Responsibility Accounting and Profitability of Listed Companies in Pakistan Stock Exchange

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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 Haussmann 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-Stat=3.469, AdjR2=.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.

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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 (Horngren 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 (Adegbie 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'' lop 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. (Adegbie 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 (Adegbie 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 frim 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 uncontainable 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. Magablih (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. Maeenuddina 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 batter loot 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 Jorden, 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 Siri 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 is 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 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 Haussmann test was done to specify the best estimation between fixed impact model and random impact model followed by other required post estimation test.

Table1
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	Agriautos 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	810000000
29	Ashfaq Textile Limited	Textile Weaving	10.38	1,749,250	4.55	399,458.73
30	Khyber Tabacco 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 (COS, OPC, QR,CCC)
(2) t1 = f (n1, n2,n3,n4, r); PBT = f (COS, OPC, QR, CCC, FS)
(3) t2 = f (n1, n2,n3,n4); EPS =f (COS, OPC, QR, CCC)
(4) t2 = f (n1, n2,n3,n4 r); EPS =f (COS, OPC,QR, CCC, FS)
(5) t3= f (n1, n2,n3,n4); ROA = f (COS, OPC, QR, CCC)
(6) t3= f (n1, n2,n3,n4 r); ROA= f (COS, OPC,QR, CCC, FS)
(7) t4= f (n1, n2,n3,n4); ROE = f (COS, OPC, QR, CCC)
(8) t4= f (n1, n2,n3,n4 r); ROE= f (COS, OPC,QR, CCC, FS)

Study Model

Ist Model

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

2nd Model

$PBT_{it} = \beta_0 + \beta^1 COS_{it} + \beta^2 OPC_{it} + B^3 QR^{it} + B^4 CCC_{it} + \beta^5 FS_{it} + U_{it}$

3rd Model

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

4th Model

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

5th Model

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

6th Model

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

7th Model

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

8th Model

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

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_o)
=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) Pooled OLS regression with Cluster Errors				Model 2. (With Control) 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 Haussmann test having test value of P-value of 0.000. Results aligned with Haussmann 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)**			
Variables	**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 Haussmann 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 Haussmann 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 Haussmann test having test value of P-value of 0.000. Results aligned with Haussmann 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

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

$$EPS_{it} = 7.681 + 0.057\ COS_{it} + 0.024\ OPC_{it} - 1.884\ QR_{it} - 0.001\ CCC_{it} + U_{it}$$

4th Model

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

$$EPS_{it} = -9.412 + 0.046\ COS_{it} + 0.018\ OPC_{it} - 1.842\ QR_{it} + 0.008\ CCC_{it} + 2.393\ FS_{it} + U_{it}$$

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 Haussmann 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 Haussmann 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 Haussmann test having test value of P-value of 0.000. Results aligned with Haussmann 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	**Model 7. (Without Control Variables)**				**Model 8. (With Control Variables)**			
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)			
Haussmann 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 Haussmann 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 Haussmann 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 Haussmann test having test value of P-value of 0.050. Results aligned with Haussmann 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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