TAF

Journal of Administrative and Business Studies

JABS

2022, **8**(1): 15-28

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PRIMARY RESEARCH

# Impact of tax avoidance and resource & development outlay on financial performance of the firms from non-financial sector of Pakistan

Rosa Fitriana*

Lecturer, Universitas Bale Bandung, Indonesia

**Keywords**

Non-financial sector
Pakistan
Research and development
Tax avoidance
Financial performance

**Received:** 17 October 2021
**Accepted:** 27 December 2021
**Published:** 22 February 2022

**Abstract**

With the changing era of the world, it has become necessary for every firm to remain updated and keep on searching for how it can better satisfy the customers' needs than other firms; for this, it should be active in research and development. The goal of every firm is to reduce its costs as much as it can, and taxes are one of the highest costs due to which a firm cannot spend on many other activities. This study has focused on the impact of research and development on the financial performance of the firms along with the impact of tax avoidance on the financial performance of the firms in the firms from a non-financial sector of Pakistan. This study has explored more and tried to clarify the big question of that is there any impact of research and development on the financial performance of the firms that was answered in a mix in previous studies and also calculated the effective tax rate in another way rather than using the usual methods to pay taxes.



## INTRODUCTION

### Background of the Study

This study examines the importance of tax avoidance and research and development on the financial performance of the firms from a non-financial sector of Pakistan. Since two decades, the importance of tax avoidance and research and development has been recognized by the researchers as it has been an area of keen interest of investors and organizations. Companies are always started with the goal of profit generation. Firms are mainly divided into three types i.e., the ones which are only focused on the generation of profit; second type is government firms that are mainly focused on the welfare of people, and third type is consistent of non-profit organizations, also known as NGOs. This study is focused on the first types of firms i.e., the profit oriented firms. Shareholder's wealth is definitely increased by tax avoidance. Tax avoidance is found to be positively associated with the value of a firm (Desai & Dharmapala, 2009). Accounting earnings are considered to be the most important indicator to evaluate the performance of a firm in terms of financial performance (Francis, LaFond, Olsson, & Schipper, 2005). Taxes are imposed by the government of every country, and no firm can refuse to pay them as it is a legal requirement. But there is no doubt cost of taxes is to be considered one of the heaviest burdens on the firm. It put a major cut on the revenue generated by the firm and eventually decreased the income of the firms well as the income of shareholders and other investors. Governments are also much concerned with taxes. This study has tried to find out the real effective tax rate ETR for the firm from a non-financial sector of Pakistan in spite of the traditional ETR that is calculated by the firms.

Taxes are considered to be the main source of income for the government of every country and also a major cost for every firm (Rajgopal, Hanlon, & Shevlin, 2004). Tax avoidance can be defined as transferring the revenues from government to the shareholders legally. Many researchers have argued that the cost of the tax is paid by the owners of the firms in the form of a cut in their dividends and incomes paid to the government as per rules (Desai & Dharmapala,

*corresponding author: Rosa Fitriana

†email: Rosa.fitriana@gmail.com

2009; Rajgopal et al., 2004). Firms always try to maximize their profits by using every means. Tax avoidance is considered to be one of the most important ways to reduce the costs of the firms.

Tax avoidance can also be explained as the method to shrink the costs that are finally borne by the owners of the firms in a legal way. A successful and legal tax avoidance activity can result in an increased wealth of the shareholders and better financial performance of the firms. The amount saved from the costs of tax can be used to enhance the tangible and intangible assets of the firms (Dyreng Scott, Michelle, & Maydew Edward, 2008; Dyreng, Hanlon, & Maydew, 2010). Firms have to consider the methods and techniques they are adopting for tax avoidance. Aggressive tax avoidance can be harmful for firms in spite of providing them benefits. One of the main reason for which firms has to be more conscious is the conflict of interests between managers and owners of the firms, also known as agency theory (Dam & Scholtens, 2012; Farid et al., 2021). As managers are awarded with different kinds of incentives for generating high revenues and profits, they try to cut the maximum costs, including the huge cost of tax (Matis, Vladu, Negrea, & Sucala, 2010). Manger's main area of interest is to get more and more incentives by showing better performance via financial performance, and owners are concerned with the profits as well as with the reputation of the organization. Due to this conflict and the personal interests of the managers, managers may take aggressive tax avoidance decisions that may lead to reputational loss as well as legal actions against the firms.

There is no doubt that tax avoidance is beneficial for the firms to cut the cost of tax while remaining legal. But it is never recommended that a firm may go beyond the limits while trying to avoid taxes, as aggressive tax decisions may lead to many problems like legal actions against the firms and reputational loss (Dyreng, Hanlon, & Maydew, 2019). So this study has calculated an optimized tax rate to find that up to what extent tax avoidance will be beneficial for the firms and will not put the firm at any risk. Cheng, Liou, and Chiu (2017) concluded that using a successful and legal tax avoidance method; a firm can easily transfer wealth from the government to the shareholders and investors of the firms.

In the current era of information and technology, it has become necessary for the firms to remain up to date by every means. Every day new technologies are being introduced by firms. A firm which doesn’t put effort into adopting new innovations and inventions will not be able to compete in the competition and soon will get out of the race. Research and development have gained the importance for a firm to survive in competition. It has also gained the position of an important tool to take a competitive advantage over the competing firms. It is a defined thing that having a competition is one of the most important things in the current era. That's why, this study has included the research and development as an independent factor to assess its importance on the financial performance of the firms. Firms are taking much more important than ever in last two decades on the commitment towards making research and development to make themselves strong enough to survive and generate maximum profits (Andi, Riccardo, & Giuseppe, 2011; Gul, Ali, & Saeed, 2021). Most expenses that are made by a firm on R&D are considered to be intangible. Previous studies have also shown that firms have made research and development on tangible assets as well as on intangible assets like copy rights, patents, etc., in literature, innovation and invention are defined as two different terms.

Inventions actually represent the concept of making new products or arranging new services on the bases of the knowledge that a firm has an innovation is defined as the process of commercializing that invention by using different means (Grant & Ashford, 2008; J. Khan, Saeed, Ali, & Nisar, 2021). Research and development are used by the firms for both innovation and invention purposes.

Previous studies made on the research and development has shown a mix of results, some are in favor of making expenses on research, and some are against it. This study has explored more about this. This study is made to clarify the mixed results that either firm should go for research and development or not. The impact of research and development is most likely to be seen in the long run. The impact of research and development can be seen from a time period of a minimum of three years to a maximum of seven years (Cheng et al., 2017). According to them, the process of research and development will not show significant improvement in the performance of firm in the short run. That is why this study has taken data for five years to assess the impact of research and development on the financial performance of the firms. The outputs of the research and development activities are considered to be uncertain. It has never been confirmed that all the expenses made on research and development activity will be beneficial for the firms which are carrying it at high costs (Pandit, Wasley, & Zach, 2011). It shows that the returns made on the research and development by a firm are considered to have both positive and negative outputs. Firms should be more conscious while carrying out research and development and must go for it with proper knowledge about it.

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

Some researchers have also shown the relationship between research and development and the financial growth of the firms. (Dave, Wadhwa, Aggarwal, & Seetharaman, 2013) worked on the relationship between R&D and the financial performance of the firms on information and technology firms of the S&P 500. The said research concluded that the impact of research and development is significant on the financial performance of the firms in a positive way. The researchers concluded that the impact of R&D on the financial performance can be achieved by using the latest technologies that will be helpful in increasing the productivity of the firms as well as the sales. While another study carried out by Kotabe, Srinivasan, and Aulakh (2002) concluded that there is no significant relationship between the return on assets and research and development. Some authors concluded that firms should not make expenses on the research and development. According to them, research and development activities increase the cost of the firm more than the returns gained by these activities. Quo, Wang, and yi Shou (2004) investigated the relationship between the financial performance of the firms and research and development and concluded in a negative relationship between the above two. They concluded that all the investments made by the firm on research and development resulted adversely on the revenues of the firms.

### Research Gap

Previously researchers are made on the importance of tax avoidance and analysis of different methods used for tax avoidance. But the impact of tax avoidance in quantitative terms is rarely assessed, especially in developing countries. Research and development are also studied much in the previous research, but those researchers are mainly focused on showing the importance of research and development and done empirically mostly. This study has tried to dig out the importance of research and development in financial means. Moreover, tax avoidance and research and development are studied separately in all the previous studies. But this study has been made on the combined effect of the two. This study focuses on the importance of tax avoidance and research and development to assess their impact on financial performance in Pakistan.

### Research Objective

Objective of the current study is to find out the role of tax avoidance and research and development on the financial performance of the firms from a non-financial sector of Pakistan. This study is focused on knowing the impact of tax avoidance and R&D in financial terms. This study is done to know the effective tax rate that will help the firms to reduce their taxable income to generate more profits. Secondly, this research has used the innovation ratio to find out the impact of research and development on the financial performance of firms. So, the main objective of the research is to clarify the previous mixed results about the importance of tax avoidance and R&D to decide that either firm should go for these or not.

### Research Questions

This study has tried to answer the following questions:

**Q1:** Does tax avoidance has a positive impact on the financial performance of the firms from non-financial sector?

**Q2:** Does research and development has a positive impact on the financial performance of the firms from non-financial sector?

**Q3:** Either the firms should make efforts for tax avoidance or not, and what should be the actual effective rate for them?

**Q4:** Either the firms should make expenses on research and development or not?

### Significance of Research

This research is focused on digging out the impact of tax avoidance and research and development on the non-financial sector firms. This research is unique from previous research made in a way that combined effect of tax and avoidance and research and development are not been assessed before. Secondly, this research is done on the firms of a developing country. This research is helpful for both the business community and academia side. This research is helpful for the business community to understand the importance of tax avoidance and research and development for the growth of a business. Secondly, it explores more than up to what extent a firm should go for tax avoidance. Research and development need much investment and puts much burden of cost on the firms and they remain confused either to make this investment or not. This research is helpful for them in making a decision about it. On the academic side, due to previous studies mixed results, there is confusion about the importance of tax avoidance and research and development. This study has explored more the importance of the above two.

Secondly, this research will contribute to the literature in a way that previous researches made on the impact of research and development on the financial performance of the firm are inconclusive. Furthermore, it was needed to do research on a specified sector, that is why this study is made on non-financial sector.

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

## LITERATURE REVIEW

### Tax Avoidance

Tax avoidance can be defined as all the activities that are carried out by adopting different tools that may reduce the cost of taxes like debt shields, investment in government bonds, purchase of tax exempted bonds, etc. that may not leads to any legal risks for the firms (Dyreng Scott et al., 2008; Ullah et al., 2021). Another other definition of tax avoidance is provided by Han-Min, Pei-Hua, Hui-Kuang, and Chih-Yi (2015), according to them it is a process of transferring the wealth of government to the owners of the firm. Taxes are one of the main costs that are paid by the firms. Tax avoidance is generally considered to reduce the explicit taxes (Hanlon & Heitzman, 2010). It can also be said that it is the most disliked cost that are paid by the firms, and these are imposed by the government, so firms have to pay it to remain legal. Every firm tries to reduce its costs to much extent but it doesn't allow them to adopt such techniques which may make them illegal. A firm can reduce its taxes by adopting proper tax avoidance and it have a significant impact on the financial performance of the firm (Dyreng Scott et al., 2008).

The activity to reduce the burden of payments imposed on the organization is deemed to be tax avoidance just because the taxation is legal while making a reduction in taxes (Dyreng Scott et al., 2008). The organization may transfer its income to an investor by getting it back to the tax authorities, which can be done through tax avoidance methodology. The organization is considered the best in the stock exchange by controlling their cost by paying the reduced amount of tax or evading tax in many ways. When a firm adopts well-managed tax avoidance procedure, than the performance shows better cash flows which eventually increase the profit after tax. With the increase in profit after tax which is shown in the financial statements of the organization, attracts the shareholders to invest more and get a high return on the same (Nadeem, Saeed, & Gul, 2020).

Firms are supposed to do tax avoidance with the goal of increasing the cash flows of the firms, which positively impacts the value of the firm, and also with the goal of reducing the cost of capital that is paid by the investors (Depoers & Jérôme, 2020). Drake, Lusch, and Stekelberg (2019) concluded that tax avoidance has a positive relationship with the growth of the firms. But another research done by Hanlon and Slemrod (2009) showed a negative response from the stock market towards the firms which were using tax sheltering tools. In the same way, Lev and Nissim (2004) showed that if a firm goes for higher tax saving activities, it will have less economic growth as it will restrict itself to limited activities. Drake et al. (2019) also showed that investors of the firm do not like to take risks, especially about the reputation of the firm; that is why firms should try to manage tax avoidance at an optimum level. That thing is mainly focused in this study and has calculated the tax avoidance by using the HS method. Though tax avoidance is considered to be helpful in increasing the income level of the firms it is not free of costs. Firms have to spend an extra amount on tax avoidance like; they have to hire experts for this and also go through legal processes to challenge the taxes imposed by the government (Han-Min et al., 2015). But organizations should not exceed the limits by getting greedier for saving amounts which may lead to many other problems. This study has tried to find out the actual benefit of tax avoidance on the financial performance of the firms by deducting the costs of tax up to an optimized level.

Tax avoidance is used to reduce the cost of the firms, and it eventually increases the income of shareholders by increasing the dividend amounts paid to them. As the value of the firm increases, it increases the financial performance of the firm (Burki, Khan, & Saeed, 2020; Wilson, 2009). Some of the tax-avoiding activities and tools may benefit the firms more in the long run than in short-run, like making investments in low tax-rated things, and some give benefits in the short run, but that may increase the tax burden in the long term. So this study has taken the HS ratio into account to calculate the effective tax rate that a firm should adopt, excluding the methods that a firm may adopt for tax reduction. The amount of tax that is paid to the government by a firm is used on the welfare of people generally. So if a firm tries to steal taxes aggressively, it can lose its repute in the public, which may affect its sales and revenues (Hanlon & Heitzman, 2010; T. I. Khan, Kaewsaeng-on, & Saeed, 2019). Most of the previous studies tried to measure tax avoidance by using a general effective tax rate. This study has used the HS ratio to measure the effective tax rate for measuring the actual effective tax rate.

Tax planning is likely to be beneficial for the firms to increase their revenues by cutting down one of the main costs which are paid by the firms, and it also helps in maximizing the wealth of shareholders. But due to the concept of agency theory, which represents the main conflict between the interests of the managers and shareholders, there is always a risk of reputational loss. The compensation that is paid to the tax directors by the firms has a negative relationship with the effective tax rate, which means a higher effective rate will pay them less, and a lower effective tax rate will pay them more incentives (Ahmad & Zafar, 2018; Armstrong, Blouin, & Larcker, 2012). That is why this study has

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

not focused on the methods of tax avoidance and their evaluation but on the effective tax rate that should be adopted by the firms for tax avoidance to remain in a good reputation in the market.

**Research and Development Outlay**

The importance of research and development has gained much importance for a couple of decades. The firms are getting more interested in knowing the importance of R&D and its impact on them. In previous studies, the impact of research and development has been studied in two forms i.e. impact of research and development on the production efficiency of the firm like (Guellec & De La Potterie, 2002; Salim & Islam, 2010) and secondly its impact on the future earning of firms. But both sides remain inconclusive. Likewise, Fortune and Shelton (2014) showed that the impact of research and development on the productivity of the firms is consistent, but its impact on the profitability of the firms is uncertain. So there is a mix of results related to the research and development. The current study has analyzed the impact of research and development on the financial performance of the firm by taking past data of 5 financial years and measuring it with the help of innovation ratio to assess that either making an investment on the research and development was helpful or not.

Lu and Wang (2011) conducted a study on the Chinese firm to know the impact of research and development. They concluded that due to the high cost of research and development, the revenue of the firms was decreased. They also mentioned another reason that was inappropriate knowledge on the basis of which research and development were carried out by different firms. Another research done by Xu and Jin (2016) on Chinese firms concluded that due to research and development, firms were able to produce products more efficiently, and that increased their sales and revenues, which eventually led to the better financial performance of firms. Zhao and Xu (2013) also concluded that research and development are found beneficial for the firms to perform better in terms of financial means. The current study has tried to explore more about the impact of research and development on the financial performance of the firms to clarify the mixed results.

In the current era, the economic performance of the firms is related to the innovations as it is considered to be helpful in gaining a competitive advantage over the other firms in the race (Cheng et al., 2017). Hall and Bagchi-Sen (2007) concluded that innovations are helpful for firms to enhance their productivity and increase their sales. They also concluded that there is a positive impact of innovation on the performance of the firms. Innovations are helpful in reducing the uncertainty about customer satisfaction with the products and also increase the sales and revenues of the firms. The current study has included the innovation ratio to find the impact of research and development on the financial performance of the firms. Anagnostopoulou (2008) made an empirical research to know the correlation between the research and development and the financial performance of the firms and concluded that the correlation is positive and research and development expenses increase the return on the investments made.

Financial performance has been impacted by research and development investment which has been considered all around the globe by many authors. Variability is found in the result of the same. However, the significant value and importance of research and development in relation to performance cannot be unkempt. An organization, by making a huge investment on R&D and technological advancement, can earn a high profit (Fatima, Majeed, & Saeed, 2017; Zia, Saeed, & Khan, 2018). Nowadays, without any hesitation, innovation-based strategies are now being used instead of economic development, which eventually share modest and favorable social and economic benefits.

Different aspects like cost of the firm, HRD, goodwill, patents etc., can be experienced through R&D. By investing on R&D, an organization may get the asset which is not tangible. Various studies have been evident that the intangible asset uplifts the performance of the organization and eventually leads the firm to high points. Research and Development can also be performed on patents, copyrights, designs, etc. Organizations consider copyrights, patents, and different intangible as intellectual property, which is considered one of the lethal weapons in competing with different organizations and also helpful in earning substantial profit for the organization.

The impact of R&D on the corporate performance of the organizations are considered an important topic for both business and academic. Research and development are considered valuable by shareholders as they consider them as an investment with high payback which is confirmed through economic studies. The impact of R&D in developing countries can also be explored by the business community with the help of economic studies. Performance of the organizations has been directly impacted and correlated with Research and Development which is evident through many studies Andi et al. (2011) Many different authors analyzed that Research and development are associated with market changes indirectly affected the performance of the organizations. A company needs to compel itself towards techno-

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-8.1.3

logical advancement thoroughly, which should be the company's major priority of all the time which, enables the firm to uplift itself over their rivals and earn more profit and high returns as compared to its competitors. By keeping producing raised levels of gainfulness, a soberly quick torrent of different developments after some span of time may sanction the organization. In addition, officers and business scientists are being worried about the compelling administration of the development procedure.

Many times R&D may not get a pass. Through this, the high returns and future earnings of the organizations may be affected. There is always a risk of not getting pass in research and development due to its uncertainty in nature. Relationship between Research and Development expense and future earnings that is uncertain are positively correlated. In prior research it is also analyzed that there is always a risk of uncertainty which overcomes with R&D. With the edge of success through technological advancement and high future earnings, there is always the risk of getting failed by introducing new innovations. Research and development are directly correlated with the unpredictability of future earnings and outcomes, which is also concluded in existing literature. An organization should be very vigilant while captivating the conclusions about R&D. An organization needs to work on the same to make the right decision about R&D. Investment made on R&D may convert profit into loss in case of wrong decision which considered as future burdens on the organizations which eventually devalue the profit of the firm and also the deferred interest of the stakeholder. An organization need to be vigilant regarding the purpose and context of research and development and what are the future outcomes of the same. Whether the research and development will be fruitful or causes the burden for the organization.

Many of the studies are in agreement that R&D have always shows positive impact on the performance of the organization significantly and few of the studies found that there are many negative impacts among the above too. The previous research conclude that strength of research and development implemented by the organization are positive correlated with the performance of organization. Many researcher also concluded that growth of the organization in not just because of research and development for the period but due to many other elements identified in prior research. Comparisons of investment in research and development and investment on an asset which are not intangible are made. It has been observed that research and development can earn two or more times than the former. In the last two decades, completion in the market has now been increased to a high level. R&D takes time to show its result. Just because of this, the researcher is not in favor of high investment in research and development as its elevates the cost of the organization in the current period in which investment is made and also affects many operations of the organizations.

People from the field of business whether they are investors or other stakeholders are always interested in the economic growth of the firm. For this, investors are willing to make investments in any field which can be fruitful to enhance their earnings. Previous studies have shown that the impact of R&D is correlated with the economic growth of the firms. Researchers like Junhong and Jing (2011); Wang, Ellinger, and Wu (2013) have strongly argued that the impact of research and development is positive on the economic growth of the firms. This study has explored more on the basis of real data from firms about the impact of research and development financial performance of the firms.

## Framework

Framework of the current study is represented as follows

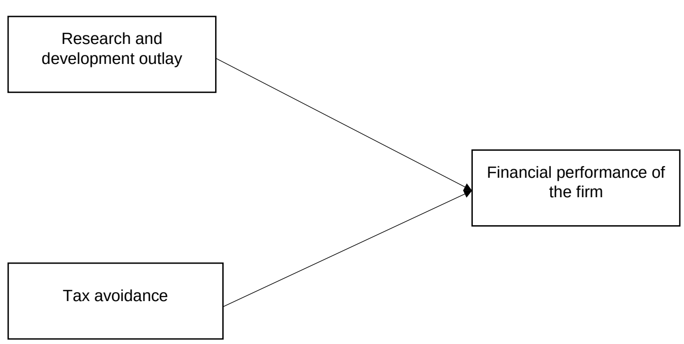


**FIGURE 1.** Theoretical framework

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

### Hypothesis

**H1:** Tax avoidance has a significant impact on the financial performance of the firm.

**H2:** Research and development outlay has a significant impact on the financial performance of the firm.

## METHODOLOGY

### Research Design

This research is designed to be secondary by nature. Quantitative data of the selected firms is used to explore the impact of tax avoidance and research and development on the financial performance of the firms from non-financial sector of Pakistan. Mainly data was taken from the website of the Pakistan stock exchange and the websites of the selected firms. Balance sheets and other financial statements like cash flows etc., were used to gather the required data for the research. Where data was not available, requests were sent via email to the finance-related personnel of the firms. The purpose of the research is to explore the impact of tax avoidance and research and development on the financial performance of the firms.

### Time Horizon

Time of approximately two months was required to complete this research work and for data collection of the firms. As the data was collected from 50 firms from the non-financial sector was required, and all the data was not available on the internet, that is why time was taken more than two months as response to the emails sent was received a bit late than the expected one.

### Population

Population of the research is all the firm from non-financial sector of Pakistan. For this the firms which are registered with Pakistan stock exchange are considered to be the main population for this research work while all other firms from non-financial sector of Pakistan are also included in the population of the research

### Sample Size

50 firms are taken as a sample from the population. Data from the 50 firms was collected and used for the research work.

### Sampling Technique

Non-probability convenient sampling technique was used for the selection of samples. This means out of all the firms, the firms which have more data available on the internet and which also responded to the emails were chosen finally for the research work.

### Data Collection

Data were mainly collected by using internet sources that included the different websites like a website of the Pakistan Stock Exchange and 50 websites of the selected firms. Balance sheets, cash flow statements, and statement of comprehensive income (previously named profit and loss statement) were analyzed for data collection. A time period of 2013 – 2017 is chosen for the data collection period.

### Data Analysis Techniques

As the data analysis is done on the basis of a regression equation, SPSS is used as the base software to calculate the results. Regression tables, tables of correlation, and ANOVA tables are drawn from SPSS. While other calculations are made on simple mathematics rules, and Microsoft excel has been used for making the data and making calculations in tabular form. Regression analysis and table of correlations are used to know the depth of the relationship between independent and dependent variables and the nature of relationship between them whether it is positive or negative.

#### *Tax avoidance*

It was quite difficult to know the actual tax avoidance in a monetary term as no firm is willing to show how much tax it has actually avoided by using different means. This study is based on the calculation that has been made on the basis of the HS formula. This study has calculated an effective tax rate that a firm should actually pay by making its taxable income low than the actual income. It can be further explained as let's suppose the tax rate imposed by the government is 35%, and no firm can pay tax less than 35%, and an effective tax rate that is calculated by the HS formula is 28%. This 28% shows that a firm should reduce its taxable income by a % so that after paying 35% on the new taxable income, the actually paid tax on the real taxable income should be 28%. For the measurement of tax avoidance, this study has used the HS formula that was introduced in existing literature to calculate the effective tax rate that should be paid by a firm to maintain its growth and increase its revenues in spite of general tax rate that is imposed by the government of every country. In this study, the initially effective rate has been calculated by the HS formula, and then the impact of this rate has been used in the regression ratio to assess its impact on the revenues and profit of the firms. , The formula of the HS method is given below;

$$\text{HS} = \frac{\text{Tax} - (\tau \text{x Pretax})}{\text{MVE}}$$

MVE represents the real value of equity at present, and the income before tax is calculated by the upper portion of the

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

ratio i.e., Tax $-(\tau$x Pretax $)$, which actually represents the income that a firm should express.

***Research and development outlay***

For the calculation related to the impact of R&D, this study has used the innovation ratio. This has been adopted from the previous study, who concluded that the innovation ratio can be used for the measurement of research and development and proposed the following formula in it.

Innovation ratio = Income before income tax / R&D expenses made by the firms

**Regression Equation**

$$\mathrm{FP}=\beta 0+\beta 1 \mathrm{TA}+\beta 2 \mathrm{RDO}+\mu \mathrm{o}$$

Whereas;

FP = Financial performance of the firm

TA = Tax Avoidance

RDO = Research and Development Outlay

## DATA ANALYSIS

### Correlation Analysis

This analysis is done for the purpose of knowing the depth of the relationship between the selected independent and dependent variables in statistics. This test is used in quantitative research where the data of the variables are available in quantitative values. Correlation explains the systematic changes caused in the dependent variable by the independent variable for a specific period of time. The nature of the relationship examined by the correlation is natural it is not due to the different treatments of the researchers. It explores the already made relationship between the variables; a researcher cannot make or deny a relationship between the variables itself with the help of correlation. If the results extracted from correlations show strong values, it shows that the relationship between the two variables is strong; otherwise, the relationship is not strong. The values of correlation fall from -1 to +1. As -1 shows a negative value, so it means that this test also check the nature of the relationship between the variables i.e., whether it is positive or negative. If the value of the results is a negative, it shows a negative relationship between the variables, which means if the value of one variable increases, it will cause a decrease in the value of another variable on the other side of the value of one variable is decreased it will cause an increase in the value of other variables.

In statistics, if the value of correlation falls around 0.8, either negative or positive, it is considered a strong relationship. If the value of the results is around 0.8 it means there is a strong positive relationship, and if the value falls around -0.8, it means the relationship is negatively strong. For example, if the results of correlation calculated are .79, it represents that 79% of changes are caused by the independent variables is the examined relationship between the dependent and independent variables. The reaming 21% are caused by the other factors that are not included by the researchers. The values of correlation are normally examined by the values of *r* and *r*-square, as the square of r makes it easier to understand the values. To examine the possibility of choosing the wrong samples for the research, the level of significance is used that shows the possibility of sampling error. It is considered helpful in knowing the possibility of the relationship between the selected variables. There is a misconception about the correlation i.e. this test is used to know the cause and effect relationship between the variables, while this test explaining the existence of the relationship and the depth of the relationship between the variables finding out the cause and effects are not included in this test. As the aim of the study is to focus on the impact of tax avoidance and research and outlay on the financial performance of the firms that were chosen from the listed companies of the Pakistan stock exchange under the head of the non-financial sector, there are three variables involved in it i.e., the financial performance of the firms as a dependent variable and other two tax avoidance and research and development outlay as independent variables. Pearson correlation is used to assess the depth and nature of the relationship between the variables in this study. Results have sown a positive relationship between the independent and dependent variables. This shows that the impact of tax avoidance and research and development outlay on the financial performance of the firm is positive, which can also be explained as these two can enhance the financial performance of the firms.

**TABLE 1.** Correlation

| | Financial Performance | R&D | Tax Avoidance |
|---|---|---|---|
| Pearson Correlation | 1 | .793** | .861** |
| Financial Performance Sig(2-tailed) | 0.000 | 0.000 | 0.000 |
| *N* | 50 | 50 | 50 |

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

Table 1. Continue....

| | Financial Performance | R&D | Tax Avoidance |
|---|---|---|---|
| Pearson Correlation | .793** | 1 | .509** |
| R&D Sig(2-tailed) | 0.000 | 0.000 | 0.000 |
| *N* | 50 | 50 | 50 |
| Pearson Correlation | .861** | .509** | 1 |
| Tax Avoidance Sig(2-tailed) | 0.000 | 0.000 | 0.000 |
| *N* | 50 | 50 | 50 |

The above given correlation explains the nature and the depth of the relationship between financial performance and tax avoidance and between financial performance and research and development. From the above table, it can be seen that the correlation between financial performance and tax avoidance is .861**, which shows a strong relationship between the two. ** here shows that level of significance here is 99%, which means there is only 1% chance of sampling error. The value .861** shows that there is a strong positive relationship between the tax avoidance and financial performance. The value .861is greater than .8, which is considered as best in correlation. It shows that 86% of changes in the financial performance based on the given data is due to tax avoidance, and the remaining 14% is due to unknown factors which are not included in the research. As the value is positive, it means the relationship is positive, and an increase in tax avoidance will increase the financial performance of the company.

The value of correlation between the financial performance and research and development is .793** at 99% level of significance. That means the impact of research and development on the financial performance is positive, that can also be stated as the research and development will enhance the financial performance of the firm. The value .793 is near to .8, which is considered a strong relationship in statistics. It means that 79% of changes in the dependent variable are due to research and development; the remaining 21% changes are due to the factors which are not included in the research and due to some unknown factors.

## Regression Analysis

The earliest use of regression that is found in history was made by Legendre in 1805, and after him, it was used by Gauss in 1809 by using the method of least square. This test is consist of four terms, including dependent variable, which is affected by the other factors and for which the test is run mainly, independent variable, the one which cause-effect in the dependent variable, and the error term, which represents the factors not included in the research by the researcher but they have an impact on the dependent variable and term is unknown parameters. In statistics, the regression test is also based on some assumptions like the data is error-free, the sample size is enough for the study, the residuals of the research are taken as constants, etc. Regression is considered to be the most widely used test in statistics to know the impact of an independent variable on the dependent variable.

The variable which is causing changes in the other variable is named as an independent variable and the variable in which changes are caused by the independent variable is known as a dependent variable. This test is used to know the level of impact caused by independent variable on the dependent variable. It is helpful in understanding the relationship between two variables, and researchers use it in the decision-making process. Like in the current study, the results of regression will not only explore more about the relationship between independent and dependent variables, but it will also be helpful for the firms to understand and make a decision about investing in the tax avoidance and research and development. The results of this test can be used in making final decisions related to the making expenses on research and development and tax avoidance by considering it beneficial or not.

**TABLE 2.** Model summary

| Model | *R* | *R*-Square | Adjusted *R*-Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .865$^a$ | .743 | .740 | .2663 |

a. Predictors: Research and development outlay

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

The above given table represents the regression results of research and development outlay over the financial performance of the firms. The value of $R$ square if .740 which means this the selected variable represents the 74% changes in the dependent variable. This means that 74% of changes in the performance of the firm are due to the research and development made by the firm, which means, according to this study, it can be concluded that the impact of research and development is positive and highly effective in enhancing the financial performance of the firm

**TABLE 3.** ANOVA

| Model | Sum of Squares | Mean Square | $F$ | Sig |
|---|---|---|---|---|
| 1 Regression | 56.234 | 56.234 | 639.807 | .000b |
| Residual | 17.785 | .079 | | |
| Total | 74.019 | | | |

a. Dependent Variable: Financial performance

b. Predictors: Constants, research and development outlay

The values of the tables show the fitness of the model and especially as the value of $F$ is so high and the value under the sig head is .000, which means it is less than 1%, so regression models fit here.

**TABLE 4.** Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | $t$ | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 0.235 | 0.126 | 0.787 | 4.768 | 0.000 |
| Research and development outlay | 0.854 | 0.37 | | 49.74 | |

a. Dependent variable: Financial performance

The value of beta is used to measure the ratio of changes that will occur in the dependent variable if one unit change is made in the dependent variable. If the value of the beta occurs in positive, this means that one unit increase in the independent variable will cause an increase in the dependent variable and vice-versa, but if the value of beta occurs in a negative, it shows that there is a negative relationship between the two like one unit increase in the independent variable will cause a decrease in the dependent variable. From the above given table, the value of beta is .787 which means if one unit increase is made in research and development, it will cause .787 units to increase in the financial performance of the firms.

**TABLE 5.** Model summary

| Model | $R$ | $R$-Square | Adjusted $R$-Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .879$^{a}$ | .772 | .770 | .2953 |

a. Predictors: Tax avoidance

The above given tables show that approximately 78% of the changes are caused by the independent variable i.e., tax avoidance in the dependent variable, i.e., financial performance. The values of $F$ test and $P$ values given in the following table show fitness of the model.

**TABLE 6.** ANOVA

| Model | Sum of Squares | Mean Square | $F$ | Sig |
|---|---|---|---|---|
| 1 Regression | 58.117 | 58.117 | 836.675 | .000$^{b}$ |
| Residual | 16.978 | .079 | | |
| Total | 75.079 | | | |

a. Dependent Variable: Financial performance

b. Predictors: Constants, Tax avoidance

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-8.1.3

**TABLE 7.** Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 0.298 | 0.146 | 0.927 | 3.973 | 0.000 |
| Tax avoidance | 0.963 | 0.37 | | 48.87 | |

a. Dependent variable: Financial performance

The above give table shows that the value of beta is again positive i.e., .927, which means that there is positive changes caused in the financial performance by the tax avoidance. It can be explained like this the value .927 shows that when one unit change is made in tax avoidance, it will cause .927 units to change in the financial performance of the firm.

## DISCUSSION

First of all, the table of correlations will be discussed here. First of all, the table of correlations shows that the relationship between the research and development is strong enough as the value of correlation between the above-mentioned two is .791, which means that there is a strong correlation between the variables. That is the answer to research question that research and development have an impact on the financial performance of the firm. This means that the relationship between research and development occurs, and the relationship is deep enough and positive. This also helps to conclude that from the previous studies as, a mix was found related to the positive and negative impact of research and development on the financial performance. From the selected data, it has been shown that the relationship is of positive nature, and the opinion of the previous researchers who had claimed that there is no connection between the R&D and financial performance of the firms is rejected as the statistical results show that the relationship exists between the above mentioned two.

Same is the case with tax avoidance. The value of correlation between the financial performance and this variable is .861 which means the relationship between these two is also positive and strong enough. From here, it can be concluded that the impact of tax avoidance occurs on the financial performance of the firms. One reason is that the cost of taxes is so heavy that it puts a major cut on the income of the firms and all the stakeholders. So the last question of the research is also answered that tax avoidance is beneficial for the firms and the point of the researchers who argued that there is no impact of tax avoidance on the financial performance of the firms and firms should not go for it. In contrast, the present study that is made on the 50 firms clarifies that the impact of the tax avoidance on the financial performance of the firms is significantly positive, and it can enhance the financial performance of the firms.

## CONCLUSION AND IMPLICATIONS

From the results of the study, there is no doubt that the impact of research and development made by any firm is significant on growth and performance. Secondly, the activity of tax avoidance is also beneficial for the firms. If a successful tax avoidance policy is adopted by the firm, it will easily increase its income, and the results will be positive.

This study highly recommends that a firm should go for research and development as it will increase the sales and revenues of the firm but also recommends that the firm should go for research and development with complete knowledge of its need for research and development; otherwise, research and development carried out in the wrong will not be fruitful, and in spite of understanding the reason of its failure, simply research and development will be blamed. In the present time, it can also be said as the era of technology. Each day new products are launched, or new features of the already produced products are launched. The firms which are just providing services even go for the newer technologies, software, and techniques to satisfy their customers and clients. So in such an era, how a firm can survive if it is not going for research and development. For a firm, it has become critically important to adopt changes and go for research and development if it wants to have a competitive advantage and want to remain in the competition; otherwise, the other firms will gain an advantage over it, and its products and services will be out of market soon. Research and development are supposed to be one of the most costly activities that are carried on by any firm. A lot of money is required to carry on this activity as many instruments, and human resources are required for it. In this case, first of all, the manager of the firm should try to make the investors and other stakeholders make understand that this activity is important for the firm. Secondly, the investment made in the research and development will increase the revenues of the firms. This activity is considered one of the most critical activities, as one mistake in understanding the real need and conducting it in a wrong way will simply lead to the loss of heavy amounts that firm are going to invest in it. So there is

**ISSN:** 2414-309X
**DOI:**https://doi.org/10.20474/jabs-8.1.3

no doubt that research and development should be carried out, but it should be carried out very carefully and after understanding its real needs of it. If a firm goes for R&D without having the knowledge of what actually they are going to conduct, it will not be favorable for the firm as it will not only cost a heavy amount to the firm but as well as it will be considered a failure by the stakeholders and may annoy the investors of the firm too.

The second recommendation of the study is about tax avoidance. Taxes are always considered one of the highest costs that a firm is supposed to pay. As the taxes are always imposed by the governments, so these are a must-pay amount; otherwise, the firm will be liable for the legal action by the government authorities and will lose its reputation in the society too, that will also cost a decrease in the sales and revenues. A firm can also use taxes to make its repute in the society as the amount collected by the Govt. from taxes in normally used on the welfare of the general public, and when a firm shows that it is paying proper taxes, people like to deal with such firms more than the firms with the tag of tax thieves. There is no doubt that the firms should go for tax avoidance as it cuts off the cost of the firms, but a recommendation of the study is tax avoidance should not be aggressive, and it must be practiced in a way that no question should arise on the firm either in a reputational way or legal way. This study has adopted the HS method to calculate the effective tax rate for the organization and found it effective. This rate is the optimum tax avoidance rate that will reduce the tax cost to much extent and will not cost any reputational loss to the firm.

Another main advantage of tax avoidance is that the amount that a firm saves from adopting the legal ways of tax avoidance can be used for many other purposes that will also enhance the performance of the firm, which will eventually lead to the better revenues like the amount saved from the taxes can be used on the purchase of latest technologies, it can be used for the research and development activities, or it can be spent on the welfare of employees which motivates them and make them more committed to the firm. So, according to this research work, a firm should not hesitate to spend money on research and development and tax avoidance. Secondly, a firm should go for tax avoidance but in an optimum way so that tax avoidance remains beneficial in spite of creating problems for the firm such as reputational loss.

**Practical Implications**

This study is helpful for the business community as it helps in understanding the importance of tax avoidance, effective tax rates, and research and development on the financial performance of the firms. Every firm always remains concerned about making expenses as the main goal of the firms is to generate maximum profits. This study id helpful for them in making decisions about making expenses on the research and development and tax avoidance and also understanding up to which level a firm should go for tax avoidance. As the current ear is of technology and every day new technologies are introduced and adopted by the firms. This study is helpful in making the firm understand the importance of research and development to enhance the performance of the business. Firms always keep on thinking that the investment they are making in any field shouldn't cost them adversely and it should pay them. This study has clarified that the investment made in the research and development will not make any loss to the company, and it will pay them back in many ways like by increasing their productivity, increasing their sales, and providing them a chance to get a competitive advantage over the other firms.

Secondly, tax avoidance is always favorable for firms. This study is helpful in making them understand that they should not get aggressive while going for tax avoidance and it has provided them a way to calculate the optimized effective tax rate that will decrease their cost of tax and will not make them questionable legally and in the eyes of their customers.

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**DOI:**https://doi.org/10.20474/jabs-8.1.3