our Hypothesis 2b goes on further to specify that of the explanatory macro aggregates, it is investment growth that will explain high GDP growth in the first pre-1992 period, and a drop in this investment growth will explain the drop in GDP growth post 1992.

Hypothesis 2b: Investment growth significantly explains high GDP growth in the first phase and a drop-in investment growth explains the drop in GDP growth in the second phase.

To test this hypothesis now requires a distinctly separate functional form. This is based on equation (8) above from our theoretical framework.

$$\Delta Y/Y = \Delta C/C + \Delta I/I + \Delta G/G + \Delta X/X - \Delta M/M \quad (8)$$

So, GDP growth, on the left-hand side, is explained by the right-hand side variables of investment growth, consumption growth, government expenditure growth, export growth and import growth. And based on our Hypothesis 2b, we expect higher investment growth to explain higher GDP growth in the first phase. And a statistically significant drop in investment growth explaining the drop in GDP growth in the second phase. And that this investment growth variable explains both phases of GDP growth, better than growth in the other macro aggregate variables posited by our theoretical framework, of consumption, government expenditure, and exports.

7.2.1 A test for a structural break in the growth of all the explanatory macro aggregates, consumption, investment, government expenditure, exports and imports

Our aim in this section is to examine whether the structural break in our key explanatory growth variables, investment growth, consumption growth, government expenditure growth and export growth, coincides with the break in GDP growth. Based on our hypothesis 2a, we particularly expect a possible break date in investment growth to coincide with the break date in GDP growth. 1992 has been identified as the significant break date for the drop in GDP growth. Therefore, in this section we will test our explanatory growth variables for the single most significant mean shift at a known break date, for the year 1992, or fairly approximate to it.

Recalling from our methodology section above, one statistical test we will use, will be based on a classical Chow (1960) test to check the shift in the macro aggregates growth series at a known break date. A second econometric test will be based on a dummy regression analysis, to test for the significance of the year 1992, as a break dummy in the macro aggregate growth series.

A structural break test at a known break date for all explanatory macro aggregates In order to test our explanatory variables growth series for a single mean shift at a known break date, we use the model specified for GDP growth given by equation (11) above, which was for an unknown break date. This equation (11) can now be specified for a known break date:

$$y_{it} = \beta_{ij} + \epsilon_t \quad \text{where } \beta_{i1} \neq \beta_{i2} \quad (11)$$

Where y_{it} represents growth in variable i in time period t . β_{ij} is the regime specific mean growth rate of variable i . This model allows the coefficient β_{ij} to change after the break. If TB is the break date, the model is

$$y_{it} = \begin{cases} \beta_{i1} + \epsilon_t & \text{if } t \leq TB \\ \beta_{i2} + \epsilon_t & \text{if } t > TB \end{cases} \quad (12)$$

Chow's (1960) test for a known break date for all explanatory macro aggregates. The Wald test for the known break date using Chow's (1960)'s procedure will be performed, to determine a break in growth of the explanatory variables. The explanatory variables are investment growth, consumption growth, government expenditure growth and export growth. Table 3 reports the findings for the Wald test at a known break date. Of all the explanatory variables, only the investment variable rejects the null posit of having no structural break. The Wald statistics takes the value 2.64 and is significant at a 10 percent level. Which shows that investment growth has a significant break in the year 1993. Overall, we can conclude that under Chow (1960) testing procedure, the investment growth series showed a significant structural break in the year 1993.

Table 3

A break in the growth of our explanatory macro aggregates

Variable Description		Break at the year1992 \pm	Tests and Probability		
		1	Test	Statistics	P-Value
Real GDP Growth		1992	$\chi^2(1)$	8.97**	0.0028
Real Consumption Growth		1992	$\chi^2(1)$	0.29	0.5829
Real Investment Growth		1993	$\chi^2(1)$	2.64*	0.0906
Real investment growth²		1993	$\chi^2(1)$	3.19*	0.0621
Real Government Growth		1992	$\chi^2(1)$	1.64	0.2001
Real Export Growth		1992	$\chi^2(1)$	1.06	0.3024
Real Import Growth		1992	$\chi^2(1)$	0.0027	0.9584

Real Investment Growth²=Real Investment Growth-Inventories

The above exercise provides valid statistical analysis in support of our hypothesis 2a, that there has been a significant break in the investment growth series. And that the break in the investment growth series coincides with the break in GDP growth.

Dummy regression for testing a known break date in investment growth. The dummy regression model to test for the intercept break is specified for the investment growth variable. We repeat the same exercise performed for GDP growth now for the investment growth variable. The model is given as;

$$g_t^I = \beta + \theta DU_t + u_t, \quad (13)$$

Where, g_t^I represents real investment growth and DU_t is the break dummy variable. The break dummy variable takes the following values $DU_t = 1$ if $t > 1992$ and $DU_t = 0$ otherwise. Specification (12) allows us to check whether investment growth exhibits a downwards or upwards trend.

Table 4 reports the results for specification (13). The dependent variable is investment growth, and the explanatory variable is the break dummy for the year 1992. For the investment growth regression, the coefficient of the break dummy variable, θ takes the value -3.11 percent and is significant. The coefficient shows that after 1992, on average investment growth drops by 3.11 percent. So, the dummy regression significantly supports our hypothesis 2b and we can conclude that there has been a significant drop in investment growth after the year 1992.

Table 4

Dummy regression for testing a known break date in investment growth

Variables	(3) Real investment growth	(4) Real investment growth ²
Dummy 92	-3.11* (1.80)	-3.46* (1.94)
Observations	44	44
R-squared	0.059	0.071

a. Robust Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

b. Dummy variable Dummy92=1 for $T > 1992$, $DU_t = 0$, otherwise.

Summarizing, the break in investment growth coincides with the break in GDP growth. Our findings show that on average we observe GDP growth to drop by 1.84 percent after the year 1992. Interestingly, we observe a similar trend for investment growth, with investment growth dropping on average by 3.11 percent after the year 1992. Hence, we can say that the better explanatory variable, coinciding with the downward trend in GDP growth is investment growth, since, both the series, GDP growth and investment growth have a significant drop post 1992.

We can now estimate the correlation between the two series across the two phases, pre-1992 and post 1992, where we expect higher investment growth to explain higher GDP growth in the first phase, pre-1992. And a statistically significant drop in investment growth explaining the drop in GDP growth in the second phase, post 1992. This is a test of our Hypothesis 2b.

7.2.2 *A test of GDP growth as a function of growth in all the explanatory macro aggregates, consumption, investment, government expenditure, exports and imports*

Having provided statistical evidence in support of Hypothesis 2a, that there has been a significant drop in investment growth, coinciding exactly with a significant drop in GDP growth. We proceed to test our Hypothesis 2b, which further specifies that GDP growth is explained well by investment growth.

We test this hypothesis using equation (8)

$$\Delta Y/Y = \Delta C/C + \Delta I/I + \Delta G/G + \Delta X/X - \Delta M/M \quad (8)$$

Where GDP growth, on the left-hand side, is explained on the right-hand side by investment growth, consumption growth, government expenditure growth, export growth and import growth. We expect higher investment growth to explain higher GDP growth in the first phase, pre-1992, and a statistically significant drop in investment growth explaining the drop in GDP growth in the second phase, post 1992.

Recalling from our methodology section above, denoting equation (8) for brevity as GDP growth g_t^Y , as a function of growth in macro aggregates. The macro aggregates are consumption growth g_t^C , investment growth g_t^I , government growth g_t^G , export growth g_t^X , and import growth g_t^M .

$$g_t^Y = f(g_t^C, g_t^I, g_t^G, g_t^X, g_t^M)$$

The functional form will be estimated using the double log form as following;

$$\log y_t = \alpha_0 + \alpha_1 \log \text{real} C_t + \alpha_2 \log \text{real} I_t + \alpha_3 \log \text{real} G_t + \alpha_4 \log \text{real} X_t + \alpha_5 \log \text{real} M_t + \epsilon_t \quad (14)$$

where, $\log y_t$ represents \log of real GDP, $\log \text{real} C_t$ represents \log of real consumption, $\log \text{real} I_t$ represents \log of real investment, $\log \text{real} G_t$ represents \log of real government, $\log \text{real} X_t$ represents \log of real export, and $\log \text{real} M_t$ represents \log of real imports. The double log form coefficients for equation (14) make the equation a growth equation. We run this equation independently for pre 1992 and post 1992. The coefficients of the model are then tested for equality across the two time periods, pre 1992 and post 1992.

Since our aim in this section is to explain the observed drop in GDP growth, and, since the break in investment growth coincided with the break in GDP growth, we would want our investment growth variable to significantly explain the drop in GDP growth

variable, as stated in our Hypothesis 2b. Therefore, while estimating equation (14) we would expect the following propositions to hold:

- a. The investment growth coefficient α_2 , should be positive and significant for both the phases, pre 1992 and post 1992.
- b. The investment growth coefficient α_2 , should have a higher value pre 1992 as compared to post 1992.
- c. The investment growth coefficient α_2 , should significantly differ between the two phases, pre 1992 and post 1992.

The results for running equation (14) for the two phases, pre 1992 and post 1992, are reported in Table 5.

Table 5
Empirical Estimation for Growth

Variables	(1) Dependent Variable Log (real GDP) Pre 1992	(2) Dependent Variable log (real GDP) Post 1992	Difference
log(consumption)	0.778*** (0.0159)	0.755*** (0.00692)	0.023
log(investment)	0.239*** (0.0166)	0.171*** (0.00919)	0.068***
log(government)	0.0855*** (0.0101)	0.117*** (0.00473)	-0.025
log(exports)	0.130*** (0.00248)	0.137*** (0.00572)	-0.007
log(imports)	-0.230*** (0.0106)	-0.165*** (0.00899)	-0.07***
Observations	20	25	
D-watson	2.44	2.41	
KPSS on residuals	0.396	0.171	
KPSS 5% critical value	0.463	0.463	
R-squared	1.000	1.000	

- a. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
- b. The coefficients of the model are consistent in the case of Fully modified OLS (FMOLS) and Dynamic OLS (DOLS).
- c. D-Watson value provides no evidence of autocorrelation.
- d. All the variables in the model are integrated to order one, hence the variables are cointegrated and the OLS regression yields consistent results.
- e. Johanson multivariate cointegration shows we cannot reject the hypothesis of a cointegrating rank at 5% confidence interval

The left hand side variable in Table 5 is the natural log of real GDP. And the right hand side variables are the log of real consumption, the log of real investment, the log of real government expenditure, the log of real exports and the log of real imports. The coefficients are interpreted as the growth coefficients in this functional form. For the consumption growth variable \log_{realc} , a 1 percent increase in consumption growth gives a 0.77 percent change in GDP growth pre 1992 and a 0.75 percent change in GDP growth post 1992. Although the two coefficients are significant in each phase, but the change between the two coefficients does not differ significantly between the two phases. For the government expenditure growth variable \log_{realg} , a 1 percent increase in government expenditure growth gives a .08 percent growth in GDP pre 1992 and a 0.11 percent growth post 1992. The increase in the coefficient value does not differ significantly between the two phases. Similarly, the coefficients for the other variables, export growth and import growth do not significantly differ between the two phases, pre 1992 and post 1992, and so are not able to provide an explanation for the drop in GDP growth. Finally testing the investment growth variable \log_{reali} for the three propositions a,b and c. The investment growth variable, \log_{reali} coefficient shows that a 1 percent increase in investment growth gives a 0.24 percent increase in GDP growth pre 1992. The coefficient of investment growth drops post 1992 and is associated with 0.17 percent increase in GDP growth. Both the coefficients are significant and positive in both the phases. The investment growth coefficient has a higher value in the first phase pre 1992, and a lower value in the second phase post 1992. And the drop in the investment growth coefficient is highly significant between the two phases, pre 1992 and post 1992. Thus all the propositions for investment growth hold true for Hypothesis 2b. That:

Investment growth significantly explains high GDP growth in the first phase pre-1992, and a drop-in investment growth explains the drop in GDP growth in the second phase, post 1992.

7.3 *The trajectory of GDP growth is even better explained episodically, with a high growth phase led by the quantum of investment, and a low growth phase led by consumption.*

In our previous sections we posited an explanation for our central problem that there has been a drop in long run GDP growth. Specifically, analyzing GDP growth on its own, we were able to statistically and econometrically determine a structural break in GDP growth in the year 1992. We showed that GDP growth significantly dropped by 1.8 percent post 1992. That enabled us to examine GDP growth under two phases, a high growth phase pre-1992 and a low growth phase post 1992. Following that, our next section identified investment growth, as the most significant explanatory variable to explain the drop in GDP growth post 1992. As the break in the investment growth variable coincided with the break in GDP growth. Also, the investment growth variable significantly dropped post 1992. But the clinching econometric evidence has come from the finding that high investment growth significantly determines the high GDP growth in the first phase, pre-1992. And that low investment growth significantly determines the low GDP growth in the second phase, post 1992.

Now recalling, our theoretical framework takes the economic argument for determination of GDP growth further, going beyond just investment growth, it pairs investment growth with the share of consumption, specifically the Marginal Propensity to Consume (MPC).

This pairing is added by Hypothesis 3, and further nuanced, because the hypothesis expects that long run GDP growth is better explained through the quantum of investment growth, paired with the marginal propensity to consume. Further, this Keynesian multiplier can be expected to work inversely with the quantum of GDP growth, with the marginal propensity to consume being relatively lower when the quantum of investment growth is high, and the marginal propensity to consume being relatively higher when the quantum of investment growth drops. Therefore hypothesis 3 expects that high GDP growth in the first phase, will be explained by high investment growth, paired with a relatively lower marginal propensity to consume on average. While the drop in GDP growth in the second phase, will be explained by a drop in the quantum of investment growth, paired with a relatively higher marginal propensity to consume on average.

Now the relationship between GDP growth and investment growth has already been well established above, as a strongly significant positive relationship. So it is the inverse relationship between investment growth and the MPC that needs to be established. Ultimately giving, for the high GDP growth phase pre-1992, which is investment led, to have a significantly lower value of MPC. And in the lower growth GDP phase post 1992, with an investment drop, to have a higher value of MPC.

Using the Marginal Propensity to Consume to explain the determination of GDP
Estimating the Marginal Propensity to Consume Recalling from our methodology section above, the MPC is estimated by running the regression of real consumption as a function of real GDP (Keynes, 1937). The regression will be run independently for the two time periods, pre-1992 and post 1992. The coefficient of real GDP in each regression gives us the average value for the MPC for each time period, pre-1992 and post 1992. The specification is given as:

$$realC_t = \alpha_{i0} + \gamma_{i1}realGDP_t + \epsilon_{it} \quad (15)$$

Where i represents two time periods, pre-1992 and post 1992, $real C$ represents real consumption and $real GDP$ represents real GDP. Since, we estimate the equation for two time periods, pre-1992 and post 1992, we will have two estimated values for the MPC, represented as, $\gamma_{pre1992,1}$ and $\gamma_{post1992,1}$. Based on the results in section 2.8.3.1, pre-1992 is considered as the high growth phase and post 1992 is considered as the low growth phase.

Accordingly, to support our hypothesis 3a and 3b, we expect the following propositions to hold true.

- a. The estimated MPC value for the pre-1992, high growth phase, should be lower than the estimated MPC value for the post 1992, low growth phase. That is $\gamma_{pre1992,1} < \gamma_{post1992,1}$.
- b. In addition to proposition (a), the estimated MPC value pre-1992 should be significantly different from the estimated MPC value post 1992. That is $\gamma_{pre1992,1} \neq \gamma_{post1992,1}$.

Table 6 shows the estimated results for equation (15). The MPC in the high growth phase pre-1992, takes the value 68.6 percent and is highly significant. And the MPC, in the low growth phase post 1992, takes a higher value 76.5 percent and is again highly significant. The estimated values for MPC in the two phases show that the proposition (a) holds, that the MPC value in the high growth phase is lower than the MPC value in the low growth phase. This result goes to support our hypotheses 3a and 3b. To test proposition (b), we perform a Chi square test to confirm that the two values are significantly different across the two phases of GDP growth, pre-1992 and post 1992. The Chi square test statistic significantly shows that the two coefficients, representing MPC values, are significantly different. This result, supports proposition (b).

Table 6
Regression Result for Marginal Propensity to Consume

Variables	(1) Dependent Variable Real Consumption Pre 1992	(2) Dependent Variable Real Consumption Post1992	(3) Dependent Variable Real Consumption Post 1992 – Pre-1992
Real GDP	0.686*** (0.0248)	0.765*** (0.0159)	.079***
Observations	20	25	
KPSS on residuals	0.261	0.129	
KPSS 5% critical value	0.463	0.463	
R-squared	0.980	0.992	

- a. Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1
- b. The difference reported in column (3) is highly significant p<.001.

Therefore, we can conclude that:

High GDP growth in the first phase, pre-1992, is explained by high investment growth. And that the Marginal Propensity to Consume in this phase is low. Making this high GDP growth phase investment led. And that the low GDP growth in the second phase, post 1992, is again explained, by low investment growth. And the Marginal Propensity to Consume, in this phase is higher. Making this phase consumption led.

8. Conclusions

This paper attempts to address the long run determinants of trend GDP growth in Pakistan.

The theoretical framework chosen, has been a Keynesian general equilibrium framework (Keynes, 1937) of estimating and analyzing aggregate demand, decomposed into the macro aggregates of consumption, investment, government expenditures, exports and imports.

Our theoretical framework adopted gives three sets of hypotheses to explain Pakistan's GDP growth in the long run. Data considerations, of consistency and comparability, have made us choose out period of analysis to be 1973 to 2017.

The analytical strategy we have used is to establish first whether there has been a discrete drop in GDP growth at any particular break date. Establishing a break date allows us to define two periods of GDP growth, a higher growth period, followed by a lower growth period. The determinants of GDP growth can then be established, by looking for correlated changes in their behavior between the two time periods.

Hypothesis 1. There has been a discrete reduction in GDP growth over the time period 1973-2017.

To test Hypothesis 1 that there has been a discrete reduction in GDP growth between 1973 and 2017, we used a methodology of searching for a break in the series for real GDP growth rates. In support of Hypothesis 1, we found a significant structural break for the year 1992. Running a dummy regression for this known break date, found that GDP growth dropped by 1.84% after 1992.

Hypothesis 2a: There has been a significant drop in the investment growth over the time period 1973-2017.

Hypothesis 2b: Investment growth significantly explains high GDP growth in the first phase and a drop-in investment growth explains the drop in GDP growth in the second phase.

Support for Hypothesis 1 having established two distinct time periods, pre-1992 marked by high GDP growth, and post 1992 marked by low GDP growth, our analytical strategy has been to establish which of the explanatory macro aggregates follows this pattern of high GDP growth in the pre-1992 period, and low GDP growth in the post 1992 period.

Which implies using the same structural break methodology applied to GDP growth, now for a known break date of 1992, for our explanatory macro aggregates of consumption, investment, government expenditure, exports and imports.

And our findings show that on average GDP growth is observed to drop by 1.84 percent after the year 1992. Interestingly, we then observed a similar trend for investment growth, with a break in investment growth coinciding with the break in GDP growth. We then established that after 1992, on average investment growth drops by 3.11 percent,

Having established that of all the explanatory macro aggregates only investment growth had a significant drop post 1992, following the drop in GDP growth, we proceeded to the next step of testing whether GDP growth was indeed a function of its explanatory macro aggregates, as in Hypothesis 2b.

Where GDP growth, on the left-hand side, is explained on the right-hand side by investment growth, consumption growth, government expenditure growth, export growth and import growth. The hypothesis expected higher investment growth to explain higher GDP growth in the first phase, pre-1992, with a statistically significant drop in investment growth explaining the drop in GDP growth in the second phase, post 1992.

As expected, only the investment growth variable consistently explains GDP growth across the two time periods, pre 1992 and post 1992. The investment growth variable coefficient showed that a 1 percent increase in investment growth gave a 0.24 percent increase in GDP growth pre 1992. The coefficient of investment growth dropped post 1992 now giving a 0.17 percent increase in GDP growth. Both the coefficients were significant and positive in both the time periods. The investment growth coefficient had a higher value in the first phase pre 1992, and a lower value in the second phase post 1992. Further the drop in the investment growth coefficient was highly significant between the two phases, pre 1992 and post 1992.

Hypothesis 3: Growth in output will be better explained episodically, some cycles being more investment led, others more consumption led, and still others following more balanced growth paths.

Hypothesis 3a: High GDP growth in phase one, will not be equally explained by high investment growth and high consumption growth. If high GDP growth in phase one is explained well by high investment growth, then the Marginal Propensity to Consume in this phase will be low.

Hypothesis 3b: Low GDP growth in phase two, will then equally not be explained by both low investment growth and low consumption growth. If low GDP growth in phase two is explained by low investment growth, then the Marginal Propensity to Consume, in this phase will be high.

Having established that the drop in Pakistan's GDP growth between the two time periods pre-1992 and post 1992, is well explained by the drop-in investment growth, this paper has attempted to go further. The theoretical framework adopted of the Kahn Keynes (Keynes, 1937) investment multiplier being based on the Marginal Propensity to Consume (MPC), implied that there could be two channels working to determine long run GDP growth, an investment channel and a consumption channel.

A further nuance was added by the implication of the two channels having a possible tradeoff. If the MPC rises, savings fall, and therefore also domestic investment and potentially total investment. Which gives the possibility that different episodes of GDP growth could be investment led, or consumption led. We had already established the significance of the quantum of investment growth in explaining GDP growth. Therefore, our test for Hypothesis 3 had now to be based on estimating the MPC across two phases of GDP growth, pre-1992 with its high GDP growth, and post 1992 with its drop in GDP growth.

The MPC was estimated by running a regression of real consumption as a function of real GDP. The regression was run independently for the two time periods, pre-1992 and post 1992. The coefficient of real GDP in each regression gives the average value for the MPC for each time period, pre-1992 and post 1992.

The estimated results showed that the MPC in the high growth phase pre-1992, was 68.5 percent and highly significant. And the MPC, in the low growth phase post 1992, was 76.4 percent and again highly significant. We then ran a Chi square test which confirmed that the two coefficients, representing MPC values, were significantly different.

Therefore, we can conclude that:

High GDP growth in first phase, pre-1992, is explained by high investment growth. And that the Marginal Propensity to Consume in this phase is low, making this high GDP growth phase investment led. And that the Low GDP growth in the second phase, post 1992, is again explained by low investment growth. And the Marginal Propensity to Consume, in this phase is higher, making this phase consumption led.

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Responsibility Accounting and Profitability of Listed Companies in Pakistan Stock Exchange

Saifullah Shakir* Abdul Aziz** Abdul Hameed*** Rashid Hayat****

Abstract

Business operations requires well-structured activities into firm different departments and best utilization of capitals in small or large size firms was sole objective to meet the expectation of profit and preference of investors. To meet these expectations of investors was a challenge for firm managers as shown by many early studies. The objective of this study was to analyses the impact of responsibility accounting on firm profitability measurement proxies of listed firms the in the Pakistan stock exchange. Ex-post facto design of research was taking on. Study utilized the cost of sale, operating cost, quick ratio, cash conversion cycle as a responsibility accounting variable using firm size as control and proxies used for profitability were earnings per share, profit before tax, return on assets and return on equity. To test the study hypothesis, all listed firms in the PSX till 30th June 2021 was considered for population of the study. Study used a sample of all 35 (3 new sectors added after 2017 and before 2017 no data available for new sectors) out of 38 sectors top listed companies using purposive and stratified sampling technique using data from the period 2011 to 2021. Study data were taken out from listed firms annual reports published on their website and also taken from PSX website after auditor's scrutiny reports. Descriptive and inferential statistics were used to test the study data. Study used panel least square techniques fixed or random effect model. Study results of Hausmann test favors of random effect model. So, study reports the result of random effect model. Findings of the study shows that responsibility accounting (RA) variables affect significantly on profit before tax as P value is less than 0.05 of the listed firm in PSX during the period. Study also revealed that cash conversion cycle and firm size has insignificant association with PBT. Results also shows that $F\text{-Stat}=3.469$, $AdjR^2=.0.145$, $p=0.000$. Study results with earnings per share and return on assets shows that a non-significant behavior with and without control variable. There is a significant difference in the result of EPS as well as return on assets with and without the control variable of firm size. Findings of the study of responsibility accounting have significant association on return on equity while non-significant effect on return using firm size as control variable. Results of the study also shows the behavior of cost of sale, operating costs, firm quick ratio, cash conversion cycle and firm size has either positive or negative relationship with profitability measurement proxies of listed firm. Depends on different conclusion of the study shows that profitability proxies have affected by responsibility accounting of listed firm in Pakistan stock exchange in Pakistan. Based on the findings and conclusion, managers of the listed firm must focus more on measuring the profitability in such a way complete understanding of responsibility accounting. They must make sure to assign proper task handing over with clear objective, proper process

of appraisal, proper budgeting of the achievable investment, develop team cross functional tasks as well as system of proper reward which create profit for the firm to achieve goal of owners.

Keywords: Activity centers; decentralization; evaluations; profitability; responsibility accounting; panel least square; Pakistan.

JEL Classification: P45

*Ph.D. Scholar, Hamdard Institute of Management Science (HIMS), Hamdard University, Karachi, Pakistan.

Email: saifullahphd@gmail.com

**Assistant Professor, Department of Business Administration, Federal Urdu University of Arts, Science & Technology (FUUAST) Karachi Pakistan. Email: Abdulaziz2004@gmail.com

***Assistant Professor, Business Administration, SIMT, Karachi, Pakistan. Email: abdulhameedph.d@gmail.com

**** Ph.D. Scholar, Institute of Business Management & Administrative Sciences, (IBMAS), The Islamia University of Bahawalpur, Punjab, Pakistan. Email: rhqazi@yahoo.com

1. Introduction

1.1 Background to the Study

A contemporary organization applies responsibility accounting as a tool of performance evaluation. Responsibility accounting is defined as a measure of an executive's performance as well as evaluation and identification of assigned tasks. Idyllically, these evaluation process for measurement of executive's performance will embrace the executive accountable about function and optimal utilization of resources allocated to the responsibility center and which consequences on other responsibility Centre Demski (1967). Responsibility accounting has emphases on transmission of information as general and specific for accounting information to different decisional/ activity centers. It develops the sense of responsibility and motivates the executives to make the appropriate decision as per organization's desires. For the efficient and effective utilization of organization's resources and maximize firm's profitability appropriate decision for allocation of resource as well as measurement and evaluation of executive performance specialized knowledge of organization's executives are essential. The measurement and evaluation of managerial performance should reflect decision in allocations of resources for their optimal utilization within the firm (Fowzia, 2011). While arguing on managerial performance as well as good governance process apropos to financial matter which is sprit of responsibility accounting (Srivastava & Bhatia,2014) suggested that family managed companies has good governance process in monetary term.

Responsibility accounting normally focused on assumption that in the responsibly center executives are individually responsible for the subunit like as division or department (Hornngren et al., 2006; Simon et al.,1954). On the other hand, while identifying concurrent planned as well as indispensable changes within the organizations, we can more broadly define responsibility accounting which includes joint or interdependent activities within the groups of responsibility centers of the administrators (e.g multitask teams or. Committees,) are conjointly responsible/accountable of their summative progress e.g., (Bushman et al., 1995; Indjejikian & Matějka, 2012; Indjejikian & Nanda, 1999). For this study responsibility accounting is define as an accounting procedure developed by the authority towards shadow on the elements of firm cost, developing the progress reports for various executive levels inside the organization, or, may be define accounting treatment of the firm in different elements of cost related in multiple departments using forecasted as well as comparing with rates incurred actual on each activity by certain department variations responsibility.

Karasioghu and Gokturk (2012) wrap up complex literature debate by directing how responsibility accounting impinges the corporate performance or firm profitability. The RA suggests a system of management control based on locating responsibility of delegating principles as well as on divisional levels, despite profitability or performance at some organizations quiet suffers by some hindrances. For instance, R A is structural approach of the organization wherein executives and others burdened with responsibilities are authorized and empowered by the firms to take responsibility and make appropriate decisions for any activity which appears within an explicit function of job assigned by the organization. It means under RA arrangement, executive is held responsible to take actions about segments contrarily called the departments, subunit, divisions, or branches. Now it's a question, despite the various implementation of R A is, has enhanced or improved the profitability in Pakistan? It's a point of investigation for this study. Owino (2017) believed that RA involves in measuring uncontrollable and controllable costs as well as observable revenue generated through individual executives. Owino (2017) also discussed that nevertheless, for real life it's a very complex and dynamic to trace out these revenue and costs so there is an acute need of well-structured RA system

Owino (2017) conferred that in order to resolve management issue of large-scale industries, responsible accounting is a unique method of cost management applied on visualization or decentralization of activities. The performance measurement of high-level executives is considered best organizational control as well as the part of efficient economic control as the process of decision making need the evaluation of each function of subunit. Ideally, each and every organization combined all factors of productions in order to achieve specific economic goal. For this purpose, organizations Passes through decision making process which determinates objectives of the company overall work of each elements" Mojgan et al. (2012) argue that prior to implementing RA system within the organization line of authority must be clearly defined. As the responsibilities and powers are clearly defined, it will show

management structure and each executive will exercise the power and can make decision at their own ends.

Chartered Institute of Management Accountant define that RA is a system of accounting which bifurcates costs and revenue into specified subunit of personal responsibility for the purpose to evaluate the progress achieved by individual to whom the responsibly was assigned. RA is also known as activity accounting, particularly within a decentralized functioning system. This system is applied to evaluate measure as well as monitor the process of decentralization within the organizations. The purpose of RA is to develop accounting reports. These reports enable all executives to aware about all items that are inside the range of authority delegated to him. CIMA (2015) further stated RA is a system of accounting that differentiates among uncontrollable and controllable cost. The study of Gray and Malins (2016) pointed out that by RA, it would be likely to recognize otherwise identify each departments of firm decision in the firm level strategic decisions to determines the costs by managers separately to obtain objective of the maximum profit declining the firm cost of production level of firm. Therefore, existing research will investigate the impact of RA as input information among firm proxies of performance used as output variable for corporation registered in Karachi stock exchange known as d in Pakistan Stock Exchange. This study is predictable that the set of exogenous variables in addition their alternatives variables would be significantly associated on firm independent variables such as operating costs of selling products, as well as products cost (includes direct cost, labour and FOH).

1.2 Statement of the Problem

Many organizations suffer challenges while attaining their profitability goals if the executives' performance has not been evaluated Datta and Ghosh (2016). As the progresses of executives are not assessed, it will be difficult to conclude whether the profitability goal has been achieved that is the key essence of RA. Derbali and Jamel (2018) also stated that common factor of business failure is not properly evaluation of an executive performance especially within the subunits/ departments wherein the individual executive has authority to take actions at their own ends. While discussing about the firm performance measurement by (Adegbe et al., 2018; Zimmerman, 2011) argued that well-organized responsibility accounting factors such as cost of sales, operating expenses, quick ratio, cash conversion cycle and firm size can be measured by profit generating ability. Makori and Jagongo (2013) and Owolabi and Obida (2012) used cost of sales for cost Centre, Centre of the decision about investment through business operational expenses as well as required firms revenue. So, many firms working in Pakistan facing profitability issue and in result most of them bankrupt or delist from the Pakistan stock exchange. Responsibility accounting has also a major problem for many firms and in result they face profitability issue. Hence, this study focusses to find out the impact of firm performance with RA of firms registered in stock PSX floor of Pakistan Stock Exchange (PSX) for selected period.

1.3 Objective of the Study

The overall objective of the study was to examine the impact of RA on profitability of listed companies with Pakistan Stock Exchange (PSX)

The particular objectives of this study were:

1. To determine the impact of RA on net Profit before tax at the listed companies with PSX;
2. To check out the impact of RA on earnings per share on the listed companies with PSX
3. To ascertain the impact of RA on return on assets (ROA) on the listed companies with PSX;
4. To assess the controlling impact of firm size on consequence of RA on net profit before tax, on earnings per share and on return on assets on listed companies with PSX.

1.4 Justification for the Study

A lot of studies like (Fakir et al., 2014; Machdar, 2019; Pajrok, 2014) argue that RA application has controversial and inconclusive and still no consensus has been developed, particularly the effect of RA application on the profitability. Whereas significant positive impact has been established by some authors in their studies, others have established no or negative impact on profitability by employing same variables. Therefore, this study cogitates on the research outcome of other studies like as (Rani & Rani, 2015) developed a significant association-ship whereas Pajrok (2014) developed a negative association-ship by conducting a survey base study. Conversely from above studies that employed survey base research design, existing study would have a different dimension. Existing study intended to use profitability as proxy variables of profit before tax (PBT), return on assets (ROA) and earning per share (EPS) to observe how these variables would be affected by RA of the companies listed on the floor of Pakistan Stock Exchange (PSX). From theoretical point of view, mostly theories seem not to have measured human behavioral assumption and the structural mechanism paradigm shift of Agency Theory like the study of (Goel et al., 2012).

This study is lacking in most studies concluded in developed and developing countries but rare study conducted in the context of Pakistan there by filling a theoretical gap in the literature. By filling these literature gaps, existing study also contributes the literature on agency theory established on attitudinal and behavioral paradigm shift of performance theory towards limitations selfish behavioral affection of the executives in decentralized firms.

Therefore, this study is relevant as it would cover entire sectors' top listed companies in Pakistan particularly introducing the application of RA in order to enhance productivity and profitability within their operations. Moreover, the organizations' management can

introduce responsibility accounting as a tool to get relevant information on regular basis. This system will equally serve a basis to motivate responsible executives of different sub-units/departments and by so doing, increase their economic welfare.

1.5 Hypotheses of the Study

The succeeding null hypotheses were tested in this study:

H1: The R A has no substantial impact on net profit before tax of listed companies with PSX.

H2: The R A has insignificant impact on earnings per share on listed companies with PSX.

H3: R A has insignificant impact on return on assets with listed companies in PSX.

H4: The Firm size have not controlling effect on impact of RA on earnings per share, net profit before tax and return on assets on listed companies with PSX.

1.6 Responsibility Accounting Proxies

1.6.1 Cost of Sales

In RA system cost of sales is used as a tool to measure the responsibility. Cost of sales is fluctuates conferring towards the nature of manufacturing sectors and organization in which business activities works. Firm like sole proprietorship organization, purchase of inventory from different vendors cost as a goods sold cost, however cost related to producing goods, manufactured firms' goods sold costs differ as compared to the sole proprietorship industry, goods sold cost including the raw material purchased for manufacturing, labor cost and FOH are included in the cost of manufacturing goods during the specific period.

Expense Centre or Cost Centre: study of (Derbali & Jamel, 2018) asserted that the goods sold costs is more important to better understanding and calculating the cost of each departments or expense incurred in the departments. To evaluate the firm reported information of accountings (RA), departmental expenditure is used as a factor that affects profitability of the firms calculating in financial terms dollar or rupees. Costs incurred in each department are related to monetary units directly linked with higher (lower) cost to decrease (increase) firm profit. In responsibility accounting system, only the cost incurred by the Centre has been recorded. (Adegbe et al., 2018; Shakir et al., 2021) stated while calculating the firm goods sold cost that is entire monetary amount of financials from the companies.

1.6.2 Operating Costs

I. Direct Cost: Akeju (2011) elucidate that direct costs are those material costs incurred to use raw material directly as well as labor charges to produce that directly involve in operations. Such type of cost should be calculating through producing any finished goods cost of manufacturer. Direct cost is also called prime cost which directly related to labour and

material cost. In addition, (Akeju, 2011) pointed out those payments to labour for regular and overtime payment during production and cost of purchasing materials known as direct cost.

II. Indirect Cost: Such types of cost not an easy task to find out directly towards things indirectly used in the manufacturing products this type of do not directly fluctuate with the production cost. This type of cost reflected in the manufacturing account as overhead cost.

Investment Center: An investment center is any part of an organization or company whose manager has control over cost, revenue and investment in operating assets such as cash, accounts receivable, inventory, plant and equipment and all other machinery held for productive use within the organization. Performance of investment center is measured not only on the basis of profit but also in terms of operating assets. Managers of an investment center are usually evaluated the performance on the basis of return on investment (ROI). This center is differing from profit center because investment center is evaluated on the basis of ROI and whilst the profit center managers are often evaluated by comparing actual profit to target or budgeted profit.

Mojgan et al. (2012) also studied the role of RA within the organizations. His study measures cost of operation employing the entire figure sampled from the listed companies. The purpose of (Adegbeie et al., 2018). Study is to keep an eye on the existing works as well as costs calculating procedures of operation recycled in their study by taking the log of OPC that is entire cost (absolute figure) of companies listed with stock exchange which were the sample of study unit.

1.6.3 Firm Profitability

The thought of profitability has been postulated by Machdar (2019) who asserted that income earned by the firm during any specific period from all activities related to business operations of any company, corporations or any business firms. (Festus et al., 2020) which states that term profit is a capacity to make earning from sale after deducting cost within given investment but that profitability is not in term of proficiency? Hifza (2011) point out that income earns by firm during any period called profitability is the key factors for primary objective and goal of any business as well as the primary aim of the business manager to increasing earnings of the firms and owners' assets or financial position during any period. In the same way, the study of Needles et al. (2010) postulates that performance of firm is the capability of increasing revenue to a reasonable profit income.

1.6.4 Profit before Tax

In this study profit before tax (PBT) is linked with profit earned by any organizations before paying off the corporation tax from the income after paying all operating expenses.

Studies also more focused about the profitability measurement such as PBT shed light by (Festus et al., 2020) (Zhai & Wang, 2016) concluded that earnings of firm before tax liability used as measurement of performance proxy, which leads the firms managers ability to earn profit and to check the departments performance to minimize the cost to increase earnings. (Nawaiseh et al., 2014); (Eliwa, 2015) utilized as a dependent variable to indicated as firm performance measurement in their study income before tax (PBT). Study also calculate operating income before tax through log of total income before tax of listed firm during the study period from their annual reports and current study also used this measurement as a profitability proxy behavior through operating costs, cost of sale and also working capital management elements of business operations.

2. Literature Review

2.1 Conceptual Review

The concepts regarding association between profitability and responsibility accounting theories and their connection from previous research literature discussed below in detail.

2.1.1 Responsibility Accounting

The main theme of firm responsibility accounting is to consider the accounting mechanism that gathered, wrap up, and relevant information reported regarding accounting connecting towards managers' obligation. This needs to improve evidence to assess for all agents (manager) responsible regarding income as well cost incurred to earn that income due to which departmental head has power over as well as right. Responsibility accounting deliberates the capability that clearly split up the easy to deal with and uncontrollable costs. Responsibility accounting can be defined in different traditions. (Abo & Mohamad, 2010; Owino, 2017) explains the (RA) responsibility accounting as an accounting technique that collect and prepare financial information such as preparing income and expenditure to evaluate the performance of all unit of group for strengthen the managers for control and made a policy decision accordingly. Similarly Zimmerman (2011) explained that the responsibility accounting which developed a structure that evaluate the performance and judge the operating results of responsibility Centre. Subsequently, RA decrees that performance evaluation way to calculate or understand the accuracy of results achieved after making investment decision rightly allocated to every single department related to firm. Magabli (2017) argue that RA formerly decrees the presentation evaluation classified procedures the accuracy of the consequences arrived as of the conclusion rightly given towards the firm departmental accountability. If, objectives & goals of budget does not attain in specific time period then responsibility does not fix on financial manager being a responsible for financial performance. According to (Horngren et al., 2006) that accountability focal point can remain framed and developed to endorse improved configuration of individuals and primary objectives of the firms.

In the same way (Yang & Modell, 2012) affirmed that management control system of responsibility accounting is designed in this way that manager of any organization responsible and accountable on the bases of their responsibility in particular department allocation plus the position in the firm. Further added by, (Fowzia, 2011); Yang & Modell, 2012). Opined that every organization has designed a mechanism to operate and responsible someone else to control the cost. Moreover, (Horngren et al., 2006) argued that profitability accounting (PA) or RA or activity based accounting (ABA) (which are same thing by application and results) is an accounting techniques that identifies several decisions/ accounting center or responsibility centers within the whole firm as well as managers of the responsible department must traces costs incurred who are mainly accountable regarding debt, firm assets growth, increasing revenue through minimizing of their stock cost in question when making any decisions. Using responsibility accounting structure, overall operational activities of business are more concerned by each department managers relatively than control more on products cost least effective.

2.2 Theoretical Review

Following sections developed the theories related to basics assumptions and theoretical foundations used to explore this research.

2.2.1 Agency Theory

This theory developed after the study assumed by (Berle & Means, 1932) agency theory they stated that ownership may be separated from control. (Panda & Leepsa, 2017) explained agency theory that an association among more conflict when conflict between stockholder or owners with firm managers know as agent of firm hold all operating activities, recruited by firm owner one or more than one managers responsible for business activities, called agents, (manager) towards execute approximately facilities on behalf of the principals. (Jensen & Meckling, 1976) pointed out that this situation gives an opportunity to company managers (Agent) towards prefer personal interests rather than to meet the firm owner's wealth maximization. Theory of agency focus to resolved the problems of agent and their solution to minimize the cost of the firm to oversee the manager acts. According to (Fama & Jensen, 1983) that agency problems arises because contracts are both costly to write and enforce. Often there is a blurred distinction between the principles and the agent. The main reason of the agency problem is that managers maximize their wealth at the cost of shareholders like excessive remunerations or unjustified benefits. According to the (Dechow & Sloan, 1991) "horizon problem" remuneration intrinsically linked to short term performance goal. In this context (Burton et al., 2006) stated that limiting management discretion through establishment of structures to monitor and control management behavior. The central questions behind theory of agency is due to interest, control of manager separation from pattern of ownership, variations of available information regarding profit and dividends and ethical

risks, utilizing of available funds and control of shareholders as well as decision-making purpose is, consequently, significant and correlated this study.

2.2.2 Profitability Theory

Hifza (2011) asserted that term profitability have been established as well as used by American Economist, (Walker, 1895) studies on firm earnings categorize measures and evaluate the corporation firm growth in the concept of profit in the context of the investment decision made by stakeholders or invested assets in the industry. Study also stated that many shareholders, invest their capital in firm for the sake of profit and return, so earnings of the firms is mostly used as a best measure to access the wise decision of investment by investors. The Capability of a company to continue to run the operations mostly be influenced by arranged this one capability to produce income and endure to happen. Firms' earnings are more concerned about the business performance measures largely project. This study assumes that RA impacts positively on performance of firms. It further proposes that success is a presentation evaluator of RA. Hence current research study is using on the circumstance that measurements applied in this study keen and correlated with this study.

2.2.3 Economic Efficiency Theory

Stilwell (2015) postulates that theory of economic efficiency was among them theories developed by many noneconomic theorists. On the other hand, this theory was postulated and under consideration in previous studies by many researchers of economists. The theory postulated that corporations must attain their efficiency or profit from input of resources through minimum cost each unit manufactured by firm during any specific period. Theory of economic efficiency also reminds, producing maximum number of units leads to lower the cost of each unit of product by any firm known as economics of scale. (Zerbe, 2002; Said, 2011) studies concluded that as a result, for the shorter period of business, more the business productivity is attained through the output level using all inputs utilized to achieve the economy of scales takings benefit of such proficiency. On the other hand, for long term business operations, stimulating the volume of a present structure can upturn the better level of production higher the efficiency. Basically, the firms perform well economically of business organization is measured by the efficient utilization of the resources at its disposal in other to attain profitability goals/targets of the establishment. From the above discussion economy of efficiency theory is more impact and related to the current study based on cost efficiency for using economies of scale. Due to more economical efficient utilization of firm assets by the managers in the business provide better output which effect on firm performance (Said, 2011; Zerbe, 2002).

2.2.4 Accountability Theory

Diamond (1984); Dow and Gorton (1997) asserted that many researchers from their own study work conclude that a higher the liquidity ratio of firm in the market improved the managers higher monitoring level. Theory of agency concluded that firm management must accountable about their inputs and outputs based on firm shareholder objective achievement from management. The principals look forward to appropriate responsibility of investors as well as owner's investment decisions as manager is agent of owners and all control of firm decision in the hand of agent. As a result, agency conflict framework is more important and related to current study as agent harms the firm profit due to personal interest as firm business activities needs fair treatment from managers. Managers are more responsible for their performance in their own department to improve the profit using appropriate decision by managers. Responsibility center in charges and their subordinates are more responsible regarding their own performance during any specific period to stakeholders. Their duties are based on assigned work of accountabilities, sense of duty plus many departments of firm's funds or assets utilized through their own authority. As a result, theory of accountability is much pay attention and taken into this study.

2.3 Empirical Review

To test the effect of RA on operational efficiency as well as the profitability a study was conducted by (Gharaibeh, 2008) by applying the RA function on listed industrial companies of Jordanian. Study applied the ordinary least square and descriptive techniques of the data on listed firms. Findings of the study show that there is no correlation among centers and the firm performance measurement used in this study and firm operational efficiency. Omniya et al. (2021) demonstrates the effectiveness of conventional accounting methods used for firm financial performance measurement. Their study evaluates 3 variables such as EVA, refine EVA and change in EVA with performance measurement of corporation. The results showed significant impact of all the economic value-added measures and REVA could be considered as the most effective economic measure in improving and explaining the financial performance.

Ali (2019) demonstrated that downside risk is important in the evaluation of assets on the Chinese stock market. A broad review of different notions can be found Latif and Shah (2021). An interesting compilation of downside risk with accounting information is the concept of accounting-based downside risk (Huang et al. 2022). Huang et al. (2022) employed the measure proposed to predict stock price falls on the Chinese market. They discovered a negative relation between ABDR and future stock price crash risk. He et al. (2020) briefly explains that responsibility accounting constructs for example total profit, after tax profit, investment return, earning per share and many other measures of firm profit create incapability due to cost factors such cost of sale, cash conversion cycle, operating cost which increases the

weighted average cost of capital. So, these measures cannot be realistic in valuation of firm. Maenuddina et al. (2020) assessed and presented empirical evidence about the economic value-added momentum compared with certain traditional financial measurements with respect to working capital management using 69 listed firm of PSX from 2007-2017). Study concludes that there is a significant positive association between earnings risk and working capital management. One of the options is to take the risk-free rate (the minimum required rate of return) as the point where there are no losses and no profits (Zebrowska-Suchodolska & Karpio 2020). Xing and Yan (2019) showed that better quality and availability of accounting data contribute to the lowering of systematic risk on capital markets. It is therefore important for investors to have access to current reliable financial and non-financial statements. A helpful instrument in this respect is the broadly understood audit, which in practice can significantly reduce the risk of false disclosures presented in the reports (Bartoszewicz & Rutkowska-Ziarko 2021). Rutkowska Ziarko (2020a) adopt three assumptions risk negative or neutral; total and systematic risk; and rates of return as well as profitability ratios.

The power vested executives of different departments through the authority of lowering firm cost to increase revenues are associated with the conclusions of their responsibility centers as well attached to the amount of profitability. The study results concluded by recommending that in order to achieve the identified organizational goals through every responsible center reorganize the organizational structure to (Atu et al., 2014) examined the issues and impact of transfer pricing policy pertaining to RA in the context of Nigerian economy. The comprehensive analysis was done on the issue of transfer pricing and unearth that various activities of planning & controlling as well as handling have been involved in international organization in Nigeria by decreasing the drain of corporate tax wherein RA technique is applied for decentralization. Patel et al. (2012). Investigated the implementation and application of RA in the large-scale companies and concluded that system of responsibility accounting was observed as better tool for performance evaluation and control system. Further pointed out that RA process consisted on two parts i.e budgeting and standard costing. The responsibility accounting system is more benefitted and appropriate for large scale industries as compared to small scale industries wherein department executives are held responsible for the performance of their division. Moreover, Alshomaly (2013) examined the associations-hip amid adoption of RA system and the performance at Medical Sector in Jordan. This study discovered that medical sector companies implemented RA system within the organization intended to evaluate the executive performance. Similarly (Gharaibeh, 2008) also investigated the application of RA system and its effect on the operation proficiency and profitability on Industrial Sectors' companies in Jordan, descriptive statistics and regression data analysis technique were used.

The results revealed that there is no association ship amid in responsibility centers and operational efficiency as well as profitability within public shareholding organization in industrial public of Jordan. The empowered executives of RA centers with authority and the

presence of incentives are allied with the performance of RA centers and they are associated to the rate of profitability. The study recommendations include reorganizing the organizational structure into RA centers and identifying the objectives which required to be accomplished by every RA center. (Abbas, 2020; Al Nimer et al., 2015) studied either quick ratio (liquidity ratio) has significant effect on return on assets (ROA) or not on the Jordan banking sectors' banks. Seven years data covering the period from 2005 to 2011 for the study was collected from the financial statements of 15 banks listed on the floor of Amman Stock Exchange (ASE), covering the period. The results show that a significant positive association-ship amid in quick ratio and return on assets, which reflect that ROA of Jordan banking sector has significantly impacting by liquidity Atu et al. (2014) examined RA issues and impact of transfer pricing policy in the context of Nigerian economy. This study conducted a comprehensive analysis on the transfer of pricing issues and established that a lot of activities on planning & controlling and handling were involved at international organizations in Nigeria through reducing the burden of corporate tax wherein RA technique has been applied for decentralization.

The Owolabi and Obida (2012) conducted a study on the association-ship between Corporate Profitability and liquidity Management by using return on equity, return on assets, return on investment of designated manufacturing organization listed on the floor of Nigerian Stock Exchange. This study unearthed that liquidity management that was measured through firms, cash conversion cycle and cash flow management, have a significant effect on return on assets, return on equity and return on investment. (Niresh & Thirunavukkarasu, 2014) conducted a study on Sri Lankan economy and measured the impact of firm size on profitability of selected manufacturing companies. The selected sample was consisting of 15 companies that were in the lime light of Colombo Stock Exchange during 2008 to 2012. The study used net profit and return on assets as a proxy of profitability while total sale and total assets used as a proxy of firm size. The study concluded that no indicative association-ship exist between profitability and firm size of selected manufacturing organizations. Similarly (Rani & Rani ,2015) examined the application of RA toot technique on the Jordanian Industrial Organizations listed on the floor of Amman Stock Exchange; survey design method was applied on 245 structured questionnaires. The statistical package for social sciences (SPSS) was applied to analyze the data. The study revealed that some elements of RA system such as preparation of budgets and structural reporting for performance evaluation exist in the selected sample companies. This study moreover found a lack on right incentives system as well as no any statistical evidence regarding the comparison of performance with regards to budgeted and actual.

3. Methodology

3.1 *Research Design*

The research study used empirical investigation in order to study the effect of RA on corporation measurement of listed firms in Pakistan stock exchange (PSX) profitability using secondary source of data from 2011-2021. The study research design was based on ex post facto who premised due to fact that it studied the previous phenomenon association among indigenous and exogenous variables. Population of this research consistent on all 530 registered corporations on the floor of Pakistan Stock Exchange (PSX) for instance 30th June, 2021. Out of 530 and 35 listed companies each top listed company from 35 sector in term of market capitalization were selected as a representative of sample size 35 in this research purposes. The completed picture of every company containing the full information such as market share value, numbers of free floated share and market capitalization is reflected at table-1.

From probability sampling systematic sampling technique was applied to select representative sample for the study based on data availability. Required data for this study was gathered from secondary published source extracted from the financial statement of selected companies as a sample. The related information used as proxy for research variables retrieved from the financial statement consisting on trading profit and loss account, balance sheet, cash flow statement and change in assets and equity covering the period under study. The extracted data was also validated by calculating the mean. This research study developed the significant effect among RA and profitability. Study thus, examined a cause and effect association ship among RA (exogenous variable) and the profitability (the indigenous variable) in order to attain this, descriptive statistics and inferential statistics both techniques were applied in the study. The data was analysis in two stages, i.e. descriptive and inferential statistics. To analyze the characteristics of data descriptive statistics were used while to test the hypothesis inferential statistics were also applied on the data. The panel regression models were estimated to assess by employing Unobserved Effects Model (UEM), whereas Hausmann test was done to specify the best estimation between fixed impact model and random impact model followed by other required post estimation test.

Table I
Research Design

Sr. #	Name of Company	Sector	Rate per Share	Total free float share	Free float share Ratio (%)	Market Capitalization (000's)
1	Altas Honda Limited	Automobile Assembly Line	497	12,408,794	10	60,800,606.39
2	Agriaautos Industries Limited	Automobile Parts and Accessories	251	18,720,000	65	6,884,064.00
3	Climax Engineering Co. Ltd	Cable and Electrical Goods	100	175,800	5.31	331,200.00
4	Attock Cement Pakistan Ltd	Cement	150	27,485,392	20	20,625,038.31
5	Agritech Limited	Chemical	5.12	215,836,500	55	2,009,241.60
6	HBL Growth Fund	Close ended mutual Fund	8.63	264,018,238	93.13	2,446,605.00
7	Allied Bank Ltd.	Commercial banks	83.9	171,761,075	15	96,071,694.34
8	Ados Pakistan Ltd.	Engineering	23.99	1,316,520	20	157,916.57
9	Arif Habib Corporation Ltd.	Fertilizer	40.9	90750000	22	4083750000
10	Al-Shaheer Corporation Ltd	Food & Personal Care Product	16.73	149,969,415	75	3,345,318
11	Balochistan Glass Limited	Glass and Ceramics	7.01	65,400,000	25	1,833,816
12	Adamjee Insurance Company	Insurance	38.28	280,000,000	80	13,398,000
13	Crescent Jutte Products Ltd	Jutte	3.4	8,317,214	35	80,795.79
14	Capial Assets Leasing Cor. Ltd	Leasing Companies	6.58	1,611,662	15	70,698.24
15	Bata Pakistan Ltd.	Leather and Tanneries	1,517	1,767,469	23.38	11,466,403
16	AKD Capital	Miscellaneous	137.9	1,253,637	50	345,727.87
17	Allied Rental Modarba	Modarbas	10	11,000,000	5	2,200,000
18	Mari Petroleum Company Ltd	Oil and Gas Expolaration Companies	1,393	26,680,500	20	185,865,701
19	Attock Petroleum Limited	Oil and Gas Marketing Companies	333.4	24,883,200	25	33,184,235.50
20	Balochistan Particle Board Ltd	Paper and Boards	17.31	2,100,000	35	103,860.00
Table to be continued						
21	Abbot Laboratories (Pakistan) Ltd	Pharmaceuticals	764.8	21,034,489	21.49	74,876,108.90
22	Altern Energy Ltd.	Power Generation & Distribution	25	90,845,000	25	9,084,500.00
23	Attock Refinery Ltd	Refinery	168	42,646,500	40	17,917,926.90
24	Abdullah Shah Ghazi Sugar Mills Ltd	Sugar and Allied Industries	6.01	19,815,417	25	476,362.82
25	Al-Abid Silk Mills Ltd.	Synthetic & Rayon	3.49	2,681,910	20	46,799.33

26	Avanceon Limited	Technology & Communication	87.81	58,222,122	27.49	18,597,280.50
27	Artistic Denim Mills Limited	Textile Composite	115.9	4,200,000	5	9,740,640
28	Nadeem Textile Mills Limited	Textile Spinning	43.1	1870000	10	81000000
29	Ashfaq Textile Limited	Textile Weaving	10.38	1,749,250	4.55	399,458.73
30	Khyber Tobacco company	Tobaco	453.7	404,813	8.42	2,181,074.71
31	Pakistan International Airlines Corp	Transport	4.83	188,806,566	3.61	25,279,066.20
32	Unity Foods Ltd	Vanaspati & Allied Industries	26.75	497,025,000	50	26,590,837.50
33	Bannu Woollen Mills limited	Woolen	45.93	4,277,813	45	436,622.06
34	Dolmen City Reit	Real Estate Investment Trust	10.76	555,925,000	25	23,927,012.00
35	UBL Pakistan Enterprise ETF	Exchange Traded Funds	13.69	3,490,000	25	47,778.10

3.2 Model Specification

In this study three nature of variables are employed; the indigenous variable, exogenous variable and the constant variable. The indigenous variable profitability which was measured by earnings per share (EPS), profit before tax (NPBT) and return on assets (ROA); the exogenous variable that is responsibility accounting measured was also measured through the operational cost (OPC), cost of sales (COS), quick ratio (QR) and cash conversion cycle (CCC) whereas the firm size (FS) is used as constant variable. The study variables are operationalization as:

$$T=f(N)$$

$$T=f(N, R)$$

Wherever

T = Indigenous Variable i.e. Profitability

N = Exogenous Variable i.e. Responsibility Accounting

R= Constant Variable i.e. Firm Size (FS)

$$T = t^1, t^2, t^3, t^4$$

t^1 = Profit before Tax denoted as NPBT

t^2 = Earnings per Share denoted as EPS

t^3 = Return on Assets denoted as ROA

t^4 = Return on Equity ROE

$$N = n^1, n^2, n^3, n^4$$

n^1 = Cost of Sales denoted as COS

n^2 = Operating Cost denoted as OPC

n^3 = Quick Ratio (QR)

n^4 = Cash Conversion Cycle (CCC)

R = r= Firm Size denoted as FS

Functional Association ship

- (1) $t1 = f(n1, n2, n3, n4)$; PBT = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC})$
- (2) $t1 = f(n1, n2, n3, n4, r)$; PBT = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC}, \text{FS})$
- (3) $t2 = f(n1, n2, n3, n4)$; EPS = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC})$
- (4) $t2 = f(n1, n2, n3, n4, r)$; EPS = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC}, \text{FS})$
- (5) $t3 = f(n1, n2, n3, n4)$; ROA = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC})$
- (6) $t3 = f(n1, n2, n3, n4, r)$; ROA = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC}, \text{FS})$
- (7) $t4 = f(n1, n2, n3, n4)$; ROE = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC})$
- (8) $t4 = f(n1, n2, n3, n4, r)$; ROE = $f(\text{COS}, \text{OPC}, \text{QR}, \text{CCC}, \text{FS})$

Study Model

1st Model

$$\text{PBT}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + U_{it}$$

2nd Model

$$\text{PBT}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + \beta^5 \text{FS}_{it} + U_{it}$$

3rd Model

$$\text{EPS}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + U_{it}$$

4th Model

$$\text{EPS}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + \beta^5 \text{FS}_{it} + U_{it}$$

5th Model

$$\text{ROA}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + U_{it}$$

6th Model

$$\text{ROA}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + \beta^5 \text{FS}_{it} + U_{it}$$

7th Model

$$\text{ROE}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + U_{it}$$

8th Model

$$\text{ROE}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + \beta^5 \text{FS}_{it} + U_{it}$$

Whereas

=Return on Assets abbreviated for study as (ROA)

=Earnings per share abbreviated for study as (EPS)

=Return on equity abbreviated for study as (ROE)

= Profit before Tax abbreviated for study as (PBT)

=Cost of Sales abbreviated for study as (COS)

=Operating Cost abbreviated for study as (OPC)

=Quick Ratio abbreviated for study as (QR)

=Cash Conversion Cycle abbreviated as (CCC)

=Firm Size abbreviated for study as (FS)

=The regression intercept that s constant denoted in the model as (B_0)

=The coefficient of the explanatory variable denoted in the model from (B_1) to (B_4)

=The error term within the model is denoted as (U_{it})

=Number of firms denoted as (I)

=The number of years used in the observation denoted as (t)

4. Data analysis and findings

Before employing any advance technique, descriptive statics were applied to check the characteristic of the data such as mean, median mode, standard deviation minimum and maximum values in the data, and later inferential statistics data analysis technique were applied to test the study hypothesis. The panel regression model's data analysis techniques were also applied by using unobserved effect model (UEM) whereas Housman test was also done in order to show the accurate estimation among fixed effect and the random effect model followed by other essential, post estimation tests.

4.1 Pre-estimation Analysis

To test basic statistical features as well as characteristics of the data of financial figures, ratios of the variables applied to measure the explained variable, explanatory variable and control variable as explained in this section. The multi-co-linearity is tested through correlation matrix which is also presented in this section.

Table 2
Variable characteristics

Tests	ROA	ROE	EPS	PBT	COS1	CCC	OPC	QR	FS
Mean	6.82	2.56	7.58	9.26	16.98	93.66	22.18	0.82	6.91
Median	2.7	0.3	3.68	4.96	6.66	90.41	9.05	0.54	7.1
Maximum	90.69	31.9	74.91	77.3	99.36	268.38	621.77	8.96	9.61
Minimum	-9.15	-65.7	-19.9	-44.9	-4	13.53	-49.31	0.14	2.79
Std. Dev.	18.17	11.98	13.22	20.15	22.39	50.21	58.44	1.14	1.39
Skewness	3.9	-1.75	2.23	1.19	1.62	0.62	8.29	5.2	-0.8
Kurtosis	17.38	14.93	10.51	5.51	4.65	3.27	85.35	33.08	4.73
Jarque Bera	1472	849.6	419.14	65.89	73.07	8.89	38815	5573	31.3
Probability	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Sum	900.7	338.5	1000.1	1223	2241.9	12364	2927.5	108.2	913
Sum Sq.Dev.	43268	18787	22896.8	53177	65679	330204	447425	169.1	252
Sample (N)	35	35	35	35	35	35	35	35	35

Source: Researchers' own work-2021

Table-2 above reflects that a sample of top 35 sectors companies with their average values taken based on their study period 2011-2021. Study also show that ROA mean value 6.82 which indicate that on average 6.82% returns were generated by the selected firms within study period by employing total assets; whereas specified firms report losses at this point

of time leads to -9.15% at minimal return on assets. The results also indicate that maximum return generated by employing total asset is 90.69% as reported from the analysis output. The reported results revealed standard deviation is 18.17 implies that risk associated in envisaging the rate of return which can be realized by organizations by employing total assets, hence, it is risky to forecast the yield on the bases of total assets. Whereas the standard deviation of other variable than quick ratio (QR) and firm size (FS); associated risk to forecast the profitability by implementing the responsibility accounting are comparatively high especially through the cash conversion cycle which reflect the standard deviation value 50.21. The possible reason for high standard deviation of study variables may be as a result of the unit of measurement which is employed in absolute from in millions to naira. The results show minimum value operating cost as -49.31 and maximum value as 621.77 that indicate that its high volatility. On average firms bared 22.18 million and 16.98 million as operating cost and cost of sales and that are very high and needs attention for its reduction through cost reduction and control techniques.

4.2 *Multicollinearity Analysis*

To test multicollinearity within the exogenous variable the multicollinearity test was employed through correlation matrix test. The result of outcome are being presented in Table-3

Table 3
Multicollinearity Test

Variables	OPC	COS1	CCC	QR	FS
OPC	1				
COS1	0.65178	1			
CCC	-0.688	0.67411	1		
QR	-0.7287	-0.7179	0.70166	1	
FS	0.63639	0.6828	-0.7462	-0.6849	1

Source: Researcher's own work 2021

Results of table-3 have been obtained through correlation matrix showing least absolute value that is 0.65178 while reflecting the highest value in the table that is 0.72872 which is evident that no multi-co-linearity exist between the explanatory variables based on the proposition of (Baltagi, 2015) who affirmed that the correlation coefficient should not more than the threshold value which is 0.75 for exogenous variables to be able to work together in a model, hence no problem of multi-co-linearity exist between the exogenous variables.

4.3 Inferential Statics

To test the hypothesis regression analysis was employed.

Table 4
Panel Regression Model

DV = (PBT)	Model 1. (Without Control)				Model 2. (With Control)			
	Pooled OLS regression with Cluster Errors				Pooled OLS regression with Cluster Errors			
Variables	B	S.E	t-Stat	Prob.	β	S.E	t-Stat	Prob.
C	8.771	3.675	2.387	0.019	6.927	9.347	0.741	0.46
Cos01	-0.19	0.075	-2.62	0.01	-0.21	0.074	-2.76	0.007
OPC	0.09	0.029	3.119	0.002	0.092	0.029	3.185	0.002
QR	-4.25	1.595	-2.66	0.009	-3.51	1.58	-2.22	0.028
CCC	0.057	0.036	1.576	0.118	0.051	0.036	1.405	0.162
FS					0.279	1.203	0.232	0.817
Adj-R Square				0.145				0.108
F-Statistics	3.469615 (0.001)				4.172 (0.002)			
Haussmann Test	Chi ² =9.515 (0.049)				Chi ² =9.436 (0.093)			
Breusch and Pagan Lagrangian	Chi ² =0.342 (0.541)				Chi ² =8.050 (0.000)			
Heteroskedasticity Test	Chi ² =21.780 (0.000)				Chi ² =6.290 (0.000)			
Serial Auto Correlation Test	F(1, 9)=6.340 (0.020)				F(1, 9)=2.560 (0.087)			
Cross Sectional Dependence Test	9.88 (0.010)				0.956 (0.346)			

The outcome of Haussmann test conducted on mode-1 employed without considering the impact of Control Variable revealed that for this panel regression analysis fixed effect model is more appropriate which is evident from the P. value which is 0.049 less than threshold value 5%. On the other hand, while taking firm size as a control variable in the model the human test result shows insignificant evident from the P. value 0.093 which is greater than 5% mean random effect model is appropriate. This result is an indicator that unsystematic difference exists in the coefficient of proposed model. LM and BP estimates used to associate

fixed effects were employed towards in order to ensure the validity of Hausmann test having test value of P-value of 0.000. Results aligned with Hausmann test results therefore, confirms the finding must reported in the study is random effect most appropriate model out of pooled OLS, random and fixed effect model.

Diagnostic Tests

To check the heteroscedasticity in both proposed model this test was applied the results reported $P=0.00$ indicating no problem heteroscedasticity in both models which entails that values of residuals not fixed period to period during the study model. Findings of study show that value of probability in range of 0.000 to 0.001 for model 1 and for model 2 about return on equity. The values of serial correlations for both models show that coefficients as well as residuals are associated with each other respectively. The p values of cross-sectional test of dependence shows that there is an insignificant relationship as p values more than 0.050 in both models. This clearly identifies that there is no problem of heteroscedasticity. The prior result of the study shows that model 1 and model 2 estimation used OLS with clear cluster errors chances.as of given in table 4.

Model summary Results

Ist Model

$$PBT_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + U_{it}$$

$$PBT_{it} = 8.771 - 0.196 COS_{it} + 0.090 OPC_{it} - 4.246 QR_{it} + 0.057 CCC_{it} + U_{it}$$

2nd Model

$$PBT_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + \beta^5 FSS_{it} + U_{it}$$

$$PBT_{it} = 6.927 - 0.206 COS_{it} + 0.092 OPC_{it} - 3.508 QR_{it} + 0.051 CCC_{it} + 0.279 FSS_{it} + U_{it}$$

Analysis of our first regression model revealed that all the variable was significantly impact on PBT of companies listed with stock exchange in Pakistan; whereas COS and liquidity ratio (QR) negatively impact on PBT, the result show that OPC and CCC has positive impact. The cost of sales (COS) coefficient evident that an increase of 1 million would cause to decline PBT by 0.196 million. But contrary to above, as the operational cost increases by 0.090 million, evident from the analysis of combined impact of independent on dependent variables, F statistics probability value show that $P=0.00$ which is lesser that 5% significant level adopted for the study exposed that RA measured through operational cost, cost of sales and cash conversion cycle significantly influence on profitability proxy taken as profit before tax. Although the value of adjusted R-square is very low i.e 0.145 but acceptable in social science discipline evident from the study of (Falk & Miller, 1992) wherein recommended that R2 values should be equal to or greater than 0.10 and (Cohen et al., 1988) suggested R2 values for endogenous latent variables are assessed as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak). Therefore, the study rejects the null hypothesis which states that RA has no significant impact on profit before tax. While in the context of Pakistan the Responsibility

Accounting effect the profitability without considering the level of firm size evident from the analysis. The finding of our study is similar to the study of Kishore et al. (2016) and Patel et al. (2012) where it was concluded that RA has significant impact on profit before tax on listed companies.

4.3.1 Test of Hypothesis Two

In table 5, study run the test to confirm the results of hypothesis two. The findings of the study illustrate for hypothesis two given below:

Table 5
Panel Regression Model

Dependent Variable (EPS)	Model 3. (Without Control)				Model 4. (With Control)			
	β	S.E	t-Stat	Prob.	β	S.E	t-Stat	Prob.
C	7.681	2.575	2.982	0.003	-9.412	6.35	-1.482	0.141
Cos01	0.057	0.052	1.1	0.274	0.046	0.051	0.908	0.366
OPC	0.024	0.02	1.221	0.224	0.018	0.02	0.927	0.356
QR	-1.884	1.106	-1.7	0.091	-1.842	1.074	-1.716	0.089
CCC	-0.001	0.025	-0.03	0.976	0.008	0.024	0.337	0.737
FS					2.393	0.817	2.928	0.004
Adj-R Square				0.026				0.146
F-Statistics	1.878 (0.118)				3.316(0.008)			
Haussmann Test	Chi ² =3.623 (0.459)				Chi ² =3.874 (0.568)			
Breusch and Pagan Lagrangian	Chi ² =0.431 (0.581)				Chi ² =45.146 (0.000)			
Heteroskedasticity Test	Chi ² =37.890 (0.000)				Chi ² =1.920 (0.115)			
Serial Auto Correlation Test	F(1, 9)=10.180 (0.010)				F(1, 9)=6.932 (0.043)			
Cross Sectional Dependence Test	15.340 (0.000)				0.972 (0.479)			

The outcome of Hausmann test conducted on mode-3 employed without considering the impact of Control Variable revealed that for this panel regression analysis fixed effect model is more appropriate which is evident from the P. value which is 0.049 less than threshold value 5%. On the other hand, while taking firm size as a control variable in the model the Hausmann test result shows insignificant evident from the P. value 0.459 which is greater than 5% mean random effect model is appropriate. This result is an indicator that unsystematic difference exists in the coefficient of proposed model. LM and BP estimates used to associate fixed effects were employed towards in order to ensure the validity of Hausmann test having test value of P-value of 0.000. Results aligned with Hausmann test results therefore, confirms the finding must reported in the study is random effect most appropriate model out of pooled OLS, random and fixed effect model.

Diagnostic Tests

To check the heteroscedasticity in both proposed model this test was applied the results reported P=0.00 indicating no problem heteroscedasticity in both models which entails that values of residuals not fixed period to period during the study model. Findings of study show that value of probability in range of 0.000 to 0.479 for model 3 and for model 4 about return on equity. The values of serial correlations for both models show that coefficients as well as residuals are associated with each other respectively. The p values of cross-sectional test of dependence shows that there is an insignificant relationship as p values more than 0.050 in both models. This clearly identifies that there is no problem of heteroscedasticity. The prior result of the study shows that model 3 and model 4 estimation used OLS with clear cluster errors chances.as of given in table 5.

3rd Model

$$\text{EPS}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + U_{it}$$

$$\text{EPS}_{it} = 7.681 + 0.057 \text{COS}_{it} + 0.024 \text{OPC}_{it} - 1.884 \text{QR}_{it} - 0.001 \text{CCC}_{it} + U_{it}$$

4th Model

$$\text{EPS}_{it} = \beta^0 + \beta^1 \text{COS}_{it} + \beta^2 \text{OPC}_{it} + \beta^3 \text{QR}_{it} + \beta^4 \text{CCC}_{it} + \beta^5 \text{FS}_{it} + U_{it}$$

$$\text{EPS}_{it} = -9.412 + 0.046 \text{COS}_{it} + 0.018 \text{OPC}_{it} - 1.842 \text{QR}_{it} + 0.008 \text{CCC}_{it} + 2.393 \text{FS}_{it} + U_{it}$$

Analysis of our first regression model revealed that all the variable were significantly impact on PBT of companies listed with stock exchange in Pakistan; whereas COS and liquidity ratio (QR) negatively impact on PBT, the result show that OPC and CCC has positive impact. The cost of sales (COS) coefficient evident that an increase of 1 million would cause to decline in PBT by 0.196 million. But contrary to above, as the operational cost increases by 0.090 million, evident from the analysis of combined impact of independent on dependent variables, F statistics probability value show that P=0.00 which is lesser that 5% significant level adopted for the study exposed that RA measured through operational cost, cost of sales and cash conversion cycle significantly influence on profitability proxy taken as profit before

tax. Although the value of adjusted R-square is very low i.e. 0.145 but acceptable in social science discipline evident from the study of (Falk & Miller, 1992) wherein recommended that R2 values should be equal to or greater than 0.10 and (Cohen et al., 1988) suggested R2 values for endogenous latent variables are assessed as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak). Therefore, the study rejects the null hypothesis which states that RA has no significant impact on profit before tax. While in the context of Pakistan the Responsibility Accounting effect the profitability without considering the level of firm size evident from the analysis. The finding of our study is similar to the study of Kishore et al. (2016) and Patel (2012) wherein it was concluded that RA has significant impact on profit before tax on listed companies.

4.3.2 Test of Hypothesis Three

In table 6, study run the test to confirm the results of hypothesis three. The findings of the study illustrate for hypothesis three given below:

Table 6
Panel Regression Model

DV- ROA	Model 5. (Without Control)				Model 6. (With Control)			
Variables	β	S.E	t-Stat	Prob.	β	S.E	t-Stat	Prob.
C	11.82	3.616	3.268	0.001	1.541	9.173	0.168	0.867
Cos01	-0.033	0.073	-0.446	0.656	-0.039	0.073	-0.538	0.591
OPC	-0.027	0.028	-0.949	0.344	-0.03	0.028	-1.08	0.282
QR	-2.87	1.554	-1.846	0.067	-2.842	1.551	-1.833	0.069
CCC	-0.016	0.035	-0.456	0.649	-0.011	0.035	-0.3	0.765
FS					1.439	1.181	1.219	0.225
Adj-R Square				0.016				0.02
F-Statistics	1.526 (0.199)				1.535 (0.184)			
Haussmann Test	Chi ² =0.079 (0.999)				Chi ² =0.079 (1.000)			
Breusch and Pagan Lagrangian	Chi ² =8.140 (0.000)				Chi ² =18.750 (0.000)			
Heteroskedasticity Test	Chi ² =38.210 (0.000)				Chi ² =18.450 (0.000)			
Serial Auto Correlation Test	F(1, 9)=125.230 (0.000)				F(1, 9)=11.250 (0.001)			
Cross Sectional Dependence Test	0.789 (0.380)				(-1.230) (0.479)			

The outcome of Hausmann test conducted on mode-5 employed without considering the impact of Control Variable revealed that for this panel regression analysis fixed effect model is more appropriate which is evident from the P. value which is 0.199 less than threshold value 5%. On the other hand, while taking firm size as a control variable in the model the Hausmann test result shows insignificant evident from the P. value 0.093 which is greater than 5% mean random effect model is appropriate. This result is an indicator that unsystematic difference exists in the coefficient of proposed model. LM and BP estimates used to associate fixed effects were employed towards in order to ensure the validity of Hausmann test having test value of P-value of 0.000. Results aligned with Hausmann test results therefore, confirms the finding must reported in the study is random effect most appropriate model out of pooled OLS, random and fixed effect model.

Diagnostic Tests

To check the heteroscedasticity in both proposed model this test was applied the results reported P=0.00 indicating no problem heteroscedasticity in both models which entails that values of residuals not fixed period to period during the study model. Findings of study show that value of probability in range of 0.000 to 0.001 for model 5 and for model 6 about return on equity. The values of serial correlations for both models show that coefficients as well as residuals are associated with each other respectively. The p values of cross-sectional test of dependence shows that there is an insignificant relationship as p values more than 0.050 in both models. This clearly identifies that there is no problem of heteroscedasticity. The prior result of the study shows that model 5 and model 6 estimation used OLS with clear cluster errors chances.as of given in table 6.

5th Model

$$ROA_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + U_{it}$$

$$ROA_{it} = 11.819 - 0.033 COS_{it} - 0.027 OPC_{it} - 2.867 QR_{it} - 0.016 CCC_{it} + U_{it}$$

6th Model

$$ROA_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + \beta^5 FS_{it} + U_{it}$$

$$ROA_{it} = 1.541 - 0.039 COS_{it} - 0.030 OPC_{it} - 2.842 QR_{it} - 0.011 CCC_{it} + 1.439 FS_{it} + U_{it}$$

Analysis of our first regression model 5 revealed that all the variable was insignificantly impact on return on assets of companies listed with stock exchange in Pakistan; whereas all variables have negatively impact on return on assets. The cost of sales (COS) coefficient evident that an increase of 1 million would cause to decline in ROA by 0.033 million. Evident from the analysis of combined impact of independent on dependent variables, F statistics probability value show that P= 0.199 which is greater than 5% significant level adopted for the study exposed that RA measured through operational cost, cost of sales and cash conversion cycle insignificantly influence on profitability proxy taken as return on assets. Although the value of adjusted R-square is very low i.e. 0.016 but acceptable in social

science discipline evident from the study of (Falk & Miller, 1992) wherein recommended that R2 values should be equal to or greater than 0.020 and (Cohen et al., 1988) suggested R2 values for endogenous latent variables are assessed as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak). Therefore, the study rejects the null hypothesis which states that RA has no significant impact on profit before tax. While in the context of Pakistan the responsibility accounting effect the profitability without considering the level of firm size evident from the analysis. The finding of our study is similar to the study of (Datta & Ghosh, 2016; Patel, 2012) wherein it was concluded that RA has significant impact on profit before tax on listed companies.

4.3.3 Test of Hypothesis Four

In table 7, study run the test to confirm the results of hypothesis four. The findings of the study illustrate for hypothesis four given below:

Table 7
Panel Regression Model

DV- ROE Variables	Model 7. (Without Control Variables)				Model 8. (With Control Variables)			
	β	S.E	t-Stat	Prob.	β	S.E	t-Stat	Prob.
C	-11.45	2.418	-4.74	0.00	-4.259	6.031	-0.706	0.481
Cos01	0.077	0.048	1.612	0.11	-0.087	0.048	-1.807	0.073
OPC	0.006	0.012	0.496	0.621	0.008	0.019	0.456	0.65
QR	6.077	0.967	6.281	0.00	-0.751	1.02	-0.737	0.463
CCC	0.081	0.022	3.709	0.00	0.004	0.023	0.166	0.868
FS					1.21	0.776	1.558	0.122
Adj-R Square				0.666				0.011
F-Statistics	11.428 (0.00)				1.290 (0.272)			
Hausmann Test	Chi ² =0.000 (1.000)				Chi ² =1.157 (0.949)			
Breusch and Pagan Lagrangian	Chi ² =1.960 (0.050)				Chi ² =8.920 (0.000)			
Heteroskedasticity Test	Chi ² =22.690 (0.000)				Chi ² =31.450 (0.000)			
Serial Auto Correlation Test	F (1, 9) =86.632 (0.000)				F (1, 9) =4.325 (0.064)			
Cross Sectional Dependence Test	-				9.88 (0.10)			

The outcome of Hausmann test conducted on mode-7 employed without considering the impact of Control Variable revealed that for this panel regression analysis fixed effect model is more appropriate which is evident from the P. value which is 1.000 less than threshold value 5%. On the other hand, while taking firm size as a control variable in the model the Hausmann test result shows insignificant evident from the P. value 0.949 which is greater than 5% mean random effect model is appropriate. This result is an indicator that unsystematic difference exists in the coefficient of proposed model. An LM and BP estimate used to associate fixed effects was employed towards in order to ensure the validity of Hausmann test having test value of P-value of 0.050. Results aligned with Hausmann test results therefore, confirms the finding must have reported in the study is random effect most appropriate model out of pooled OLS, random and fixed effect model.

Diagnostic Tests

To check the heteroscedasticity in both proposed model this test was applied the results reported P=0.00 indicating no problem heteroscedasticity in both models which entails that values of residuals not fixed period to period during the study model. Findings of study show that value of probability in range of 0.000 to 0.064 for model 7 and for model 8 about return on equity. The values of serial correlations for both models show that coefficients as well as residuals are associated with each other respectively. The p values of cross-sectional test of dependence show that there is an insignificant relationship as p values more than 0.050 in both models. This clearly identifies that there is no problem of heteroscedasticity. The prior result of the study shows that model 7 and model 8 estimation used OLS with clear cluster errors chances.as of given in table 7.

7th Model

$$ROE_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + U_{it}$$

$$ROE_{it} = -11.458 + 0.077 COS_{it} + 0.006 OPC_{it} + 6.077 QR_{it} + 0.081 CCC_{it} + U_{it}$$

8th Model

$$ROE_{it} = \beta^0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR_{it} + B^4 CCC_{it} + \beta^5 FS_{it} + U_{it}$$

$$ROE_{it} = -4.259 - 0.087 COS_{it} + 0.008 OPC_{it} - 0.751 QR_{it} + 0.004 CCC_{it} + 1.210 FS_{it} + U_{it}$$

Analysis of our 7th regression model revealed that cost of sale and operating cost were insignificant while liquidity ratio QR and cash conversion cycle has significantly impact on return on equity ROE of companies listed with stock exchange in Pakistan; whereas all variables of the model shows positive impact on return on equity. F statistics probability value show that P= 0.00 which is lesser that 5% significant level adopted for the study exposed that RA measured through operational cost, cost of sales and cash conversion cycle significantly influence on profitability proxy taken as return on equity. Although the value of adjusted R-square is 0.666 shows 66.6% variation explain by model 7 on return on equity. In model 8 using firm size as control variable shows that all variables have positive impact on

return on equity while quick ration and cost of sale has negative impact on return on equity. Adjusted R square value 0.011 shows less applicability of the model. Therefore, the study rejects the null hypothesis which states that RA has no significant impact on return on equity. While, in the context of Pakistan the responsibility accounting has affect the profitability without considering the level of firm size evident from the analysis. The finding of our study is similar to the study of (Datta & Ghosh, 2016) and Patel(2012) wherein it was concluded that RA has significant impact on profit before tax on listed companies.

5. Discussion of Findings

Study shows the negative and non-significant relationship between return on assets and cost of goods sold by firm opposite opinion as of (Nyakuwanika et al., 2012) . These results also negates with other current researcher studies of (Owolabi & Obida, 2012); (Jaradat et al., 2012) and (Abebe & Abera, 2019) on the other hand, findings merely shows same results as of (Niresh & Thirunavukkarasu, 2014) due to change in variables calculation used in this study and refer study.

As findings of the study shows a negative association between firm operating cost and return on assets same results of Mojgan et al. (2012). Further, findings of the study show insignificant association of return on assets with all independent used in this study related to null hypothesis regarding responsibility accounting firms registered in Pakistani stock exchange. Study also finds that responsibility accounting hypothesis shows non-significant relationship with profit before tax, return on equity and earnings per share in the listed firms in Pakistan. Study results are similar as reported by (Mutairi, 2011) who concluded that there is a significant association of firm responsibility accounting on firm performance using a sample of oil sector of Kuwait firms as well as negates the results with (Akenbor & Nkem, 2013) and (Nawaiseh et al., 2014).

5.1 Implications of Findings

Findings of the study have the following implications for investors, managers, analysts, auditors, researchers, and academician as well as for policy makers to making decisions and explore more this study.

Top Management Staff: Findings of the study data showed that firm profitability has significantly associated with responsibility accounting for better understandings of accountings and best fit of strategies by firm managers. Managers must maintain constant expansions, flexible goals, streamline and reengineer and emphasize more authorities assign to groups work in the firm for higher profit goals.

To Analysts and Capital Market Participants: Findings of the study results is useful for the analysts and participants of the markets to analyses better choice of portfolio investment, improved market structured as well as more informative in the capital market.

To Investors: Results also suggest that under insecure as well as instable environment investors made investment choices to earn profit.

To Policy Markers: Policy makers of any firm may use this study results to implements and formulate better policy to increase protected environment for investors applying proxies of financial data and responsibility accounting proxies employed in this study.

To Scholars and Researchers: Researchers and scholars finds interesting results if they include large data size of firm listed in stock exchange and increase time period.

6. Conclusion

The objective of the study was to find out the effect of responsibility accounting on profitability of the corporation registered in Pakistan stock exchange during the period 2011-2021. Study used the data of all sectors top listed companies in PSX from 35 out of 38 sectors (due to addition of 3 new sectors from 2017 and limited data availability of new sector excluded from the study data) to access the study hypothesis. Study results based on panel data techniques shows that profitability proxies affected through responsibility accounting proxies without taking firm size as control variables. So, responsibility accountings have more impact on profitability not dependent on size of firm. Cost of goods sale, quick ratio, current ratio, operating expenses and cash conversion cycle used as responsibility accounting variables whereas earnings per share (EPS), return on assets (ROA), return on equity (ROE) and profit before tax used as proxies of firm profitability. Conclusion of the study revealed that there is no impact of size as a controlling variable through responsibility accounting on firm profitability of listed in Pakistan stock exchange.

6.1 Recommendation and Future Directions

Based on study results and conclusions, following valuable recommendations suggested for corporation managers, investors, technical and fundamental analysts as well for policy maker:

- i. Higher the firm assets will control to lower cost of sale and cost of business operation which leads to firm profitability affected significantly. Firm managers must focus to increase assets to more control on lowering firm cost earn higher profit. Study findings concludes that negative influence of cost of sale on earnings before tax, so manager must purchase stock from that vendors which provides discounts more with quality product.

- ii. The investors must focus on more reviews the firm's profitability and responsibility accounting. The implementation of firm measurements regarding profitability must provide better understanding for both investor side as well as firm side its due responsibility of SECP. Investors who invest their money in these firms must give full rewards of their profit to investors for better understandings and implementation of responsibility accounting. Better the understandings of both responsibility accounting and measurement of profitability proxies provides good insight for investors as well as participants in capital market to take good decision of investment and make well diversified investment planning during uncertainty in the market. For that reason, participants and investors must see the trend of earnings consistency during the period of the listed firms in the stock exchange.
- iii. Listed companies in Pakistan stock exchange management must focus to improve profitability with responsibility accounting measures to obtain wealth maximization objective of the firm management for satisfying owners.
- iv. Responsibility accounting work well if SECP must implement how to measuring the firm efficiency, way of effectiveness as well as better for economy close work with management of listed companies in Pakistan.
- v. Listed company's management should use earning per share and return on assets to determine the profitability for responsibility accounting sustainability and weigh up.

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From Human Acculturation to Brand Acculturation: A Phenomenological Perspective of University Students of Pakistan

Qasim Ali Shah* Naveed Anwer** Asim Qazi*** Juned Ali Shah****

Abstract

Culture plays a crucial role in determining the success or failure of a brand in a particular market. Despite having workable marketing plans, several brands fail globally due to the lack of cultural considerations in their marketing strategies and programs. The acculturation concept has been studied in the context of consumers, marketplaces, and marketers. Past research rarely explores acculturation in global brands. There is an evident lack of concrete models and theories that provide guidelines on how a brand should go for acculturation. Informed by the research gap and following the brand anthropomorphic consideration, this research investigates if brands follow human acculturation patterns in cultures other than the country of their origin (COO). The phenomenological study based on the interviews of 24 students having international consumption experience was conducted in Pakistan along with some case studies of global brands. The result of in-depth interviews followed by thematic content analysis identifies four brand acculturation strategies: integration, assimilation, separation, and marginalization, which can be leveraged to develop brand positioning based on the nature and characteristics of the global brands and the country of operations. The paper introduces the first-ever concept of brand acculturation and invites brand researchers to deepen their horizons further. Theoretical and managerial implications of the study are also discussed.

Keywords: Brand acculturation; global brands; country; culture.

JEL Classification: M 31 Marketing

*Lecturer, Management Sciences, SZABIST Larkana, Pakistan. Email: qasimali@lrk.szabist.edu.pk

**Assistant Professor, Lahore Business School, University of Lahore, Pakistan. Email: naveed.anwer@lbs.uol.edu.pk

***Assistant Professor Marketing, IBA Karachi, Pakistan. Email: ashabir@iba.edu.pk

****Lecturer, Management Sciences, SZABIST Larkana, Pakistan. Email: juned.shah@szabist.edu.pk

1. Introduction

“Acculturation is a dual process of cultural and psychological change that occurs due to contact between two or more cultural groups and their individual members” (Berry, 2005). Acculturation is also defined as “Attitudinal, value, behavioral and identity adjustments by the people when they interact with other cultures” (Van Oudenhoven et al., 2006). It includes “assimilation with new culture”, “maintenance of old culture”, and the “resistance to both new and old culture” (Peñaloza & Gilly, 1999). Similarly, Berry and Sam (1997) identified the four levels of consumer acculturation “Integration, assimilation, separation & marginalization”. Integration: when individuals interact with host culture while maintaining their home culture. Assimilation: when individuals fully get attached to the host culture and ignore their home culture. Separation: when people keep their home culture and avoid interaction with the host culture. Marginalization: avoiding both home and host cultures by creating an alternate. Mendoza (1989) used the terms “cultural resistance”, “cultural shifts”, “cultural incorporation,” and “cultural transmutation” interchangeably. Aspects of acculturation such as human acculturation (Berry & Sam, 1997; Mendoza, 1989), consumer acculturation (Benabdallah & Jolibert, 2013; Van Oudenhoven et al., 2006), the markets and marketer acculturation (Peñaloza & Gilly, 1999) have been studied extensively. However, the application of acculturation concepts and strategies to global brands has been missing from the canvas. Culture plays a crucial role in determining the success or failure of a brand in a particular market. Despite having workable marketing plans, several brands fail globally due to the lack of cultural considerations in their marketing strategies and programs. The acculturation concept has been studied in the context of consumers, marketplaces, and marketers. Past research rarely explores acculturation in global brands. There is an evident lack of concrete models and theories which provide guidelines on how; a brand should go for acculturation. Addressing this significant gap in the literature, we propose the concept of brand acculturation. The contextual idea of brand acculturation is anthropomorphism, and the literature is silent on how a brand acculturates from its home country of origin (COO) to the host country. This research attempts to bridge the gap by exploring the concept of brand acculturation, hence contributing to the literature.

2. Literature Review

The literature on global branding strategy and international marketing has studied the currency of cultural factors and their impact on overall marketing strategy. Steenkamp (2019) argues that the success and survival of a global brand depend on its ability to integrate into and adapt to the changing market environment.

Brands constantly struggle to win and maintain customer loyalty and leave behind global and local competitors by increasing their market share. According to Holt (2002), a brand has better chances of success if it integrates culture and other essential market

dynamics into its branding and advertising strategy. Global brands get insights on enhancing purchase likelihood by incorporating the local cultural elements into their branding strategy; He and Wang (2017) reported a direct and significant positive effect of considering cultural elements on the purchase likelihood of global brands. The authors also identified the need for a more empirical and systematic investigation of global brands to figure out a more effective usage of local cultures.

Previous research shows that local brands portray a sense of pride by conveying the local culture and resources (He & Wang, 2017) and this provides them with more flexibility than the global brands. Along with other benefits, the major advantage of local brand is that they are more connected with the national and regional identity and cultural history and heritage. A local cosmetics company in Pakistan is getting more familiar than the global brands available in the market. There are more customers in local restaurants and fast-food chains than McDonalds and KFC in India. There are more people buying local cellphones (Huawei) than Apple and Samsung in China. Similarly, if a global company wants to be successful, they need to adopt to the local culture. Global companies have also got too much success in nondomestic markets. The world's famous brands like Coca Cola, Shell, Gillette, Pampers, Apple, Nestle, Loreal and many others have been driving revenues and profits from international markets since decades and these companies have motivated many other to inter into the arena of international markets to drive more sales (Saxena, 2012) and enhance market shares. Global marketing needs a deeper understanding of how their 4P's are going to work in different markets and might bring many changes to it as per the cultural sentiments, language, value, lifestyles and other aspects of foreign consumers (Saxena, 2012).

The research on culture and global brands has increased in the recent years, but still according to (Samiee, 2019), there is no proper construct available to "define the global brand". According to him, there are two schools of thought concerning the definition of global brands. One is the broad availability of the brand in the different markets with almost similar kind of packaging, target market and distribution strategy. The second school of thought which is considered as main driver of the research on global consumer culture is the consumer perception of "globalness" of a brand. Whether it is first school of thought which is considered or the second one. No matter how a global brand is defined but according (Steenkamp, 2019), future success and survival of a global brands depends on how well it integrates the and is adaptable to the changing market environment. Brands are in continuous struggle to win customer loyalty and maintain and increase the market share while competing with various other global and local brands. A brand according to (Holt, 2004) has more chances of success if it integrates the culture and other important market dynamics into its branding and advertising strategy.

Rahman and Cherrier (2010) asked a pertinent question about the significance of culture, i.e., “what happens to the consumer having a predefined own context of consumption moves to a new market setting where advertising, fashion, food, and other social life aspects are different? McCracken (1986) and Peñaloza and Gilly (1999) appear to address this concern by suggesting that consumer needs to redefine themselves in the new cultural settings. This redefinition refers to “the acquisition of skills and knowledge relevant to engaging in consumer behavior in one culture by members of another culture” (Peñaloza & Gilly, 1999). It is helpful to deconstruct the phenomenon of the cross-cultural journey of a brand; what happens when a brand, with a given set of characteristics (Identity, value, image, personality, and culture), goes to another country where people have different perspectives of things around them; language, religion, lifestyle, race, age structure, values, and belief system with overall different culture. The brand might also consider redefining itself in the new cultural settings.

Although the impact of culture on branding strategies is broadly discussed in the literature, a specific focus on cultural adjustment concepts and strategies concerning brand anthropomorphism is rarely brought into the academic discourse. We propose to bridge this prominent gap in the literature by exploring the concept of brand acculturation. As anthropomorphisms suggest that brands are also considered human beings, the interesting questions are: Do brands acculturate like humans when launched across borders? Do such brands adjust their brand elements, features, and characteristics as humans/consumers do when exposed to different cultural settings? And if yes, what are the patterns of brand acculturation?

Each of the following sections has a specific focus, beginning with methodology, followed by data analysis, findings, and discussion. We conclude with the theoretical, practical implications and limitations of our research.

3. Research Methodology

As discussed earlier, brand acculturation is a novel phenomenon proposed for the first time in our research. Hence, the exploratory objectives of the study matched the qualitative paradigm. In-depth interviews help to deeply understand the phenomenon from a consumer’s perspective (Hudson & Ozanne, 1988). For the study’s first phase, phenomenological study based on the in-depth interviews were used to understand consumers’ perspectives regarding global brands in their country. As with the emergence of new concepts, the need for exploratory research is increasing, and the case study method seems most appropriate in this situation. In the second phase, following (Goffin et al., 2019), a case study on brands was performed to observe some cases of global brands and their way of working in the host v/s home country culture.

3.1 *Informants*

Based on the authors' affiliation with different universities in Pakistan, a convenient sampling technique was used to identify the participants. Convenience sampling is a non-probability method, usually used in qualitative research when the objective is to approximate a specific topic (Kinnear et al., 1993). The data was collected from a sample of 24 graduate and post-graduate university students; the demographics are mentioned in table 01. The students were selected as respondents for the interview based on their ability to understand the components of the question, their knowledge regarding local and foreign brands in their country, and their exposure to the international consumption patterns and cultural artifacts. The respondents belong to two culturally rich and densely populated provinces of Pakistan, Punjab and Sindh.

3.2 *Data collection*

Data was collected through in-depth interviews with the 24 participants, and a semi-directed interview guide was used. On average, each interview took 30 minutes. Respondents were briefed about the purpose of data collection and were ensured of the confidentiality of their responses. Moreover, the Authors also took their consent for recording the interview. The interview questions were asked in the national language of Pakistan, Urdu so that the participants could understand and answer comprehensively without a language barrier.

Table 1
Participant's demographics

Gender		Age (Years)	Education		Location		Total
Male	Female		Graduating	Graduates	Sindh	Punjab	
13	11	23-31	12	12	11	13	24

4. *Analysis*

The interview data were transcribed and translated into English before analysis. Authors coded around 60 pages of interview transcripts with about 7000 words. The thematic content analysis technique was performed using NVivo 12 pro qualitative data analysis software as thematic analysis is the best search for describing the phenomena and the emerging themes, perspectives, and processes (Braun & Clarke, 2006). Authors used the deductive approach to develop themes based on the concept of human acculturation and its strategies (Berry, 2005) and the verbatim extracted from interview transcripts. Two authors of this manuscript analyzed the transcripts separately. After observing the most recurring codes in the text, they reached four global themes, as mentioned in table 2. The most prominent themes were integration, separation, marginalization, and assimilation.

Table 2
Results of thematic analysis

Codes	Themes
<p>Mixing brand elements of both cultures, different for different customers, changing branding as per local values, partial adoption to a new market, accommodating both homes as well as host cultures, suitable to all customers of different cultures, valuing local customers while keeping the heritage intact, a combination of home and host, change some brand elements and keep some same, respect both cultures</p>	<p>Integration</p>
<p>Love for home culture only, patriotic to own country, against our culture, do not adopt, apart from local society, ignore values of the host culture, introduces home country culture in foreign markets</p>	<p>Separation</p>
<p>No cultural attachment, newness in everything, no country identification, totally different from particular cultural values, neither follow home nor follow host country culture, having own distinct identity in all markets, introduces own brand culture globally</p>	<p>Marginalization</p>
<p>Fully adopt host culture values, forget original culture, only care for the host culture, become local by changing inner and outer personality, no identification of culture of origin, forget own values, becomes a foreigner</p>	<p>Assimilation</p>

The analysis of interviews and cases provided the evidence that brands acculturate much like human acculturation. Our findings suggest that the most frequently used strategy is integration, where brands keep some of their anthropomorphic elements but change some based on the needs of the local culture. Integration was followed by the separation where, instead of adapting or changing their anthropomorphic elements according to local culture, brands keep their culture originality intact. The third most frequently used strategy was marginalization, where brands neither follow their home country's culture nor adopt to host country culture, instead of creating their own alternate global culture and market it in different countries. The fourth strategy, less frequently used by the brands, is assimilation, where brands adapt entirely to the local culture. According to participants and the case study of brands, it is difficult for the brands to assimilate into the host country's culture completely; such a strategy would harm brands' originality and the feel of being global. Although in some cases, brands are found to have completely adapted to the local culture.

5. Discussion

5.1 *Brand acculturation*

Based on the results of interviews and case studies of brands, the term brand acculturation can be defined as “the ability of a brand to change its brand elements, features, and characteristics based on culture, values, beliefs, and norms of the host country”. To the best of our knowledge, no one has used the term “brand acculturation” previously. While answering the questions regarding why they think a brand should acculturate, a participant quoted as below:

“I believe that culture has huge influences on the purchase behavior of any customer either national or international. Culture not only changes our minds but the overall perspective of the brands. The values, norms, choices, and even the likes and dislikes of society impact the customer a lot. A good marketer is always aware of the culture. A brand should be according to a particular society’s norms, values, and culture. Doing this will change the customer behavior and bring the brand to the top of the customer mind; if the product is according to our culture, we can be attracted to it more”.

The brands are working on the cusp of global and local consumer culture (Steenkamp, 2019). Due to emerging global technology, much attention has been given to such global cum local strategies in the marketplace. Global companies that do not consider local cultures face several challenges and research has proved that the brand equity of these companies is weaker than that of local companies (Abratt & Motlana, 2002). It could be that local companies better understand local consumers’ culture and local markets’ tastes. “Patanjali,” a local Indian (FMCG) brand, has grown its brand equity and sales drastically in recent years. The brand has given a tough time to global companies like Colgate Palmolive, Nestle, and Unilever, operating in Indian markets for decades (Gupta & Wright, 2019).

Brand acculturation was also defined through the lens of culture and normative influence, as stated by one of the participants:

“I think the culture plays a significant role in the brands’ selection and purchase decisions. Whenever we buy something, we keep in mind whether that would be acceptable in our society or not. If we wear a clothing brand, we will wear the one having acceptability in our society so that we may feel comfortable. Culture has importance in our purchases because it tells us how we live and wear”. It reflects that consumers also feel obliged to fulfill others’ expectations and need their approval (Myers, 2013). Moreover, our participants stated that consumers need brand acculturation in different product categories, especially food, clothing, and other consumer items.

A participant commented on the importance of culture in clothing selection:

“Cultures impact our brand choice a lot. Take the example of the “Khaadi” clothing brand that makes different dresses for Sindhi customers in Pakistan. Foreign clothing brands are rarely preferred over local ones here because their style is not compatible with our culture. We only buy products which are according to different cultures like Sindh, KPK. Baluchistan. We don’t prefer foreign cloth brands over ours”.

Relevant to the participant’s description is Fournier’s (1998) observation that consumers develop relationships with anthropomorphic brands, same as arranged marriages, causal friendships, partnerships with a long-term commitment, and even secrecy and enmity. Suppose a brand truly represents a consumer’s cultural values. Consumers might develop a long-term commitment and partnership with such a brand, whereas enmity might also be developed in other cases. If a brand wants to generate market acceptability and long-term commitment of the customers, it should consider acculturation.

“As Pakistan is an Asian country, we relate it with our culture when we buy anything. I recently went to the market to buy something; I saw a person selling imported toys like teddy bears from the USA. When I asked my father to buy it for a kid at our home, he denied saying that animal shapes and toys are not allowed in our Islamic culture because when we offer prayer, animal-shaped toys or pictures create a distraction. It’s not allowed in our religion. My father recited a” Hadith” and explained that these items are not allowed in our religion”. The above statement by a male participant shows the importance of cultural adoption for a brand. Culture is made of various elements, including religion. The participant shared his experience implying that culture influenced his family’s purchase decisions, even of a toy for a kid, and added that they avoided buying a particular product from the USA. The participant’s behavior confirms that culture is a prime determinant of consumer behavior, lifestyle, and attitude, where consumers fulfill their needs by acquiring goods and services of their choice (Cleveland, 2018).

Referring to the symbolic identification of culture and use of brands, a participant mentioned: *“In Indian culture, bride purchases her wedding dress in red color because it is considered as the color of “suhagan” (married) and she will never purchase a white dress as it is considered a sign of a widow, whereas a Christian bride will especially order a white gown for her wedding day because white is a sign of happy bride in their culture. In this way, culture has made our mindset and hence we perceive things accordingly and our purchase decisions are influenced by the culture. We dress and eat according to cultural values so when it comes to the brand, we select those which offer products according to our culture. As J. (Pakistani clothing brand) offers eastern wear and I will select J. because I know it offers the products which suit my culture”.* The people in collectivist cultures such as Pakistan, India, and China behave differently than those of individualistic cultures, mostly found in the

One of the participants stated:

“Culture is a significant part of our market. We belong to a society where emotions are very important. Family terms, social aspects, relationships, friendships, and overall culture is essential. Every person, belonging to whatever culture in Pakistan prefers such things and gets inspired. For example, there are two brand names, one is written in my language Urdu and the other in some foreign so, we prefer those things which are locally produced and communicated in our local language. So, culture surely influences our purchase”.

It ensures that its marketing activities reflect the brand’s acculturation. It should not be restricted to the advertisement but must also be reflected through product packaging and labels that are assigned to a brand.

5.2 Brand acculturation

strategies:

Our research confirmed the following four acculturation strategies based on the analysis and the theory of human acculturation (Berry, 2005).

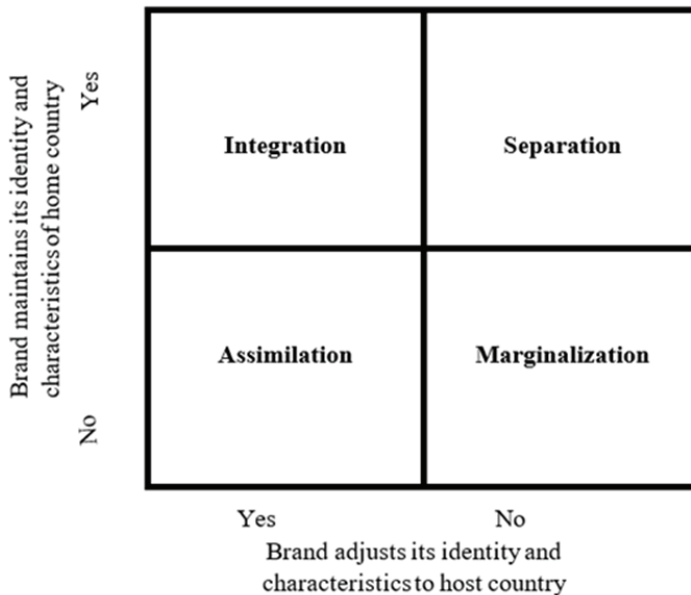


Figure 1: Brand acculturation strategies

The matrix shows four strategies of brand acculturation. The X-axis demonstrates brand identity and characteristics in the home country, whereas the Y-axis shows the brand identity and characteristics in the host country.

5.2.1 *Integration*

According to Berry (2005), out of four human acculturation strategies, integration allows consumers to interact with the host country's culture while maintaining their home country's culture. Hence, it is the most popular and stress-free strategy. Similarly, Peñaloza and Gilly (1999) has termed this strategy as accommodation of marketer with home country culture and those of ethnic cultures and Mendoza (1989) described it as cultural incorporation. Our analysis and case examples also highlight the integration strategy where a brand keeps some of its elements (Identity, values, personality, image, culture) the same as of home country's culture and alters some others according to the cultural needs of the host country.

The participants under this strategy have quoted several examples. Some of the best examples include Nestle., The company adopts the local consumer taste, targets families using local communication and branding strategies, participate in local events like (Eid and Ramazan) in Pakistan, and follows all customs and traditions of local cultures globally. In Pakistan, Nestle even adopts the national language (Urdu) in its brand names, for example, Nestle "Buniyad", Cerelac, Nestle "Zeera" "Podina" and "Khas Karachi key Lie" yogurt. Nestle Pakistan's website also contains a picture of Pakistani families with descriptions in Urdu and English language. Nestle also adopted the local culture in India by launching "Maggi masala vegetable atta noodles" and "Maggi Bhunna Masala" to promote a healthy lifestyle in India. On the contrary, nestle has different branding strategies in the U.S.A, depicting American cultural values, beliefs, and norms.

One of the participants explained the integration strategy followed by McDonald's:

"McDonald's is one of the international brands having a presence in many countries and has been continuously doing well. It never loses its originality while trying to provide a product that local people like Hindus prefer. For us Muslims, they have halal products". People have different values, so the brand has to somehow adapt to local culture to capture the market." McDonald's, an American brand, has a western brand personality, values, identity, and image. The brand is available worldwide and has adapted to the local cultural values as per respective country. In China, for instance, McDonald's opened the restaurant 'Eatery,' having Chinese building structure and style along with localized decoration using lanterns, abaci, and bun streamers (Fournier, 1998; He & Wang, 2017). It reflected a different image and identity of America's McDonald's in China. Similarly, in India and Pakistan, the brand has adopted local culture by maintaining the values, identity, and other aspects of these countries' cultures. In India for example, the brand uses local Indian names on its burgers and

other items such as “Maharaja-Mc”, “Mc-Aloo” and “Mc-Tikki”. A participant stated: *“International brands must go with their first country strategy, but they must follow the needs, wants, appearance and the culture of the host country, as followed by coca-cola; however, Unilever has a different culture in India and Pakistan.”*

Coca-Cola is a useful example of an integration strategy. Coke’s famous marketing campaign of “share a coke” reflects the company’s cultural sensitivity. In Pakistan and India, share a coke campaign used local names and even language in its branding. While maintaining its American brand identity and personality, Coke simultaneously adapts to local cultural values and norms. In China, for example, the website of Coca-Cola is written in the Chinese language and even the company uses the Chinese language on its various brands.

All 24 participants talked about the integration strategy, where they showed how comfortable they feel having a blend of a global brand with local culture. The same has been argued by Berry (2005), stating that integration is the most suitable and widely observed strategy concerning human acculturation. This strategy is stress-free and does not need much effort and investment by the company compared to the assimilation or marginalization strategy. Similarly, Penaloza and Gilly (1999) has used the term accommodation to discuss the marketers’ cultural adoption strategies. “Business accommodated Mexican consumers by (1) product and service assortments, (2) displays, (3) sales support services, (4) holiday celebrations, and (5) community services. Moreover, Mendoza (1989) used the term cultural incorporation in the place of integration strategy. Global brands rapidly penetrate emerging markets like China, India, Brazil, and Pakistan. However, they face cultural resistance in these emerging markets. Özsoy (2012), suggested that while maintaining their perceived globalness, it’s essential for the brands to adapt to local tastes. Even a global brand must sacrifice its brand consistency to capture a larger market share in the emerging markets (Roberts & Cayla, 2009). According to Chiu et al. (2011), combining the global brand image, which is often associated with Western cultural elements, with local cultural elements is “cultural mixing,” representing two cultures in one object. Our research also confirmed various cases and situations where brands have been observed partially adapting to the local culture while keeping their originality intact.

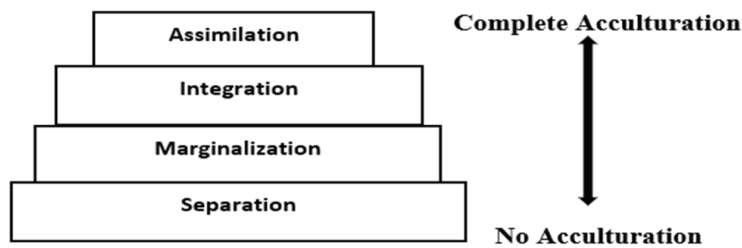


Figure 2: Hierarchy of Brand Acculturation

Figure 2: depicts the hierarchy of brand acculturation. Assimilation and separation brand strategies include complete acculturation and no acculturation, respectively, whereas integration and marginalization are in the middle of complete acculturation and no acculturation at all.

5.2.2 Assimilation

Assimilation refers to the acculturation strategy where people embed themselves entirely into the host country's culture and are disconnected from their culture of origin (Berry & Sam, 1997; Mendoza, 1989). This implies brand acculturation in a way that when the brand completely adapts to the local cultural values, norms, and beliefs and looks disconnected from the home country or its originality.

Some of the descriptions from the participant's quotes concerning assimilation strategy are mentioned below: "There are many foreign brands and now it is difficult to identify which one is a foreign brand. There are many brands embedded into Pakistani culture, their promotional activities are also as per Pakistani culture. For example, MINISO is a brand which I had no idea earlier that it's a foreign brand" 50% of participants were able to recall some brands that completely merged into local cultures, and they find it hard to identify these brands as foreign. The rest of the participants talked about the challenges of assimilation strategy and its lesser possibility for an international brand. Berry (2005) argues that this strategy has also been observed in various cases, although rarely. When discussing the brands, we could only find a few examples where brands have changed most of their elements and strategy in favor of local markets. At times brands have achieved this by launching different products with even different brand names to target the local or ethnic customers. Some of the examples are mentioned below.

Wall's Ice-Cream, a Unilever's world-famous ice-cream brand known as walls in countries of Asia and the UK. It is named Holando in central America, Guidant Status in the USA and Israel, Frigo in Spain, Frisko in Denmark, Miko in France, Eskimo in Turkey, Streets in Australia, and New Zealand, Inmarko in Russia, and Algida Ice cream in European countries. The brand uses a different name and other elements based on the country's market dynamics it operates in. Since it is the strategy of Unilever to buy the local ice-cream brands and continue with the names of local brands to make them easily identifiable in the local market. Opavia by a French food manufacturer, Danone is a global packed food manufacturer. When Danone launched its famous global biscuit brand, Lu, in the Czech Republic, despite extensive marketing efforts, the brand failed. When Danone changed its brand name from Lu to a local name Opavia, the company generated substantial sales. Danone could completely change its brand identity as per the host market.

5.2.3 Separation

Participants mentioned that some of the brands are preferred as they are. Customers of such brands don't want these brands to adapt or change as per local markets because by doing so; the brand will lose its image of being a luxurious global brand. Some of the descriptions supporting separation strategy are mentioned below: *“Most of the brands do not change much as per the country culture. Because brands are strongly developed when their elements are stable. If you consider luxury brands, they hardly follow the local culture because following the local culture will take them out of the luxury brand category in my opinion. For example, we purchase Rolex watches and Tag Heuer watches because of their home country identity. Similarly, Outfitter is a western brand operating in Pakistan, but it supports western culture. Although we use outfitters, it's not according to our culture.”*

More than 90% of participants mentioned the separation strategy, the second most prominent brand acculturation strategy. Participants mentioned that some of the brands in a particular category are only preferred because of their image of being a global brand. *“There is a brand Levi's; they always follow their branding, and they don't care about us. They follow the trends, but their branding is international”. They always prefer their languages, and they like their country. They use badges on their dresses and launch products according to their nature”.*

According to Berry (2005), separation is not an acculturation strategy; rather, it's the opposite of acculturation; brands do not acculturate under this pattern. Separation refers to the acculturation strategy where consumers show resistance to the new cultural settings and remain associated with their original culture (Berry, 1992). Mendoza (1989) used the term cultural resistance where he revered this acculturation pattern as “resistance either active or passive, against the acquisition of alternate cultural norms”. In his “ICMA” framework, Banerjee (2008) termed this strategy as “convince” where he argued that when a brand is strong, having a strong cultural heritage, it doesn't need to adopt the local culture rather convince customers to purchase the brand. Our research also found several examples of rigid and insensitive brands to the local culture. The brands under the separation strategy keep their originality intact in all aspects and do not change their values, identity, culture, and personality in other countries. Wherever they go, they bring the same branding and marketing stagey. Some of the examples are mentioned below:

Levi Strauss & Co. (LS&CO) is an American clothing brand. The brand personality of Levi's is the same for all its markets, even in culturally heterogeneous countries like India and Pakistan. Levi's has a standardized branding and marketing strategy worldwide guided by its core values: empathy, integrity, originality, and courage. The brand carries an American fashion style, culture, personality, and identity; it does not consider the local cultural values in its country. Louis Vuitton, a French luxury man, and women's fashion brand, has a

consistent brand personality of an upper class, charming, elegant, and glamorous brand worldwide. The brand is available in many countries of the world through direct or indirect channels. The company uses standardized branding and marketing strategies. Louis Vuitton has global celebrity endorsers and uses mass media channels, including social media, to communicate with its millions of customers worldwide. The brand possesses an image of being French, luxurious, expensive, and elegant; it does not change its visage in different countries. The brand seems to have a consistent personality, identity, image, values, and culture in all corners.

5.2.4 Marginalization

More than 70% of participants talked about the situations where brands are perceived to have their own brand culture, independent of their country of origin or the host country. Some of the descriptions related to the marginalization strategy quoted by participants are mentioned below: *“The promotions of Cars and Vehicles are unique as they don’t hit any culture. Fortune, for instance, only focuses on product robustness and sophistication, not on any country or culture, and similarly, if you take the example of IKEA, which follows a global culture. It does not advertise itself differently in Pakistan or change products in Pakistan. It portrays its culture and lifestyle”*.

Some participants also mentioned the marginalization strategy adopted by IKEA and Harley Davidson by stating that: *“Harley Davidson never follows any country or culture. It has its own culture and fan following. Those who use Harley adopt Harley culture. It is a niche marketing brand. It has a distinct group of people who are rugged and rough tough. They never change the culture. Harley Davidson has built its own brand culture. When we see their advertising and products and their macho-man style bikers, they are into their own culture. Marlboro is also trying to create its own culture. They target cowboys and adventurous customers. So, they have created a culture like that”*.

From the results of interviews and cases, it was found that the brands in the automobile industry are observed not to follow any country’s culture rather, they create their own culture and lifestyle. Other than that, some luxury brands, energy drinks, bikes, and cigarette brands are also observed not to follow any country or regional culture but instead create their own culture and market it globally. The literature frequently discusses the brands that have created their own brand culture not related to any specific country (Firat & Dholakia, 2006; Holt, 2002; Schroeder et al., 2014). It confirms our findings that marginalization is one of the widely observed brand acculturation strategies, as reflected in figure 3 via case examples of companies following marginalization strategy.

Literature uses the term marginalization, where people neither follow their home country’s culture nor they follow the host country’s culture but rather create a substitute for both cultures (Berry, 2005). According to Mendoza (1981), the fourth acculturation pattern is called “cultural transmutation” which refers to forming an alternative subculture instead of following home or host country cultures. This applies to the brands that create their own brand culture different from home and host country culture. Brands do create their own culture of consumption globally. Based on the cases and extracted from participants’ descriptions, some of the examples of marginalization are mentioned below:

Harley Davidson, “We are not a motorcycle company; we are a culture on wheels”. Harley Davidson is an American heavy bike company. The brand possesses a robust image and identity for its global customers. Harley has a rugged brand personality; it carries a rebellious identity and has created its own culture through brand communities. Harley consumers in these communities are grouped around the brand’s values, culture, lifestyle, activities, and ethos. Harley has a global standard brand strategy. The core brand value is personal freedom and the brotherhood of bikers regardless of national boundaries. If you own a Harley bike, you are a member of the “global family”.

Another example is Red Bull BmbH, an Austrian energy drink brand that globally uses a standardized branding strategy. The brand has the same personality, identity, values, and culture everywhere. Red bull has created its own sporty culture worldwide the “Red Bull culture” (Gorse et al., 2010). The sporty brand participates in sports and musical events and competitions locally and globally. “Red Bull creates its “brand culture” by associating the brand with a very diverse range of sports, music, and other cultural activities”. The brand has 21 variants with a similar logo, color, design, name and has used the slogan “Red bull gives you wings” in all cultures since 1987.



Figure 3: Case examples for each acculturation strategy

6. Conclusion

Following the concept of human acculturation (Berry, 2005; Mendoza, 1989), market and marketer acculturation (Peñaloza & Gilly, 1999), the brand cultural fit (Banerjee, 2008), and consumer acculturation (Van Oudenhoven et al., 2006), our study adds to the body of acculturation literature by exploring brand acculturation and its strategies. To the best of our knowledge, no study has specifically applied the concept of acculturation to brands. Based on the interview results and fieldwork on brand examples, we conclude that like humans, acculturation when they migrate to another country with different cultural settings, the anthropomorphic brands also go through a similar process. From our qualitative study that was based on the semi-structured interviews and case study on brands, we coined the term brand acculturation, which can be defined as “the ability of a brand to change its brand elements, features, and characteristics based on cultural values, beliefs, and norms of the host country”. The findings of the study also show that brands use four acculturation strategies; “integration, assimilation, separation and marginalization” based on several factors. Our results also confirm that, if a brand truly represents a consumer’s cultural values, consumers might develop a long-term commitment and partnership with such a brand (Fournier, 1998). However, an enmity might also be developed in other cases. Suppose a brand aims at market acceptability and long-term commitment of the customers. In that case, it should consider acculturation based on the nature of its business and relevant category i-e (luxury versus non-luxury and food versus non-food).

6.1 Research Implications

The study has various implications, both theoretical and managerial. First, it is an addition to the literature of culture-specific strategies of global brands. Secondly, to the best of our knowledge, no study has taken the concept of human acculturation and applied it to global brands; this study is the first to propose the concept of brand acculturation. Thirdly, the study contributes to filling the gap of availability of some profound brand acculturation strategies. Along with theoretical implications, the study has some implications for marketers. First, it provides a very specific concept of brand acculturation, which could help marketers specify their brand cultural adoption programs. According to Banerjee (2008), marketers find it challenging to integrate brands-culture in different countries. Second, it gives some direction for marketers to choose an acculturation pattern from the four patterns; integration, assimilation, separation, and marginalization and develop brand positioning based on the nature and characteristics of their global brands and the country of operations and decide on a suitable cultural adoption strategy to face the fierce global competition (Bartikowski & Cleveland, 2017).

6.2 *Limitations and future research*

No research is free of limitations; the first limitation of this study is its inability to generalize the framework presented here. The study was qualitative with a concentrated sample of university graduates and final year undergraduate students in Pakistan. Future research may use a different methodology, such as quantitative, to include a large sample in the same or different country and might have a different result. Secondly, although several authors have studied global branding strategies and the role of culture, the concept of brand acculturation, especially with brand anthropomorphism, is novel. Future research is invited for a deeper understanding of the concept. Our study mainly explores acculturation and its strategies; future research can devise a model depicting the brand acculturation process, its determinants, and outcomes. Although we have provided some examples of different product categories, Product-acculturation strategy mapping was beyond the scope of the study. It could be of interest for future research in this domain. Lastly, future research may also include the outcomes of brand acculturation and its various strategies that we have discussed through the lens of this research.

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The Economic Impact of Covid-19: A Study of Small and Medium Entrepreneurs in Khyber Pakhtunkhwa, Pakistan

Sheraz Ali* Johar Ali** Awais Alam Khan*** Saeeda Khan****

Abstract

This research study focused on the economic impact of covid-19 on small and medium entrepreneurs. This research study was conducted in seven districts of Khyber Pakhtunkhwa where 350 samples were randomly selected from seven districts. From each district 50 samples were selected including 25 small and 25 medium entrepreneurs. Entrepreneurs from auto, hoteling, grocery, fresh food and garments industries were focused on for data collection. In this research study, mean values were calculated to know the economic impact of covid-19 lock down on small and medium entrepreneurs. The results showed that stay-at-home policy inflicted huge economic cost both on small and medium entrepreneurs in Khyber Pakhtunkhwa. On average a small entrepreneur in Khyber Pakhtunkhwa lost US \$1552.8 per day while every medium entrepreneur lost US \$13084.2 per day in the garments industry during covid-19 lock down. Similarly, per day average cost of a small entrepreneur in Khyber Pakhtunkhwa was US \$898.7 while that of the medium entrepreneur was US \$6140.65 during covid-19 lock down. This financial lost/cost did not include any past or current liabilities rather it was derived from the sale and purchase data collected from the local entrepreneurs in Khyber Pakhtunkhwa.

Keywords: Covid-19 lockdown; economic impact; small entrepreneurs; medium entrepreneurs.

JEL Classification: O1, O2

*Assistant Professor, Department of Social and Gender Studies, University of Swat, Swat Khyber Pakhtunkhwa, Pakistan. Email: sheraz.khan80@gmail.com

**Professor in Sociology, Department of Sociology University of Peshawar, Khyber Pakhtunkhwa, Pakistan. Email: johar_ali55@yahoo.com

***Assistant Professor, Department of Management Sciences, Institute of Management Sciences, Hayatabad, Peshawar, Khyber Pakhtunkhwa, Pakistan. Email: awais.alam@imsciences.edu.pk

****Program Officer, HRDC, Institute of Management Sciences, Hayatabad, Peshawar, Khyber Pakhtunkhwa Pakistan. Email: sdkhan.1988@gmail.com

1. Introduction

The outbreak of novel coronavirus disease, covid-19, severely affected the lives of individuals, and economic activities worldwide at the regional, national and international levels. It was declared as a global pandemic on the 11th of March 2020 by WHO. It was first reported in December 2019 at Wuhan, Mainland China and spread worldwide in few months. In Pakistan, the first case of COVID-19 was confirmed on 25 February 2020 and the number reached more than 10,000 in less than a month. Many states adopted the policy of lock down, imposed restrictions on air travelling and sealed their borders to curb further spread of this virus (Thunström et al., 2020). These measures resulted in economic repercussions that are expected to result in the worst recession since the great depression of the 1930s (Hevia & Neumeyer, 2020). Pandemics are not known only for the loss of human lives but also for the glooming global economy.

According to the Government of Pakistan Coronavirus Tracker, the country has witnessed more than 940,000 cases of covid-19 so far, along with 21,689 deaths. Although the loss of lives was tragic but massive financial consequences of this pandemic were out-reaching. A report by United Nations Conference on Trade and Development (UNCTAD) also highlighted that Pakistan would experience more challenges by the global pandemic of covid-19 (UNCTAD, 2020). Like other countries to curtail the spread of covid-19, Pakistan also adopted stay-at-home policy every single activity was closed. Pakistan being a developing country has been facing economic challenges including poverty, unemployment, inflation, food insecurity which aggravated with the covid-19 pandemic. Economic shocks caused by the lockdowns badly affected the small and medium enterprises (Aderemi et al., 2020; Iwuoha et al., 2021; Kalogiannidis, 2020; Rathore & Khanna, 2020; Robinson & Kengatharan, 2020).

Although every enterprise faced a variety of challenges due to changes in demand and supply, shortage of raw material, supply chain disruption, restrictions of import and export, and many others during the nation-wide lockdown. But small and medium enterprises (SMEs) remained the chief sufferers of the covid-19 outbreak in Pakistan. These enterprises are the significant drivers of economic growth especially in developing and emerging economies (Abdullah & Othman, 2019) and any positive or negative impact on these entrepreneurs result in either positive or negative impact on the overall economy. Though the national enterprises in Pakistan are mainly comprised of the micro, small, and medium (MSMEs), and contribute over 30 per cent to the country's GDP (Dar et al., 2017), however, they are highly vulnerable to economic shocks like the one caused by covid-19. Usually, the SMEs have a limited number of customers and stock and follow a routine business transaction. Therefore, these entrepreneurs faced negative spillovers from the lockdown and lost their sustainability sources.

In addition, these businesses already lacked innovation in production, high investment in government securities, high transaction efficiency, satisfactory business plans, accounting, financial competition and awareness, modern technological development and adaptability, and even faced energy crisis, lack of infrastructure, rising unemployment which made them more susceptible to failure (Baker et al., 2020). Many businesses shut down due to the unavailability of inputs or a decline in demand for the product. SMEs could not meet their financial needs and lack of capital was a common problem faced by small businesses. Similarly, (Shah et al., 2020) highlighted poverty as a serious threat to small business owners during the pandemic and lockdown. They call it one of the reasons for SMEs failure to afford prolonged isolation during a pandemic. While Yi Lu et al. (2020) revealed that most of the SMEs besides lack of revenue and capital were unable to operate due to the inability of employees to return to work. Delay in resuming their work resulted in unprecedented pressure on the survival of many SMEs. It made the recovery from the economic disaster very hard for them.

The main objective of this study is to enquire the economic impact of covid-19 pandemic on small and medium enterprises of Khyber Pakhtunkhwa. The study intends to reveal the cost incurred to these enterprises due to the covid-19 pandemic. This cost means an average loss incurred to a small or medium entrepreneur in Khyber Pakhtunkhwa during covid-19 pandemic.

2. Literature Review

In Pakistan, not all SMEs were able to survive amid covid-19 pandemic. Many of the SMEs faced a decline in income by 50 per cent, along with job risks (Javed & Ayaz, 2020). Shafi et al. (2020) also founded in their study that covid-19 severely affected the SMEs in Pakistan as compared to large enterprises. They identified financial issues, supply chain disruption, decrease in demand, reduction in sales and profit as the main challenges faced by their sample enterprises. Although financial support was provided to many sectors of the economy, however, there had been no policy adopted by the government of Pakistan to support small businesses (Shah et al., 2020). Before going into the details of reviewing the relevant literature, it is necessary to clearly define small and medium entrepreneurs.

2.1 Defining SMEs

Since, this research study applied quantitative research method of measuring the impact of covid-19 on small and medium entrepreneurs, therefore, the quantitative definition of small and medium entrepreneurs is adopted. Some economists define small and medium enterprises on the basis of staff employed by these enterprises while others define them on the basis of financial liabilities (OECD, 2004; Hatten, 2011; Carter & Jones-Evans, 2006). The primitive among these definitions is the Bolton Report, wherein small and medium

enterprises were defined both qualitatively and quantitatively. Qualitative definition of the small and medium enterprises is based on certain principles such as the unification of property ownership and management, the personal principle and leadership (Loecher, 2000). These principles are also incorporated in the European Commission (2003) criteria of measuring and defining SMEs. The principle of property ownership and management means that the manager of business is also the owner of the enterprise with greater autonomy in making decisions. The personal principle and leadership mean that the company manager performs a central role in leading the entire setup. These principles are also mentioned in the Bolton Report of 1971 (Stokes & Wilsons, 2010). On the other hand, the quantitative definition of SMEs is based on a different criterion. This criterion keeps on changing with the passage of time and specifically differ from country to country. The following table shows the European Commission criteria for differentiating small and medium enterprises.

Table 1
Defining SMEs by European Union Standard

Enterprise Category	Headcount	Annual Turnover in €	Balance Sheet in €
Micro	< 10	< 2 Million	< 2 Million
Small	< 50	< 10 Million	< 10 Million
Medium	< 250	< 50 Million	< 50 Million

Source: European Commission (2005)

The above table (table-1) explains the criteria of differentiating micro, small and medium enterprises by the number of employees and annual turnover in millions of Euros, however, this standard is adaptable to the European Community where majority of the states have a high economic growth rate and they have crossed the transition stage. In the developing countries, this standard is not adaptable because of the prevailing economic uncertainties.

In Pakistan, SME Bank defines small and medium enterprises on the basis of number of employees and ownership of productive assets. The State Bank of Pakistan defines SMEs on the basis of nature of business, number of employees and the worth of capital invested. The Pakistan Bureau of Statistics considers only the number of employees while measuring small and medium enterprises (Hashmi et al., 2017). In this study, we focus more on the principle of ownership and management, the number of employees and the worth of capital invested/annual turnover as the criteria for measuring small and medium enterprises.

2.2 Global Disruption Caused by Covid-19

Every single state was negatively affected by the outbreak of covid-19. The implications were even worst for the small and medium entrepreneurs both in the developed

and developing countries. Labor force shortages, demand shrinking and supply of raw material disrupted by the covid-19 lock down (Yi Lu et al., 2020). They further argued that covid-19 outbreak had severe impacts on small and medium entrepreneurs. In the first month of covid-19 lockdown many small entrepreneurs ceased to operate in the market while in the forthcoming months of lockdown many both small and medium firms were closed (Fairlie, 2020). Some of the entrepreneurs could not sustain their functionality due to extra cost of production and no demand. Extra cost of production was due to shortage of labor force while an abrupt decline in demand was due to lockdown policy adopted by states.

Supply chain disruption was caused everywhere in the world, particularly where the states opted to stay-at-home policy. But supply chain disruption was preceded by decline in demand due to general lockdown. Meyer et al. (2022) argued that supply chain disruption was not that much severe than demand shrinking. Demand shrinking brought the revenue graph of the firms to the bottom which negatively affected the entire entrepreneurial processes, including wages to the workers, payment to suppliers and financing of new orders and further investment. Some researchers believed that demand shrinking was a dominant factor in explaining the impact of covid-19 lockdown on local entrepreneurs (Hassan et al., 2020; Bartik et al., 2020). Others believed covid-19 lockdown a supply shock (Candia et al., 2020; Dietrich et al., 2022). Supply shock preceded demand shrinking or demand shrinking preceded supply disruption but both were the major factors that affected the small and medium entrepreneurs negatively. These two factors were dominant in the European, Americana and Asian markets with far reaching impacts on small and medium entrepreneurs.

2.3 *Implications for SMEs in Pakistan*

According to the United Nations Conference on Trade and Development (2020a) Pakistan was one of those developing countries that was highly affected by the covid-19 pandemic. The chief sufferers were the small and medium entrepreneurs. The main factors that resulted in the downfall of the business sector were supply disruption, demand shrinking, shortage of labor force, high transportation cost and unavailability of raw material caused by the adoption of stay-at-home policy by the government. Many firms quit the market because of low demand and supply shortage. Further investment was ceased due to huge uncertainty in the local and global markets. According to Junaidi (2020) Pakistan lost one third of its revenue which negatively affected the GDP growth. Exports declined by an estimated 50% due to the covid-19 pandemic. There was high probability of economic recession in the country and it was warned by many economists (Naqvi, 2020). An estimated 1.3% decrease was expected in the GDP growth rate (World Bank, 2020b). This decrease was expected to reach 2.2% if the same situation prolonged.

Poverty is an everlasting economic factor that has made millions of people vulnerable to such pandemics. According to Hussain (2020) in Pakistan an estimated 5 million people live below the subsistence level. Majority of them are unskilled workers including farmers, factory workers, transport workers, waste recyclers and construction workers. These unskilled workers are highly vulnerable to pandemics and other economic uncertainties. In addition, almost 35% of the total national employment consists of small entrepreneurs who rely on their businesses for survival (Sohail, 2019). These businessmen are street hawkers, shopkeepers, vender's etcetera who remain in hand-to-mouth situation and whenever disasters like covid-19 pandemic come they are the chief sufferers.

In Pakistan, since the working force consisted of unskilled laborers, therefore, they were highly affected by the stay-at-home policy. The unemployment rate in 2017-18 was 5.8% but due to covid-19 pandemic this rate increased to 8.1% during 2020-21 (Ibid). In addition to increase in unemployment and inflation rate, foreign exchange market was also negatively affected by the covid-19 pandemic. According to World Bank (2020b) Pakistan's exchange rate devalued by 7.3%. This exchange rate devaluation resulted in price hike in the local market that highly discouraged further investment. This problem got even worst when prolonged because the short run impact was supply-centered but the long run impact was more demand. Supply side impact was not as severe as demand side impact because decline in demand also resulted in decline in investment which highly distorted the local market.

3. Research Methodology

In this research study, quantitative research method was applied because quantitative research method was comparatively a scientific method that applied statistical tools to identify and measure the variables more accurately (Eyisi, 2016). The target area for conducting this study was Khyber Pakhtunkhwa divided into seven districts, including district Swat, Mardan, Peshawar, Nowshera, Haripur, Abbottabad and Mansehra. These districts were selected for this study because business activities in these cities were highly affected by the covid-19. Moreover, majority of the small and medium entrepreneurs were situated in these cities. The target population was number of business owners/investors or managers who are called the entrepreneurs. Only small and medium entrepreneurs were selected for this study and the criterion for measuring small and medium entrepreneurs was based upon the principles of ownership, number of employees and annual turnover. The data was collected through predefined questionnaire. The questionnaire was designed in line with the objectives of the research study. Questionnaire was an efficient way of collecting information on specific variables/indicators (Roopa & Rani, 2017). In questionnaire everything was clarified in line with the objectives of the research study. In social sciences, questionnaire is one of the fundamental tools that instills the basic concepts of the researcher. In predefined questionnaire, every respondent tries to keep his perceptions limited to the questions included in the questionnaire. Since, this study consisted of 350 samples measuring the economic impact on small and

medium entrepreneurs, therefore, it was comparatively better to design questionnaire and collect the data on the main variables. All the samples were randomly selected and every sample was accessed physically. There were 7 districts selected in Khyber Pakhtunkhwa for this study, where 50 samples were collected from each district.

Since, the data was collected in quantitative form, therefore, the mean value for every single industry was calculated to measure the impact in terms of financial cost. Measuring the impact of covid-19 lock down in terms of financial cost was comparatively convenient by calculating the mean values for every single industry. Therefore, in this research study, the mean values were calculated and on the basis of these mean values, the cost incurred to every industry due to covid-19 lock down was identified.

The following table shows details of the data distribution.

Table 2
shows data distribution among the selected districts of Khyber Pakhtunkhwa

District	No. of Samples	Small Ent.	Medium Ent.	Sub-Total
Swat	50	25	25	50
Mardan	50	25	25	50
Peshawar	50	25	25	50
Nowshera	50	25	25	50
Haripur	50	25	25	50
Abbottabad	50	25	25	50
Manshera	50	25	25	50
Total	350	175	175	350

Table-2 shows the data distributed among seven districts of Khyber Pakhtunkhwa. Of 350 samples 175 were small entrepreneurs and 175 were medium entrepreneurs. None of large or big entrepreneurs was selected because this study was mainly focusing on small and medium entrepreneurs. These 07 districts represent Khyber Pakhtunkhwa province and business activities are fast in these cities. Moreover, there was complete lockdown in these districts for months during covid-19 which adversely affected the business community in these cities.

The following table (table-3) shows details of entrepreneurs and the average estimated cost incurred during covid-19 lockdown. The entrepreneurs selected for this research study included auto industry, hoteling, grocery, fresh food and garments. From each district 50 entrepreneurs were selected including small and medium entrepreneurs each. Of 350 samples 175 were small entrepreneurs and 175 were medium entrepreneurs.

Table 3
shows details of small entrepreneurs and the average cost in US dollar

District	Entrepreneur	Industry	Number of Entrepreneurs	Total No. of Ent.	Average Cost/day in US \$	Average Cost/m in US \$
Swat	Small	Auto	5	25	472	14160
	Small	Hoteling	5		650	19500
	Small	Fresh Food	5		400	1200
	Small	Grocery	5		780	23400
	Small	Garments	5		1200	36000
Mardan	Small	Auto	5	25	720	21600
	Small	Hoteling	5		800	24000
	Small	Fresh Food	5		380	11400
	Small	Grocery	5		790	23700
	Small	Garments	5		1300	39000
Peshawar	Small	Auto	5	25	1800	54000
	Small	Hoteling	5		730	21900
	Small	Fresh Food	5		450	13500
	Small	Grocery	5		800	24000
	Small	Garments	5		2200	66000
Nowshera	Small	Auto	5	25	450	13500
	Small	Hoteling	5		600	18000
	Small	Fresh Food	5		500	15000
	Small	Grocery	5		760	22800
	Small	Garments	5		1700	51000
Haripur	Small	Auto	5	25	400	12000
	Small	Hoteling	5		650	19500
	Small	Fresh Food	5		320	9600
	Small	Grocery	5		742	22260
	Small	Garments	5		870	26100
Abbottabad	Small	Auto	5	25	640	19200
	Small	Hoteling	5		1780	53400
	Small	Fresh Food	5		630	18900
	Small	Grocery	5		1900	57000
	Small	Garments	5		2700	81000
Mansehra	Small	Auto	5	25	432	12960
	Small	Hoteling	5		840	25200
	Small	Fresh Food	5		430	12900
	Small	Grocery	5		740	22200
	Small	Garments	5		900	27000
Total	-----	-----	175	175	31456	932880

The following table (table 4) shows details of medium entrepreneurs selected for this research study. A total of 175 medium entrepreneurs were selected for this study. From each district 25 medium entrepreneurs were selected from auto, hoteling, grocery, fresh food and garments industries.

Table 4

Shows details of medium entrepreneurs and the average cost in US dollars

District	Entrepreneur	Industry	Number of Entrepreneurs	Total No. of Ent.	Average Cost/day in US \$	Average Cost/m in US \$
Swat	Medium	Auto	5	25	700	21000
	Medium	Hoteling	5		4400	132000
	Medium	Fresh Food	5		1200	36000
	Medium	Grocery	5		3080	92400
	Medium	Garments	5		9000	270000
Mardan	Medium	Auto	5	25	2800	84000
	Medium	Hoteling	5		2700	81000
	Medium	Fresh Food	5		1700	51000
	Medium	Grocery	5		5800	174000
	Medium	Garments	5		8700	261000
Peshawar	Medium	Auto	5	25	6050	181500
	Medium	Hoteling	5		5032	150960
	Medium	Fresh Food	5		7000	210000
	Medium	Grocery	5		8900	267000
	Medium	Garments	5		22000	660000
Nowshera	Medium	Auto	5	25	4400	132000
	Medium	Hoteling	5		3000	90000
	Medium	Fresh Food	5		3900	117000
	Medium	Grocery	5		6070	182100
	Medium	Garments	5		7090	212700
Haripur	Medium	Auto	5	25	3060	91800
	Medium	Hoteling	5		4500	135000
	Medium	Fresh Food	5		3100	93000
	Medium	Grocery	5		7001	210030
	Medium	Garments	5		12000	360000
Abbottabad	Medium	Auto	5	25	3070	92100
	Medium	Hoteling	5		7000	210000
	Medium	Fresh Food	5		2700	81000
	Medium	Grocery	5		7890	236700
	Medium	Garments	5		19800	594000
Mansehra	Medium	Auto	5	25	3200	96000
	Medium	Hoteling	5		5080	152400
	Medium	Fresh Food	5		3200	96000
	Medium	Grocery	5		6800	204000
	Medium	Garments	5		13000	390000
Total	-----	-----	175	175	214923	6447690

4. Results and Discussion

In this research study, the cost incurred due to covid-19 lock down was presented in averages. Every entrepreneur's per month cost was calculated from its per day cost and the three months cost was also calculated from one day cost. The data was collected from auto industry, hoteling industry, grocery, fresh food and garments industries. The findings of this research study reflected these five industries only. Every single entrepreneur was negatively affected by the covid-19 lock down. On average every small entrepreneur in Khyber Pakhtunkhwa lost US \$1552.8 per day in the garments industry while every medium entrepreneur lost US \$13084.2 per day during covid-19 lock down. Similarly, per day average cost of a small entrepreneur in Khyber Pakhtunkhwa was US \$898.7 while that of the medium entrepreneur was US \$6140.65 during covid-19 lock down. This financial loss/cost did not include any past of current liabilities rather it was derived from the sale and purchase data collected from the local entrepreneurs. Every single entrepreneur suffered an immediate decrease in sale due to covid-19 and an immediate stoppage due to lock down. Many entrepreneurs left the market and ceased to operate because of huge financial loss, however, in this research study only those entrepreneurs were interviewed who continued to operate and they sustained their position in market after lock-down was lifted.

Covid-19 lock-down was an emergency situation and the government had no other option to curtail the movement of people except lock-down. This restriction on the movement of people compelled almost all small and medium entrepreneurs closed their businesses. The supply chain was broken due to immediate stoppage of sale. Goods that were already displayed for sale were perished especially in the fresh food industry. Demand for goods and services abruptly declined. Many firms due to huge losses quit the market and permanently ceased their operations. The target area of this study was highly focused for lock-down because these cities were comparatively more congested. This lock-down continued for almost three months in the first phase which brought an immediate disruption in the business sector.

In this research study, it was founded that on average a small entrepreneur lost US \$ 472 per day in the auto industry while a medium entrepreneur lost US \$ 700 per day. In hoteling industry, on average a small entrepreneur lost US \$ 650 per day while a medium entrepreneur lost US \$ 4400 per day. In fresh food industry, on average a small entrepreneur lost US \$ 400 per day while a medium entrepreneur lost US \$ 1200 per day during covid-19 lock-down. In grocery, on average a small entrepreneur lost US \$ 780 per day while a medium entrepreneur lost US \$ 3080 per day during covid-19 lock-down. In garments industry, on average a small entrepreneur lost US \$ 1200 per day while a medium entrepreneur lost US \$ 9000 per day. In this research study, the average cost was calculated from 05 small or medium entrepreneurs in a specific industry in each district and from this cost average per month cost was calculated.

The garments industry in Khyber Pakhtunkhwa was chiefly suffered by the covid-19 lock-down. As compared to other industries, the garments industry is very much expansive in operation and many big and medium firms operate usually in Peshawar and Abbottabad. Peshawar and Abbottabad remained the hub of these entrepreneurs. In Peshawar, many popular brands such as R-Sheen, Khadi, Bareeze, Junaid Jamshed, Maria B. and Nishat Linen on average lost US \$ 22000 per day due to covid-19 lock-down. Similarly, the same brands lost on average US \$ 19800 per day in Abbottabad due to covid-19 lock-down. These brands are very much popular among the people and mostly in winter season they are overwhelmed with people. Comparatively the garments industry has a high impact on the economic growth of a country and in this research study the garments industry suffered the most during covid-19 lock-down.

While measuring the overall economic impact of the garments industry, it was found that on average US \$1 million were lost per day during covid-19 lock-down by small entrepreneurs and US \$9.1 million were lost per day by medium entrepreneurs in the garments industry in Khyber Pakhtunkhwa. Since, this lock-down was not in a specific area or city rather this policy was adopted by the government and implemented everywhere in the country, therefore, it was not only demanding that frozen but the supply chain was also disconnected which left the entire industry ceased. The share of small and medium entrepreneurs in the GDP of the state is approximately 40 percent and comprise nearly 90 percent of the Pakistan's enterprises (PSB, 2019). Small and medium entrepreneurs carry out a significant impact on the GDP. Small and medium entrepreneurs generate income and employment opportunities for the people and play a significant role in poverty reduction. Thousands of peoples' income is associated with small and medium entrepreneurs in Khyber Pakhtunkhwa.

This sector received a huge scourge during covid-19 and the collective impact of it can never be repaired. In developed countries this sector was highly protected through loan reimbursement, technological and infrastructure development, protection in the form of subsidies and free utility services provision and tax exemption because covid-19 hit the entire world and every state opted to stay-at-home policy. Since, the contribution of SMEs in Pakistan's economy is enormous, therefore, this sector needs to be protected through incentives in the form of tax exemption, free utility services provision, technological advancement, infrastructure development and foreign linkages. In Pakistan, nearly 78 percent of the non-agriculture labor force is employed by the SMEs which has a definite impact on employment generation and income level (PSB, 2019).

In this study, it was founded that the economic impact of covid-19 was very drastic because every single small and medium entrepreneur was affected by the stay-at-home policy. Moreover, the connection between small and medium entrepreneurs' operation and economic growth is very strong especially in the provision of employment opportunities, income generation, improving living standard and boosting up of consumption and production

activities. Similarly, many studies identified a positive association between SMEs operation and economic growth such as Cravo et al. (2012), Kongolo (2010), Minniti and Levesque (2010), Spencer and Gomez (2004) and Littlewood and Holt (2018).

5. Conclusion

Covid-19 lock-down quite negatively affected the entire economy of the globe where the developing countries were the chief sufferers. Pakistan was one of the developing countries that was highly affected by adopting stay-at-home policy. Almost every sector of the economy was affected but small and medium entrepreneurs were affected very negatively. In Khyber Pakhtunkhwa, stay-at-home policy had far-reaching effects on the business sector and the after-shocks remained continued for longer than expected in the form of lowest demand for goods and services. In this study, five industries were investigated including the auto industry, the fresh food, grocery, hoteling and garments industry. It was identified in this research study that a huge scourge was inflicted to the garments industry and the hoteling industry. In garments industry a small entrepreneur lost on average US \$1200 per day while a medium entrepreneur lost US \$9000 per day, and in hoteling industry a small entrepreneur lost US \$700 per day and a medium entrepreneur lost US \$3000 per day. Though these entrepreneurs were negatively affected, however, no facilitation or support was given by the state in the form of any incentives or subsidies.

These entrepreneurs ceased to operate during covid-19 lock-down and paid their monthly rent and utility bills. In Khyber Pakhtunkhwa the price of a commercial unit of electricity is higher than domestic unit while in the developed countries and even in mainland China utility services for the business sector are almost free with special tax holidays and extra concession and relaxation in bills payment. Such incentives are lacking in Pakistan and every entrepreneur operates in the market on his own risk and cost. That's why many entrepreneurs left the market due to covid-19 while the government did not pay any attention for the recovery of the business sector.

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The Sindh Education Sector Reform Project (SESRP), which Aims to Raise Educational Standards, Involves Primary Schools in Pakistan's Hyderabad Region

Imtiaz Ali Mallah* Imam Uddin Khoso** Muhammad Nawaz***

Abstract

The paper's main goal is to analyse the Sindh school education sector reform project critically using it as a case study. Additionally, it looks for gaps in improving access to new leadership through education as a policy instrument for change management. Additionally, the paper offers suggestions on how to strengthen the suggested plan in the general good. The study concludes that the best investment in the developing world will be made in improving quality education with new leadership for all, so plans, policies, and programs must be centered on providing incentives for educational access in order to promote sustainable economic growth and development.

Keywords: School education system; literacy challenges; opportunities; quality education; leadership management; Sindh education sector reform project (SESRP).

JEL Classification: M1, M10, M20

*PhD Scholar IBA University of Sindh, Jamshoro, Pakistan. Email: ali.imtiaz360@gmail.com

**Professor, IBA University of Sindh, Jamshoro, Pakistan Pro Vc Mirpurkhas Campus, University of Sindh, Pakistan. Email: imam.khoso@usindh.edu.pk

***Associate Professor Department of Commerce University of Sindh, Laar Campus Badin, Pakistan. Email: drmnawazuk@gmail.com

1. Introduction

Article 26 of the Universal Declaration of Human Rights declares that the right to an education is a fundamental one. The right to education is upheld by both Article 25-A of the Pakistani Constitution and the 1948 United Nations Declaration of Human Rights. (F. Gresham 2015). Assertion 25-A placed in the constitution in 2010 requires the Pakistani government "to all students aged five to sixteen, free and mandatory education years in a manner that the law may specify. (Miyazaki et al., 2018) The United Nations member states' adoption of the Sustainable Development Goals (SDGs) on September 25, 2015, take it a step further

by emphasizing the value of high-quality education. (Daly, E. 2020). There are enormous challenges for Pakistan in the field of education. (Hussain et al., 2021). Years of neglecting the education sector in the form of insufficient funding, poor governance, and capacity have resulted in low enrolment, an insufficient number of schools, inadequate facilities in schools, a high dropout rate, a shortage of and incompetent teachers, etc. 39 million children in Pakistan between the ages of 5 and 16 who are not in school provide a difficulty, and it is predicted that another 2 million children are born each year. Pakistan, a developing nation with the sixth-largest population in the world and 60% of its people being under 25, urgently needs a high-quality, fair education system that is broadly accessible.

Although the National Education Policy of 2009 proposed spending 7 percent of GDP on education, Pakistan presently spends only about 2.2 percent of its Gross Domestic Product (GDP) on education, compared to the minimum mandated target of 4 percent. Provincial governments have been devolving authority to a greater extent since the 18th amendment, although they have not made much progress in the area of education. The mismatch between Pakistan's educational policies, data, and budgetary allocations has been one of the key causes of the country's delayed improvement in the quality of education. Panjwani and Chaudhary (2022). A good and long-lasting educational development will not be possible as long as these three educational change pillars are not integrated Rinda and Shah (2019). The education sector was therefore chosen to carry out (SESRP) study.

According to four key aims, this study seeks to close this gap and offers the most sensible advice.

- To explore initiatives taken by newly appointed school leaders to improve education quality.
- To explore, the experiences of teachers regarding the quality of education.

2. Literature Review

A mature and forward-thinking civilization needs education because it gives people and there's societies the opportunity for use their creative and productive potential. It always contributes to the great democracy, harmony, as well as for Tolerance, stability, and peace via promoting socioeconomic growth to lessen societal inequality and poverty. Slow progress is being made in achieving quality, obligatory education.

Pakistan has significant obstacles to overcome in order to achieve SDG-4. More than 22.6 million children between the ages of 5 and 16 are not in school, and the adult literacy rate is 57%. There is significant gender, social, and geographic differences in access and quality, and there are insufficient numbers, levels of training, and qualifications for instructors. Poor conditions prevail in schools, and universal access to early childhood education (ECE) is not guaranteed. Budgetary restrictions, poor governance, poverty, instability, and frequent

natural disasters are further barriers to education. At the previous, system of education lacked the fundamental framework by establishing goals therefore assessing initiatives to raise the quality of education due to the absenteeism of clearly defined and widely accepted minimum national criteria for quality education at the national level. In 14 districts of the province, as of December 2012, there were 1216 government schools.

The government are currently collaborating with the school leaders for make sure the all schools have the required resources with faculty. 223,075 students took the student successfully achievement test for the academic year 2013–2014, which was given in grades 5 and 8 in every school in Sindh. The outcomes are expected to be crucial in planning for teacher management. The International Development Association (IDA) has granted a USD 400 million credit to the World Bank, which it uses to support the Sindh Education Sector Reform Project financially and technically. with payments conditioned on the achievement of predetermined performance objectives. The project includes a \$7 million technical support component that pays for the crucial capacity-building requirements. (UNICEF 2004).

2.1 *The challenge*

The School Education and Literacy Department of the Sindh government recognised the importance of school administrators in fostering academic growth and the production of top-notch human capital. In an effort to raise the province’s minimum educational standards, the government of Sindh has started the (SESRP). for strengthen standards of education, for this goal achievement the Sindh Education & Literacy Department was appointed 957 Head Teachers (BPS-17) in public schools. As for as SESRP was new project that has only been partially implemented, but because it aims to change established procedures, it poses a challenge for Pakistan’s education system.

2.2 *Significance of Study*

Through school leaders, this programme seeks to improve system governance and accountability (head Masters). To increase educational standards, the Sindh government has also put in place a MIS, and HRM system, and a budget management system. In 2020, Mat-cha et al. Still, there is a dearth of study on school leaders’ participation in Pakistan’s change management process, notably in Sindh province. 2017 (Bank of England) Numerous implementation problems could arise, as was already mentioned. For instance, the current study seeks to examine and learn more about the influence of change agents on the standard of education.

3. Research Methodology

The outcome of the research is significantly influenced by the methodology chosen. A quantitative study is most appropriate for the type of research if statistical data is gathered and analysed for it using tools for mathematical modelling (such as SPSS) (Denzin et al., 2006). In this case, a qualitative research approach would help in gathering and analysing respondent information and illustrations of the empirical materials used. Included in qualitative research are case studies, personal experience, introspective, life narrative, interviews, observational, historical, interactive, and visual texts to convey common and difficult occurrences and meanings in people's lives (Aspers & Corte ,2019) This study primarily examines the current implementation of (SESRP) and how it affects education in Sindh because it does not call for quantitative data, such as estimations, precise outcomes, statistics, or any other quantifiable features. Hyderabad, the country's second-largest city, and all of its surrounding areas were covered.

4. Data Gathering & data Analysis

Among the many strategies accessible to support the current research, One of the primary methods of gathering data for the study is through interview approaches. Since it offers deeper understanding of the study question, enables researchers to obtain responses, and helps the researcher to obtain additional information from the interviewees that may be useful in subsequent writing, a judgmental -structured interview method is also used.

The semi-structured interviews used for this study were conducted at a variety of Pakistani schools in the Hyderabad region, Headmasters and authorities at the level of school instructors were interviewed in September of 2021. The study did not contain any elements that were dependent on subjective interpretations. All responders were made aware of their right to privacy as well as their personal information, which included names and identification numbers. discussions and interview data were used to gather information that is a perfect reflection of the actual scenario. For doing data analysis, themes and sub-themes were created. English, Sindhi, and Urdu were the three languages used for the in-person interviews. The data came after the interviews. Data collect from the interviews were transcribed after several consecutive interviews (by way of dictation).

Table 1
The interviewed participants

School case	Tando Allahyar	Badin	Matyari	Tando Muhammad khan	Jamshoro	Hyderabad
Gender	M/F	M/F	M/F	M/F	M/F	M/F
Designation in the school	Middle level Mgt (HM) Or (ST) 1	Middle level Mgt (HM) Or (ST) 1	Middle level Mgt (HM) Or (ST) 2	Middle level Mgt (HM) Or (ST) 3	Middle level Mgt (HM) Or (ST) 1	Middle level Mgt (HM) Or (ST) 5
Experience# of years)	04 to 04 Considering that this research was based on a SESRP project					Responded# 13

4.1 *Results of data analysis using themes*

The key steps implemented by SESRP leaders to promote quality of education including building teams, time punctuality, personal examples, academic reform learning by doing, extracurricular activities, and charity, according to empirical findings of the theme analysis.

4.2 *SESRP's conception or implementation in practise*

- How do HMs see the education sector's implementation of SESRP?
- What kind of resistance, if any, do you encounter while starting and implementing SESRP inside and outside of schools?

4.3 *SESRP's level and methods of implementation*

- Which SESRP implementation strategy is employed in the education sector?
- How involved are stakeholders in the sector of education?

4.4 *Information gathering and decision-making*

- Do you think joining Global Communication will help education gain a global reputation?
- Would you like to add something this conversation that might be pertinent Is there anything else?

4.5 *Opportunities and challenges*

- Are there any barriers to SESRP operations on the basis of culture or economy?
- Do you have any other SESRP recommendations?



Figure 1: shows the theme

4.6 *Quality Education*

Being in line with ensuring quality education is another goal of SESRP in the educational sector. The Sindh government has plans in the SESRP to improve educational infrastructure, hire more skilled instructors, and promote inclusive education. According to the SESRP director, “Because the quality of government schools was not increasing, the SESRP model was implemented. Large teacher absences and a shortage of instructors for specialised subjects” the independence of schools by SESRP provides an excellent opportunity to guarantee quality Allais (2009). Despite all the fact that Primary schools give the important impression of having a higher level of quality owing to accountability, the diverse approaches to school management have resulted in a significant variance in quality. Some Primary schools perform remarkably well, while others perform averagely. Alcón (2016). This distinction has become apparent because some groups operate schools with comparative advantages (Ronfeldt et al., 2015). Less inclusivity and larger disparities in quality are caused by inadequate rules, increased competition, and standardised assessments in SESRP projects. More segregation and less collaboration are further exacerbated by present educational practises and segregated quality assurance processes (Lubienski, 2003). Many parents believe that as education becomes more commercialised and infused with economic ideals, its moral and ethical component is vanishing day by day.

4.7 *The Road to Quality Education*

All the national education policies and provincial/area education sector strategies share the common goal of providing high-quality education (ESPs). Access, quality, and governance are the main priorities of all provincial and area ESPs, with differing emphasis on each of these. (Iqbal et al., 2015). The SDG-4 is generally closely matched with the ESPs of Punjab, Sindh, and Balochistan, including those that address access, quality, and governance. Gilgit Baltistan (GB), the Federally Administered Tribal Areas (FATA), and the Islamabad Capital Territory (ICT) ESPs display a considerable amount of alignment (UNESCO, 2017). According to the NEP (2009), By establishing criteria for educational inputs, procedures, and outputs as well as institutionalizing the process of 15 levels of monitoring and evaluation, the quality of education provided at government-owned institutions must be raised (Igbaekemen & Odivwri, 2015).

Quality Assurance in Education has received considerable consideration in the NEP (2009), which includes a specific chapter on quality and its components in the education sector. The six fundamental elements that make up the majority of the policy are highlighted. (Ahmad et al., 2014). These include the curriculum, textbooks, exams, professors, the setting in which students learn, and the applicability of education to real-world situations and the job market (Alcón, 2016) The most important actions need to be taken in order to improve instructional materials and pedagogical strategies used by teachers. The greatest priority is to improve the quality of teaching in schools (Ahmed & Broor, 2014).

The quality components are the main focus of the Sindh Education Reform Project 2014–2018. The following are the SESRP’s most prominent suggested programs.

- an education project for fresh head teachers and continuous professional development (CPD) for all teachers who concentrate on reading and learning outcomes in general.
- the creation of a fresh management team to enhance governance; and
- rethinking literacy and non-formal basic education to be scaled up by reducing reliance on conventional classroom settings and increasing use of other options.
- Establishing an effective Information and Communications Infrastructure (I&CI), designing and implementing a Human Resources Management System (HRMS), and improving the monitoring system through recruiting monitors.

4.8 *Teaching and Learning*

Any school’s basic functions will always be teaching and learning, with the student as the priority. The school’s goals and objectives must be developed by the principal, who must also choose effective teaching methods (Baden & Parkes, 2013). It is required of schools to set their own internal goals and to create and carry out effective plans to achieve them

Saleem (2015). In this regard, all parties involved have distinct tasks to play in ensuring that the curriculum is implemented correctly and effectively as well as in boosting student achievement and academic performance (Choi et al., 2017). To ensure that students learn well and that the curriculum is implemented effectively, all teaching and learning activities must be appropriately designed (Xenikou, 2017).

5. Conclusion

The research was carried out as a case study in Pakistan's Sindh-based education sector, in project (SESRP) with team meetings, the starting point and necessary revisions were examined, and the information was acquired by questioning case school employees about the components in the cities of Hyderabad, in Sindh. This study concentrated on the importance of change management, and educational quality as major components of (SESRP) and how each of these components should be considered to be successful. The results showed that headmasters had worked incredibly solid to deliver outstanding education in primary schools all over the Region of Hyderabad, in the face of a variety of problems, based on the empirical evidence that was obtained, I learned. Education would suffer, and headmasters' efforts will be lost, if this project is not adequately carried out. The recommendation is based on a literature evaluation in addition to the cascading effect.

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