BMIJ
ISSN: 2148-2586

bmij (2021) 9 (1):295-306
doi: https://doi.org/10.15295/bmij.v9i1.1789

**Research Article**

# Impact of corporate insider on insider trading: Evidence from Pakistan stock exchange

## İçeriden öğrenenlerin ticaretinde şirket içerisinden bilginin etkisi: Pakistan borsasından kanıtlar

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**Abstract**

The purpose of this study is to investigate the impact of a corporate insider on insider trading in Pakistan. For this purpose, 30 top firms will be extracted from 540 Listed Firms on Pakistan Stock Exchange, and their data from the last five years will be used in this study. This research will measure the variables by the method of Logit Regression Analysis. The result shows that Directors' ownership has optimistic and Audit firms hurt insider trading, whereas the remaining four variables had no impact on insider trading. This research is just limited to Pakistan's listed firms with limited variables and restricted sample size.

**Keywords:** Corporate Insiders, Insider Trading, Director's Ownership

**Jel Codes:** M52, M31, E24

**Submitted:** 25/01/2021

**Revised:** 12/03/2021

**Accepted:** 20/03/2021

**Online Published:** 25/03/2021

**Öz**

Bu çalışmanın amacı, Pakistan'da içeriden öğrenenlerin ticareti üzerindeki kurumsal içeriden birinin etkisini incelemektir. Bu amaçla Pakistan Menkul Kıymetler Borsası'nda 540 Kote Edilmiş Firmadan 30 büyük firma çıkarılacak ve son beş yıldaki verileri bu çalışmada kullanılacaktır. Bu araştırma, değişkenleri Logit Regresyon Analizi yöntemiyle ölçecektir. Sonuç, Direktörlerin mülkiyetinin iyimser olduğunu ve Denetim firmalarının içeriden bilgi ticaretine zarar verdiğini, geri kalan dört değişkenin içeriden öğrenenlerin ticareti üzerinde hiçbir etkisi olmadığını göstermektedir. Bu araştırma, Pakistan'ın sınırlı değişkenlere ve kısıtlı örneklem büyüklüğüne sahip borsada kayıtlı firmalarıyla sınırlıdır.

**Anahtar Kelimeler:** İçeriden Öğrenenler, İçeriden Öğrenenlerin Ticareti, Yönetim Kurulu Sahipliği

**JEL Kodları:** M52, M31, E24

**Citation:** Rao, B., Impact of corporate insider on insider trading: Evidence from Pakistan stock exchange, bmij (2021) 9 (1): 295-306, doi: https://doi.org/10.15295/bmij.v9i1.1789

## Introduction

### Overview

Arose and identified in the Early 1900s, Insider Trading or Rigged Market falls into the extreme category of Efficient Market Hypothesis, which incorporates abnormal changes in current stock prices due to excessive buying and selling of shares of a firm to access to its public and private financial information. The information is manipulated and tampered with as per the prospects of the company or individual. The upshot of this insider activity results in abnormal returns to the investors and owners that are tentative and wade off soon and does not reflect the firm's earnings. Insider trading is illegal because it is not translucent and overlooks the interests of shareholders. It can be carried out by any person inside the organization ranging from a manager to a CEO.

Corporate insiders include anyone on a higher hierarchy, like a senior officer, director or CEO of a firm, who have undeviating immediate information about a firm's standing. Anyone titled as Corporate Insider is bound to follow the stringent obligations of the Security and Exchange Commission (SEC) laws of the respective company. These people inside the company are most likely to fluctuate the share price by unscheduled buying and selling of stocks, and the change is drastic because they possess a large chunk of the company's shares. Other coveted gears can be Institutional ownership in a firm, block shareholders, firm size, external auditors ranking and leverage, or a firm's debt level.

Prior research has proved a significant relationship between private information access to corporate insiders and the Abnormal return on insider trading. Morris and Boubacar (2018) findings extrapolate that insiders gain more and abnormal returns on their investments than outsiders or the public. Arif et al. (2018) extrapolate that firms getting their audit done by some moderate or low-level audit firms are most likely to get the audit findings sooner and are likely to tamper with them for their gain.

Berkman et al. (2018) found that institutional insiders like brokers, agents, or funds managers earn higher return due to private information leakage. Wasiuzzaman and Lim (2017) extrapolate a negative relationship between institutional investors and their facilitation to reduce insider trading.

As discussed earlier, in the case of DAWH and CYAN, it was identified that the directors of DAWH are the CEO and directors of CYAN and had prior knowledge of switching the nature of business of CYAN from insurance to investment. They interfered with confidential information by selling CYAN shares before the announcement (SECP, 2013).

### Problem statement

There are abundant lawsuits and models established to identify insider activity in the world's financial sectors as they are highly supervised by the regulatory authorities and are easy to observe by the general audience as well that may be effective or ineffective (Dalko & Wang,2016). However, this is not true in the case of the Pakistan Stock Exchange. A case was registered back in 2013 by the SECP regarding insider trading in a conglomerate firm's associated company named Dawood Hercules Corporation Limited (DAWH) and CYAN which was investigated regarding unannounced selling of 800,000 and 500,000 shares in the year 2011 and 2012. The company was sued and charged a penalty of Rs. 1,000,000 (SECP, 2013). The preceding paradigm explains one variable of a corporate insider, i.e. Director's ownership and insider trading. Numerous other variables can be considered to fortify and facilitate the regulatory authorities to identify the manifestation of insider trading in the stock exchange and individual firms. Similarly, in the year 2018, approximately 4 cases, and in the year 2017, approximately 11 cases of insider trading have been filed by SECP in a court of Pakistan (Mobin, 2017).

The chances of insider trading inside the Pakistan stock Exchange are high because no or less research and regulations have been established to address this issue in Pakistan or any other part of the world. Pakistan's service industry is vast and contributes approximately 52% to Pakistan's GDP. Overlooking the insider's actions of this industry can have a hugely adverse effect on the economy and shareholders. Therefore, a model needs to be developed to overcome insider trading and secure the shareholder's interest in the Pakistan Stock Exchange. Relying on just two variables of volume and share price as an indicator of Insider trading by corporate insiders is not ample. This study will be dealing with the intrusion of top hierarchy, firm size, institutional involvement, and the ranking of audit firms through which these listed firms in the Pakistan Stock Exchange are being audited.

### Research question

Based on the above-mentioned past reviews of researchers and present issues faced within the system of Pakistan Stock Exchange regarding insider trading by the corporate insider, we have identified the following question that will be profoundly discussed and answered in this research;

***What is the impact of Corporate Insider on Insider Trading?***

**Objective**

This study contributes an in-depth insight into how insider trading works and who are the major players of this activity in the Pakistan Stock Exchange. Previously, most of the research has been carried out in Pakistan's financial sectors, where this study intends to prove that this activity can happen in any Publically Listed firm, regardless of the industry. Some novel variables identified are the leverage ratio and block shareholders and their impact on insider trading in abnormal returns and unscheduled announcements. Moreover, past researchers have not worked on multiple corporate insiders' components or have failed to link the variables to the issue.

**Significance of the study**

The information from this research will assist future researchers, financial institutions and decision-makers to incorporate new laws for these variables of Insider trading and the public to see if there is any significant difference in their and insider's returns at a specific point time. It will also allow the small investors to know who can cause the insider trading and how they can secure their interest.

**Definitions**

**Insider trading**

When an insider trades within his own corporation's shares while possessing sensitive and confidential information, which is non-public, it is said to have involved in insider trading activity (Gulber, 2017).

**Corporate insider**

People inside the organization, including officers, directors, and other constructive owners, have more than 10% ownership of their shares.

## Literature review

Numerous researches have been done in the past on insider trading and change in stock price and volume. One of the analysis extrapolates that a high concentration of ownership in the upper hierarchy found a negative relationship between the buying and selling of shares and future stock returns. The resultant change in stock price is explicitly driven by the directors and their ownership concentration, who may or may not intend to earn a profit on investment (Chronopoulos et al., 2018).

Auditing firms play a crucial role in the firm's probability of getting involved in insider trading. Corporate insiders like directors or CEOs of a company are closest to the auditors' information and receive them before any public entity. There are higher chances that insiders can take benefit of the data. The information is exploited but disappears before disclosing audit opinion to public, yet no reaction from the capital market is recorded around the audit report date (Arif et al., 2018).

Likewise, institutional owners like insurance companies or other firms holding a firm's shares also have private information, which they manipulate and change as per their profit. Berkman et al. (2018) extrapolate that brokers, financial analyst and manager purchase and trade for their account, and whenever they do so for extra gain, they beat the retail investors. Their ability to outperform the rest of the market improves when they work in collaboration with financial experts. Researchers also found consistency in block traders' actions from foreign and local institutions, revised recommendations from the analyst as in expert trading.

Directors are responsible for maximizing firm and shareholder wealth while keeping their interests aside. Intimate to sensitive information, directors of acquiring firms, while knowing the possibility of augmentation of the acquiring firm's stock price before any fundamentals and public announcement, buy the shares and sell them off after the acquisition. The same goes for the leakage of information regarding a company's adverse prospects; directors tend to sell off the shares before any public announcement (Hossain et al., 2016).

Davis et al. (2017) recognized that corporate insiders use leaked information regarding a firm's lawsuit and take actions to buy and sell their shares as per news of the settlement. This is the time when these insiders accumulate greater returns, while after the announcement, outsiders agonize.

Institutional investors who can act as block shareholders and primarily responsible for diminishing insider trading are inclusive in insider trading in most cases. (Wasiuzzaman & Lim, 2017). Bricker and Markarian (2015) stated that institutional shareholders follow the best practices of Corporate Governance and hinder the chances of any insider activity and keep up the best quality of internal control for a firm.

Moreover, insiders of a firm gain abnormal returns on their investment due to misuse of information before the press release. This specifically happens before the news update, such as major merger and acquisition, projects commencement, assets disposal, change in financial structures while the insiders are moving towards increased leverage. Interestingly, increased leverage is only available to the peopl at the top of the hierarchy, involved in the purchase or sell the shares to get better returns than others (Morris & Boubacar, 2018).

Insiders cannot always play a hunch on getting more returns by exploiting the information; they need to be vigilant while using the adverse information rather than using the positive information, as positive information consequences, in most of the cases are anticipated, while damaging information exploitation can take any direction at the last moment (Lee et al., 2014).

A renowned investor quoted that insiders sell their shares in the market due to any possible reason to raise cash, reduce the risk affiliated with the ownership, and have fewer lawsuits against it. On the contrary, insiders buy shares at the time of reduced share price due to one reason, that is the leaked information about augmentation of price in future due to reasons accessible to the insiders only. Gao et al. (2015) stated that insider sales are more bounded with litigation than purchases, specifically before dropping share price with the announcement.

Future opportunistic actions can be identified with the insiders earning before the quarterly fundamentals public announcements. If fundamentals have shown lower profits, and insiders wealth has increased drastically around the quarter announcement date, there is a high possibility that insider trading has happened in the firm (Ali & Hirshleifer, 2017).

Davis et al. (2017) identified the fact insiders' act according to the lawsuit and settlement news, specifically when they have advance knowledge of such announcements before the general public. The researchers identified that in case of settlement news, which is the good news for the firm, corporate insiders act as a net purchaser before the announcement and in case of bad news, i.e. under any lawsuit, and they become the seller of the securities.

The trading information in supervised firms, sometimes, is also provided to the institutions responsible for monitoring the actions, which are the regulatory authorities. Most of the times, the regulatory authorities possess such information that is inaccessible to the company itself. This is when institutional owners and authorities show insider trading signals and earn more return than the insiders. Similarly, corrupted or less stringent regulatory authorities encourage more insider trading that can count up to billions of dollar annually (Reeb et al., 2014).

Some researchers also worked on the motives that cause corporate insiders to trade illegally. Spaic et al. (2019) explained that most of the culprits, either in the civil or criminal case of insider trading told that their main reason to use the confidential information was to gain better result than outsiders. The manipulation of information was limited to the culprit, but he/she passed the information to their kin, colleagues and other people in a close social circle.

The stock exchange plays on anticipation. The real intimators to the sensitive information after the CEOs and the directors. However, they act only as per received data in the form of fundamental, news or law and order situation. As Jain and Sunderman (2014) identified, the prices of stock fluctuate before the merger announcement in the stock exchange. The information reaches stock exchange brokers, who buy or sell shares for augmentation in profit or avoid future loss due to the merger announcement in the market.

Gupta (2015) identified the impact of block shareholders on insider trading and concluded that block shareholders gain abnormal returns on their investment and are more likely to augment the stock price, which is highest in 41 days' window before the announcement date.

**Research hypotheses**

After reviewing the past literature, it is evident that there are certain variables responsible for insider trading that leads to the following hypothesis;

**$H_1$**: There is a significant impact of directors' ownership on insider trading.

**$H_2$**: There is a significant impact of institutional ownership on insider trading.

**$H_3$**: There is a significant impact of block shareholder on insider trading.

**$H_4$**: There is a significant impact on audit firms on insider trading.

**$H_5$**: There is a significant impact of Leverage on insider trading.

**$H_6$**: There is a significant impact of Firm size on insider trading.

## Research methods

**Sources of data collection**

For our research, secondary data has been extracted from top firms on Pakistan Stock Exchange whose data is effortlessly available on their websites and financial reports. Other relatable data has been extracted from the Security and Exchange Commission (SECP) website, SCS trade and Pakistan Stock Exchange (PSX) websites.

**Research approach**

The data is virtuously quantitative in the form of ratios, absolute and dichotomous values where required. The quantitative studies are used to numerically establish the correlation between research variables (Faizan & Haque, 2019; Ślusarczyk & Haque, 2019; Gusakov, Haque, & Jogia, 2020; Haque, Sher, & Urbański, 2020; Haque, Yamoah, & Sroka, 2020; Kot, Haque, & Baloch, 2020; Rahman et al., 2020; Ślusarczyk et al., 2020; Urbański, & Haque, 2020). The approach will be deductive, where we will be testing specific hypotheses and conclude.

**Research design**

This study will be using a Causal-Effect Research design. The rationale behind this research design is that this study will be analyzing the variation caused in Insider trading (effect) due to variation in independent variables, i.e. causes. This research needs its hypothesis to be answered, which can only be addressed by this research design.

**Sample size**

The population of this study is the listed firms on PSX, and the sample has been drawn in the form of top 30 firms (whose data is readily available on their website and financial report) from a total of 540 listed firms (5.5% of the population) with their data of last five years, i.e. from the year 2015 to the year 2019 making the sample size of 150. The rationale behind opting for this sample is that firms listed on PSX are publicly registered and have internal and external (public) shareholders that can help measure the existence of insider trading if any.

**Statistical technique**

To find the impact of a corporate insider on insider trading in the Pakistan Stock Exchange, Logit Regression Analysis has been used in our research. This will consider the insider activities in the last five years in the opted firms to determine the abnormal fluctuations in price followed by scheduled and unscheduled announcements.

**Research model development**

This research model has been derived from Morris and Boubacar (2018) abnormal return study, where they used different explanatory variables in different country and sectors. Based on past researches and requirement of the present with the help of hypothesis, our research model takes the following form;

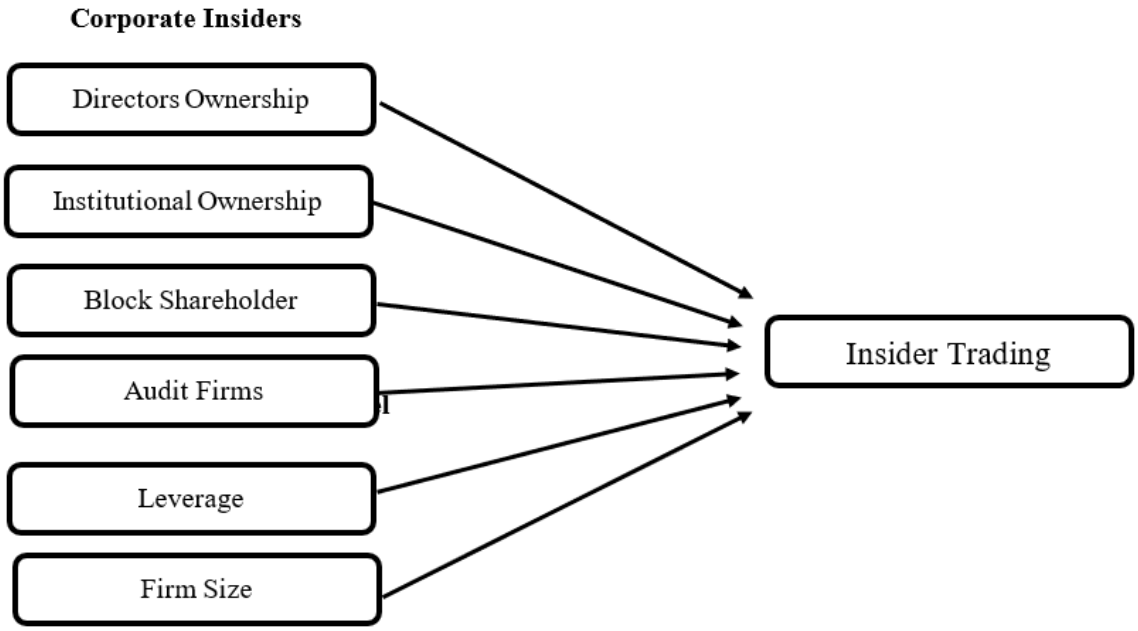


**Figure 1:** Conceptual framework – Own Illustration

**Logit regression model**

Our variables can be written in the form of a logit Regression Model as

$$Prob\ (\text{INSIDER}) = \frac{e^{(a + \beta_1 DIR\_OWN + \beta_2\ INS\_OWN + \beta_3\ BLOCK\_SH + \beta_4\ AUDIT\_F + \beta_5\ LEVER + \beta_6\ FIRMS)}}{1+e^{(a + \beta_1 DIR\_OWN + \beta_2\ INS\_OWN + \beta_3\ BLOCK\_SH + \beta_4\ AUDIT\_F + \beta_5\ LEVER + \beta_6\ FIRMS)}}$$

This model will ratify the presence of insider trading using the same independent variables. Here, Insider trading is measured in terms of Scheduled announcement denoted by 0 and Unscheduled announcement denoted by 1, a binary data, verifying the logit model.

**Dependent variable**

This study has opted for insider trading as our dependent variable, which cannot be measured unaccompanied. It is measured through Unscheduled or scheduled announcements.

**Insider trading**

The same data of independent variables will be used to identify whether any scheduled or unscheduled announcement has been made soon after the fluctuation using the logistic regression analysis (Morris & Boubacar, 2018).

| Dependent Variable | Notation | Measurement |
|---|---|---|
| Insider Trading | IT | Scheduled (0) and Unscheduled Announcement (1) |

**Explanatory variables**

Like Dependent, Corporate insiders cannot be determined by themselves; it has specific determinants linked to it that measure Corporate insiders' activity (Wasiuzzaman & Lim, 2017, and Morris & Boubacar, 2018). The control variables opted for this study to measure insider trading are director ownership, institutional ownership, block shareholder, audit firms, firm size, and firm leverage.

**Directors ownership**

This information is available on the firm's websites and financial statements in the pattern of shareholding section. It determines the ratio of shares owned by the upper hierarchy, and there is the probability of Insider trading if the ratio is greater than 0% of total shares (Morris & Boubacar, 2018).

**Institutional ownership**

This information is also available on the firm's websites and financial statements in the pattern of the shareholding section below CEOs and directors share the pattern. Many financial firms like investment, insurance and banking institutions work directly with the organizations and provide various services and, in return, hold a massive chunk of the company's shares. Just like other shareholders, their interest is to maximize their return. Sometimes they have access to the firm's sensitive information, which they can manipulate and cause insider trading (Wasiuzzaman & Lim, 2017).

**Block shareholder**

These are the influential institutions or individuals who own a considerable chunk of shares. They are titled Block shareholders when their ownership reaches 5% or above (McClure, 2019).

**Audit firms**

External auditors get to know about the firms' financial position before the outsiders and sometimes, even the insiders. They can disclose sensitive information. Our study has opted top 5 audit firms in Pakistan as a benchmark that they will be least likely to leak any information to the insiders (Chi & Prentice, 2017).

**Leverage**

The leverage, i.e. the degree of financing with debts, can be another reason insiders' trade. The higher the leverage, the more the default and credit risk, and more variability in the firm's cash flows. This information can be used by the banks and other financial institutions owning the shares. Hence it will make more use of the information than the general public (Wasiuzzaman & Lim, 2017).

**Firm size**

This variable can be measured through various means, such as net assets, market capitalization, and market share or sales. This study considers market capitalization among all variables as an indicator of the firm size. Firm size and insider trading are related so that the larger the firm size (in terms of market value of capital), the more the insider will be willing to buy it, as it will brace the firm's position.

| Independent Variable | Notation | Measurement |
|---|---|---|
| Directors Ownership | DIR_OWN | (Number of shares owned by Directors and CEOs / Total Number of shares) x 100 |
| Institutional Ownership | INS_OWN | ( Number of shares owned by financial institutions / Total Number of shares ) x 100 |
| Block Shareholders | BLOCK_SH | Share ownership ≥ 5% (1) , < 5% (0) |
| Audit Firms | AUDIT_F | A.F. Fergusons and Co., KPMG, Ernst & Young, BDO, and Deloitte Pakistan(1), others (0) |
| Leverage | LEVER | (Total Debts / Total Assets) x 100 |
| Firm Size | FIRM_S | Market Capitalization= Number of Outstanding Shares x MV of Share |

**Ethical consideration**

This research is conducted by all the ethical requirements of the study. This research makes sure that it does not disturb anyone's confidentiality and has not used any derogatory terms and material.

## Results, findings and discussions

**Findings and interpretation of the results**

For analysis, SPSS Software has been used to find the impact of our independent variables on Insider trading. The tables below are the results achieved after running the Binary Logistic test.

**Table 1:** Model Summary

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 149.763[a] | .125 | .170 |

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

The table of Model Summary shows the statistics about the model decision prediction capability through -2LL. Cox and Snell R Square is interpreted the same way it is done in Multiple Regression. For -2LL, the smaller the value, the better model predicts the decision. Cox and Snell $R^2$ shows the independent variation variable, i.e. Insider Trading created by Independent variables. The statistics explained in the model summary show that independent variables have explained 12.5% of the dependent variable variation. As Cox and Snell $R^2$ assume that all predictors created the variation, it is not the case. In this study, 2 out of 6 predictors are found to impact our dependent variable significantly. Nagelkerke R Square explains that any addition of a relevant variable can increase the variation impact by 17% on the dependent variable, i.e. scheduled and unscheduled announcement.

**Table 2:** Hosmer and Lemeshow Test

| Step | Chi-square | df | Sig. |
|---|---|---|---|
| 1 | 3.459 | 8 | .902 |

The table is shown above test the goodness of fit that explains how well the data extracted fits the model prepared. The data is the observed value. Hosmer and Lemeshow work on the acceptability of the null hypothesis. This test has the hypothesis, as shown below:

$\mathbf{H_0}$: The predicted model fits the data.

$\mathbf{H_1}$: The predicted model does not fit the data.

In this test, we want our predicted and observed result to be the same or our model to fit the data well. The threshold for the acceptability of the null hypothesis is that the Sig value should be >0.05, which, in our case, is true. The Hosmer and Lemeshow Sig value in our case is found to be 0.902 > 0.05, leading to the acceptance of the Null Hypothesis, which explains that our Model fits well to the data and that our model-predicted values of the dependent variable are as same as the observed value.

**Table 3:** Classification[a]

| Observed | | | Predicted | | |
|---|---|---|---|---|---|
| | | | Announcement | | Percentage Correct |
| | | | 0 | 1 | |
| Step 1 | Announcement | 0 | 21 | 27 | 43.8 |
| | | 1 | 13 | 64 | 83.1 |
| | Overall Percentage | | | | 68.0 |

a. The cut value is .500

The classification table shown above is a method to evaluate the predictive accuracy of the logistic regression model. Our main concern was finding out whether there is any change in stock price before any significant announcement by the corporations, indicated by 1. The result indicates that our model has been able to predict 68% of our observed cases correctly, which is a good result, as it is above

the cut off of 0.50.

**Table 4:** Hypotheses Results

| Hypotheses | Coefficient | Sig. Value | Empirical Conclusion |
|---|---|---|---|
| **$H_1$**: There is a significant impact of directors' ownership on insider trading. | 2.661 | .033 | Accepted |
| **$H_2$**: There is a significant impact of institutional ownership on insider trading. | 2.522 | .243 | Rejected |
| **$H_3$**: There is a significant impact of block shareholder on insider trading. | .099 | .879 | Rejected |
| **$H_4$**: There is a significant impact of audit firm on insider trading. | -1.545 | .009 | Accepted |
| **$H_5$**: There is a significant impact of Leverage on insider trading. | -1.228 | .148 | Rejected |
| **$H_6$**: There is a significant impact of Firm Size on insider trading. | -.031 | .722 | Rejected |

**Table 5:** Variables in the Equation

| | | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| Step 1[a] | Director Ownership | 2.661 | 1.249 | 4.536 | 1 | .033 | 14.311 |
| | Institutional Ownership | 2.522 | 2.163 | 1.360 | 1 | .243 | 12.457 |
| | Block Shareholders | .099 | .649 | .023 | 1 | .879 | 1.104 |
| | Audit firm | -1.545 | .595 | 6.743 | 1 | .009 | .213 |
| | Firm size | -.031 | .086 | .127 | 1 | .722 | .970 |
| | Leverage | -1.228 | .849 | 2.092 | 1 | .148 | .293 |
| | Constant | 1.397 | 1.912 | .534 | 1 | .465 | 4.045 |

a. Variable(s) entered on step 1: Director Ownership, Institutional Ownership, Block Shareholders, Audit firm, Firm size, and Leverage.

The table shows that out of 6 predictors, two predictors, i.e. Director Ownership with sig value 0.033 and Audit firm with sig value 0.009, impact insider trading. Their Coefficients were found to be 2.661 for Director Ownership that shows an increase in Director Ownership will increase the insider trading probability by 2.661 units, while for Audit firm, it was found to be -1.545, that explains if top 5 auditing firms do the audit, the chances of insider trading will decrease by 1.545 units. The constant-coefficient was found to be 1.397, that in the absence of any of the predictor, there will be a 1.397 unit impact on insider trading due to some hidden factors and variables.

$$Prob\ (\text{INSIDER}) = \frac{e^{(1.397 + 2.661DIR\_OWN + 2.522\ INS\_OWN + 0.099\ BLOCK\_SH - 1.545AUDIT\_F - 1.288\ LEVER - 0.031\ FIRM\_S)}}{1+e^{(1.397 + 2.661DIR\_OWN + 2.522\ INS\_OWN + 0.099\ BLOCK\_SH - 1.545AUDIT\_F - 1.288\ LEVER - 0.031\ FIRM\_S)}}$$

**Hypotheses assessment summary**

**$H_1$** declares the sig value 0.033, which is less than 0.05, which shows that hypothesis 1 has been accepted. It explains that there is a significant impact of directors' ownership on insider trading. The positive coefficient explains that the greater the director's owner, the greater the chances of insider trading. The previous research strengthens the result that intimate to sensitive information, directors of acquiring firms, while knowing the possibility of augmentation of the acquiring firm's stock price before any fundamentals and public announcement, buy the shares and sell it off after the acquisition. The same goes for the leakage of information regarding a company's adverse prospects; directors tend to sell off the shares before any public announcement (Hossain et al., 2016).

**$H_2$** expresses the sig value of 0.243, which is more than 0.05, which shows that hypothesis 2 has been rejected. In other words, there is no significant impact of institutional ownership on insider trading. Bricker and Markarian (2015) stated that institutional shareholders follow the best practices of Corporate Governance and hinder the chances of any insider activity and keep up the best quality of internal control for a firm.

**$H_3$** indicates the sig value of 0.879, which is more than 0.05, which shows that hypothesis 3 has been rejected. In other words, there is no significant impact on Block shareholder on insider trading. Gupta (2015) identified the impact of block shareholders on insider trading and concluded that block shareholders sometimes gain abnormal returns on their investment and are likely to augment the stock price, which is highest in 41 days' window before the announcement date.

**$H_4$** shows that the sig value 0.009, which is less than 0.05, shows that hypothesis 4 has been accepted. In other words, there is a substantial impact of Audit Firms on insider trading. The negative coefficient shows that the presence or being audited by the top 5 audit firms of Pakistan will reduce insider trading chances by 1.545 unit. The result is supported by the previous study that Auditing firms play a crucial role in the firm's probability of insider trading. Corporate insiders like directors or CEOs of a company are closest to the auditors' information and receive them before any public entity. There are higher chances that insiders can benefit from the data if not audited by top audit firms (Arif et al., 2018).

**$H_5$** expresses the sig value of 0.148, which is more than 0.05, which shows that hypothesis 5 has been rejected. In other words, there is no significant impact of Leverage on insider trading. Sometimes, Change in financial structures, where the insiders are moving towards increased or decreased leverage, is only available to the top in the hierarchy, who then purchase or sell the shares to get better returns than others (Morris & Boubacar, 2018).

**$H_6$** displays the sig value of 0.722, which is more than 0.05, which shows that hypothesis 6 has been rejected. In other words, there is no significant impact of Firm Size on insider trading. As Jain and Sunderman (2014) identified, the stock prices fluctuate before the merger announcement in the stock exchange, which shows the firm's size does not matter when it comes to trade illegally. It can be done by the Stock Exchange or a small firm as well.

Several researchers have researched the influence of single or multiple corporate insiders on insider trading, and multiple results were achieved from those studies. Most of the study results were consistent with past theories and research that supported this research results. Different analysis and tests should be done to get new and appropriate results and findings for better understanding.

## Conclusion, implications and future research

**Conclusion**

The research was conducted to find the impact of corporate insiders on insider trading by listed PSX firms. Corporate Insiders include directors, financial institutions, block shareholders, audit firms, leverage, and firm size. These components were taken into account to study their impact on insider trading measured through fluctuation in stock price before any scheduled or unscheduled announcement. The data for observation was collected from financial reports of the last five years, from different financial websites to our analysis and concluding. After the analysis, directors' high ownership has a positive impact on the announcement that leads to insider trading, whereas auditing done by top 5 firms of Pakistan reduces the chances of illegal insider activity due to tight control on the audited results.

**Policy implications**

Corporate insiders are the ones who have immediate information and knowledge of significant decisions and changes inside the firm that may have an impact on the share price, in which outsiders have their interest as well. Due to intimacy, insiders use the information that may significantly impact

share price if made public and decide to buy and sell shares as per the nature of the decision to be made based on that information. This research is conducted to help outsiders understand the sudden changes in stock price, variables responsible for the change, and counteractions to follow the trend and get the same or better returns.

**Future research**

This research is conducted by taking a few Insider trading variables, whereas Insider trading is not limited to these variables. Therefore, future research should be done by taking more insider variables. This research is conducted for five years, so the following research should be done by extending the data to more than five years. This research is conducted in Pakistan as if this research will be conducted in another country with more variables, so the result should be different and more favourable. Future research should be done by adding moderating and mediating effects with these variables.

**Peer-review:**

Externally peer-reviewed

**Conflict of interests:**

The author(s) has (have) no conflict of interest to declare.

**Grant Support:**

The authors declared that this study has received no financial support

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