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Exploring Independent Factors Influencing Investment Efficiency of Asset Acquirers in Pakistan: Evidence from Mixed Methods

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Abstract

This study aims to empirically assess how independent factors influence the acquirer's investment efficiency in Pakistan. This study used primary data gathered through the survey method from 584 respondents. The secondary data was collected from yearly reports of 300 selected Pakistani companies from 1991 to 2023. The study has chosen 1000 samples of asset acquisitions, 550 purchases have several business units and 450 have individual segments. Multivariate regression analysis and econometric modeling were used to estimate data outcomes. The study findings emphasize that independent factors directly relate to subjectivity, objectivity and rationality of corporate players, which strongly influence the acquirer's return. In unfavorable circumstances, the independent attributes adversely influence the performance of firms and the return on the asset buyer's investment. Findings further revealed that the majority of acquirers rely on personal expertise, mental accounting, social interactions and recommendations instead of emphasizing the existing market dynamics. This study's outcomes have practical implications and expand the theory that behavioral biases, social pressure, financial awareness, decisional biases, political risk, economic and environmental characteristics have mixed effects on the asset buyer's investment efficiency.

Keywords: Independent factors, Acquirers return, Value maximization, Investment efficiency, Asset acquisitions.

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1. Introduction

The investment efficiency of acquirers has become a major provocation faced by corporate entities globally to secure their feasibility and business sustainability. Investment efficiency is a positive net present value taken on through an entity under a prognostic situation, exempted from exchange/trading resistance such as moral hazards or agency risk (Cao et al., 2018). Consequently, mitigating the value of deteriorating asset acquisitions and ineffective managerial decisions has attracted the attention of investors, corporate entities, policymakers, regulatory authorities and the government. Whereas, asset acquisition is the purchase of a firm through purchasing its assets rather than its stocks (Chen and Chen, 2017). After an effective governance provision mechanism, a corporate entity's critical issue is maximizing shareholder return and making the value-creating capital allocation. However, the investment efficiency of acquirers is not restricted to intrinsic forces; the independent forces potentially influence acquisition value creation. The independent factors refer to external factors (i.e., demographic, behavioral, psychological, decisional, financial awareness, political, marketing, economic, and ecological factors) that are not in the direct control of corporate management and firms (Singh and Yadav, 2016). Thus the existing state of artwork regarded external forces as motivators (Nazari et al. 2015).

Contrary to the studies above, the present study aims to address whether and how the independent factors provisions affect and sustain the asset acquirer's return on investment efficiency. Prior studies (e.g., Ramesh and Athira (2022); Knetsch and Salzmann (2022); Afriyie and Adza (2019); Fonseka et al. (2021)) individually assessed the impact of societal trust, psychological and social biases, ethnic diversity, government integrity, and social responsibility on the underinvestment and investment efficiency in developed economies. Plenty of studies specifically emphasized the investment behavior e.g. (Martínez et al., 2022) and (Gulzar et al., 2019) gender effects, (Rizvi and Abrar, 2015) demographic characteristics and investor investment style, (Taparia and Chandra, 2019) reported the investor's risk-taking ability and economic factors. In contrast (Samsuri et al., 2019) financial literacy and accounting information, (Mumtaz et al., 2018) reported heuristic biases, risk avoidance, corporate instruments and strategies favorably impact investor's investment choices.

The studies mentioned above overlooked the collective effects of independent factors due to the singularity of subject matter and financial settings. Thus it was not clear whether the presence of independent factors superficially maximizes or deteriorates the acquirer's return on acquisitions. Still, there is no research to address the collective impacts of independent characteristics on the value-maximization of acquirers. Furthermore, there is scarce research to recommend an innovative framework to assess the cause-and-effect relationship between independent drivers and the acquirer's efficiency.

The present research is different from previous studies on the basis of substance, direction of analysis, and novelty of findings; initially, prior studies focused on the

association between social determinants and investment efficiency/ under-investment. Conversely, the present study focuses on the impact assessment of independent factors on investment efficiency of asset buyers. Secondly, this study emphasized total effect, as prior studies focused on single-factor assessment i.e. behavioral factors and accounting ratios in developed economies rather than aggregate assessment. The corporate scenario of developed economies is different from underdeveloped countries. They adopted a single-factor approach and sample bias which may not represent the total effect. Henceforth, assessing the total impact of independent factors on the investment efficiency of acquiring shareholders is of practical significance to entities, acquirer's investment decisions, capital allocation mechanisms and successful acquisitions.

The economy of Pakistan is an ideal focus of this study due to prevailing governance, sustainability and financial challenges. Firstly, asset acquisition became a value-based strategic instrument for business development and financial shake-up in Pakistan. The overall worth and persistence of acquisition declarations increased from 0.0385 to 3.80956 bn$ in 2005. More than fifteen hundred asset purchases and sales events were announced from 1991-2022. Secondly, the changing competitive financial landscape, uncertain policy, political distress and economic issues have expanded asset transactions in the financial and nonfinancial companies of Pakistan. All in all the disputed matter of whether these asset transactions increase the investment efficiency of acquirers (buying shareholders) has still not been assessed. Thirdly, some studies contradict that these acquisitions inversely influence the acquirer's return (Khan et al., 2012). There are shaky policy implementation structures and an absence of shareholder protection mechanisms in Pakistan i.e., protection of minority rights and a rigged market (Ashraf and Ghani, 2005). Therefore, the question is that all of these deals particularly do not promote the value creation of acquiring shareholders. The tendency of value-efficient asset transactions depends on internal, external, sustainability provisions and independent factors. The prior literature mainly focuses on the specific internal factors affecting governance structure and diversified acquisitions, although hardly any study investigated the value-destroying /maximizing independent factors and their causes and effects when the buying shareholders experience inefficient asset transactions.

This study contributes to the current state of artwork as follows. Firstly, this study solely supplements the existing scientific knowledge by assessing the embedded relationship between independent factors and the investment efficiency of asset buyers. Secondly, the present study expands the financial management literature on acquisition investment by introducing ecological, marketing and financial awareness characteristics as critical forces to determine a gain on acquisition investment. Thirdly, this study emphasized fully representative and aggregate independent factors about the acquirer's investment efficiency. Fourthly, the synthesized results emphasize the independent factors directly related to the subjectivity, objectivity and rationality of corporate players, which have a strong impact on the acquirer’s value.

2. Literature review and hypothesis development

This study nestles upon stakeholder theory to address the impact of independent factors on the acquirer's investment efficiency. According to stakeholder theory, corporate entities create externalities that influence various parties, both intrinsic and extrinsic to the company. Thus, the stakeholder's doctrine focuses on an inclusive set of transaction issues and highlights the comparative effectiveness of different governance and independent provisions for multi-stakeholder and firm relationships in various economic contexts (Stoelhorst and Vishwanathan 2022). Subject to independent factors, the preliminary studies (Kabra et al., 2010) revealed that demographic characteristics have a strong effect on individual investor's decision-making behavior. Several studies individually emphasized the independent factors and investment behavior e.g. (Gulzar et al., 2019); (Martínez et al., 2022) reported gender effects that influence males more than females, i.e., anger, fear, herding and stress. Demographic characteristics have a significant role in determining an investor's investment style (Rizvi and Abrar, 2015). Moreover, the investor's risk-taking ability differs from their income level and certain economic factors (Taparia and Chandra, 2019). Older people tolerate more risk than young investors (Gondaliya and Dhinaiya, 2016). Therefore, we hypothesized that:

H_1: The total Independent factors significantly influence the acquirer's investment efficiency.
H_{1a}: The Demographic factors significantly influence the acquirer's investment efficiency.

Generally, referring to behavioral and psychological characteristics the human decision-making process comprises risk and return relationships (Rauf-i-Azam and Hunjra, 2012), but investors cannot evaluate risks and returns objectively. Instead, they behave emotionally while making decisions (Azwadi, 2011). Therefore, prior literature elaborated that behavioral factors are involved at each step of efficient decision-making (Tabassum et al., 2021). Prior theories hold that humans are rational and they make rational decisions that was the main hindrance in traditional theories and later changed with behavioral doctrines of contemporary finance which is the mixture of psychology and economy. The psychological and economic components play a vital role in investor's decision-making (Parveen et al., 2020). Some studies (Phuong et al., 2022) posit that feelings and emotions have more influence on investor's behavior. Moreover, traditional finance theory suggests that psychological factors play a critical role in investor's investment decisions (Iman, 2011). Likewise, (Charles and Kasilingam, 2016) revealed that behavioral biases significantly influence investor decisions. As (Moueed et al., 2015) argued psychological and social factors affect individual investor decisions. Further, Kengatharan and Kengatharan (2014) indicated that psychology is a fundamental component of behavioral finance. Previous state-of-the-art work reported that cognitive flaws and sentiments influence human behavior. The behavioral

components of finance specifically rationality, reasoning and decisional choices of investors strongly influence the investment decisions, which form different biases. Usually, the investor's reaction relies on financial disclosure that impacts risk-taking behavior, as investors make inefficient decisions at that time which creates biases in investor's decision-making. According to (Wamae, 2013) the heuristic theory emphasizes a critical component that is overconfidence. Many researchers reported the influence of psychological and decisional preferences of investors, although they lack emphasis on the potential influence of overconfidence, accounting conservatism and dissatisfaction over the decision-making choices of investors. As reported by (Kallinterakis et al., 2010) investors utilize herding behavior for accurate information, on one side the herding behavior brings reliable outcomes for investors, on the other side it creates multiple conflicts i.e., cognitive issues, rumors, coherence, biases and compliances.

Likewise (Caparrelli et al., 2004) emphasize that capable investors commonly refrain from groupings and prefer rationality of decisions as it causes market inefficiency, the herding behavior brings spikes in asset prices that protect all individual investors. Whereas (Good Fellow et al., 2009) indicated that investment capacity, behavior and overconfidence influence investors. Generally, investors depend on herding behavior due to a lack of reliable information for efficient decision-making. Still, in case of overconfidence, they usually have sufficient information, but they avoid herding behavior in that scenario which results in higher investment as well as the risk of higher losses. Based on previous literature (Tabassum et al., 2021) it can be argued that market forces influence investor's behavior but even though they are extrinsic factors they cannot be added to behavioral components. The behavioral factors comprise herding behavior, investor's overconfidence, and other miscellaneous factors. Hence market and behavioral forces conjointly influence the decision-making preferences of investors. Whereas, (Kengatharan and Kengatharan, 2014) reported an association between behavioral components and decision-making choices and elaborated that other than cognitive biases psychological forces significantly affect the investor's decision. Regarding Pakistan (Ejaz and Khan 2014) indicated a negative association between efficient decision-making and various behavioral components i.e., cognitive bias, intelligence and over-estimation biases. Contrarily, in the Pakistani context (Qadri and Shabbir, 2014) reported a positive influence of control and cognitive bias on investor's decision-making. The findings of (Qureshi et al., 2012) indicated a positive association between psychological components i.e., cognitive biases, anchoring, information bias, unfair decisions and decision-making choices of corporate managers in Pakistan.

Referring to social factors the individual investor's investment decisions are also affected by their social interactions (Nofsinger, 2005). Several scholars revealed that perceivers show more excellent projection to in-groups than out-groups. The socially involved investors invest in less risky investments and socially excluded investors choose to invest in more risky investments (Duclos et al., 2012). Therefore, recent research by (Safi et al., 2023) in the context of corporate social responsibility

(CSR) indicated a favorable association among corporate social responsibility, investment efficiency and firm efficiency. The findings further emphasized that managers must focus on social and ecological practices strategically to decrease agency cost issues and enhance investment efficiency. Many scholars (Li et al., 2021; Pham and Tran, 2020; Galant and Cadez, 2017; Flammer and Kacperczyk, 2016; Servaes and Tamayo, 2013) reported a positive relationship between social responsibilities and a company's value and efficiency. Enterprises are supposed to enhance their corporate value creation through higher investment efficiency whilst countering the inherent interests of shareholders and meeting their demands. Moreover, high social responsibility performance is linked with company revenues, partially as a result of the high efficiency of investment. Therefore, we formulated the following hypothesis:

H_{1b}: The Behavioral factors significantly influence the acquirer's investment efficiency.
H_{1c}: The Psychological factors significantly influence the acquirer's investment efficiency.
H_{1d}: The Social factors significantly influence the acquirer's investment efficiency.

Moreover, (Bajracharya, 2018) empirically examined that investor's decision depends on the sources of information they get from "brokers and annual reports" to make an investment decision. At the same time, (Bennet et al., 2011) indicated that the investor's awareness level enhances decision efficiency. In addition, (Qureshi et al., 2012); (Fulkerth, 2000) reported a positive association between behavioral forces and decision-making. In contrast, financial literacy and accounting information are the most influencing factors (Samsuri et al., 2019). Contrary to decisional factors financial awareness also plays a vital role in investment efficiency. As stated (Giesler & Veresiu, 2014) financial knowledge is a combination of ideas and abilities to determine which investment opportunity is suitable. Consequently, it is supportive of efficient investment decision-making. Investors having financial awareness behave more rationally than others as financial awareness brings a decline in irresponsible behavior. Likewise (Borden et al., 2008) emphasize that financially aware investors make rational decisions through suitable approaches at suitable times. (Al-Tamimi and Anood Bin Kalli, 2009) investors usually emphasize more on accurate information rather than miscellaneous information while making investment decisions. Prior studies (Jain et al., 2015) elaborated that investor's risk-taking decisions rely on their financial awareness as financially aware investors utilize better approaches to reduce the level of associated risk. Whereas, (Rooij et al., 2007) reported that less aware/illiterate investors have ambiguities and are involved in various behavioral biases while making decisions. (Competition and Roadshow, 2012) financial knowledge is an efficient component in enhancing the strength of investors in investment decisions. Hence, we hypothesize the following hypothesis:

H_{1e}: The Decisional factors significantly influence the acquirer's investment efficiency.
H_{1f}: The Financial awareness factors significantly influence the acquirer's investment efficiency.

As reported by (Restrepo et al., 2012), political factors have a pivotal role in a company's business environment. As (Tomz and Wright, 2008) political risk affects the firm's decisions in different ways. For instance, investors are concerned about market uncertainty and pay high premiums (Zurawicki and Braidot, 2005). Similarly, the study (Jayaraman, 2012) revealed that political factors, media coverage, financial education, and trend analysis greatly influence individual investor behavior. Moreover, (Restrepo et al., 2012) indicated that political risk has a mixed influence on the value of investment opportunities and the firm's decisions to invest. Contrary to marketing factors (Arianpoor, 2023) indicated that market competitiveness significantly influences investment efficiency. Moreover, there is scarce literature on the relationship between marketing factors and investment efficiency. Although few studies addressed marketing factors in different dimensions i.e., (Hu et al., 2023) in the context of ESG participation by companies with effective marketing possibilities decreases investment inefficiency. Marketing forces are considered financial expertise which portrays a company's capacity to utilize available resources and transform them into financial efficiency. This exceptional image supports a firm to attain effective social conformity and enhances the long-run influence of marketing forces i.e., promotion and stakeholder interaction. A firm with efficient marketing activities possibly has a favorable opportunity to seek positive feedback from stakeholders, which probably promotes the firm's central activities (Jayachandran et al., 2013). Accordingly, we hypothesize the next hypotheses:

H_{1g}: The Political factors significantly influence the acquirer's investment efficiency.
$H1_{h}$: The Marketing factors significantly influence the acquirer's investment efficiency.

Another critical determinant is economic factors that are ignored by the previous state of the artwork. According to (Kareem et al., 2023) economic condition is a critical factor that can affect the investor's decision-making choices. The economic circumstances can influence the efficiency of investments. For instance, at times of economic growth, stock prices move up while firms acquire gains and investors behave more optimistically. Contrarily, at times of economic decline, stock values decrease as firms attempt to gain profits and investors behave cautiously (Niyozovna et al., 2021). Further, personal conditions also play a vital role in investor's decision preferences. For instance, investor's age, risk-taking and corporate values can influence their investment choices. There is the possibility that the young investor can be eager to bear risk for the sake of higher profit, although

the older investor can be more concentrated on protecting their assets (Naqvi et al., 2020). Hence, awareness and information about economic circumstances enable investors to make efficient and informed decisions. It may help investors accomplish corporate goals and protect their future investments (Gill et al., 2018); (Gardi et al., 2021). Similarly, (Shama, 1973) indicated that shareholder's values and anticipations change during economic uncertainty. The transformations in the economic system negatively influence stakeholders (Shiller 1998).

Furthermore, ecological awareness reduces the differences between companies and their shareholders (Ting et al., 2019). Referring to ecological factors the scholars have different findings i.e., (Qi et al., 2022) indicated that the effective implementation of the ecological framework may enhance the possibility of technical innovations and potential eco-friendly production of firms while maximizing the firm's resource allocation. (Tan 2021) it also helps firms acquire greater comparative advantages, enhances investment efficiency and production capacity. Therefore, few researchers emphasize that ecological rules may accelerate the over-investment of companies and decrease investment efficiency (Sheng et al., 2020); (Zhou et al., 2019). Conversely, ecological regulations can promote a firm's inadequacy in investment. First, the unexpected economic situation triggered by ecological practices will enhance the option price of investment preferences and induce companies to decrease investment. Second, the extremely scarce ecological capability for new investment in different localities also restricts the investment behavior of companies, which ultimately causes inadequate investment (Tan et al., 2022);(Zhou et al., 2019). Currently, there is a lack of research on the effects of ecological rules and practices on a firm's investment efficiency. Likewise, firms facing tough ecological regulations, also need to implement strategic plans to control the ecological deterioration produced by their corporate practices to fulfill ecological rules and decline compliance expenses (Sharma, 2000). Additionally (Safi et al., 2023) reported that ecologically responsible companies are performing effectively concerning investment efficiency. Henceforth, regarding the above-mentioned literature, we further hypothesize that:

H_{1i}: The Economic factors significantly influence the acquirer's investment efficiency.

H_{1j}: The Ecological factors significantly influence the acquirer's investment efficiency.

H_2: The asset buyer's investment efficiency has a significant reverse impact on the Independent factors.

H_3: The shift in company-based drivers of the asset buyer's efficiency significantly influences the investment efficiency.

H_4: The shift in sales-level drivers of the asset buyer's efficiency significantly influences the investment efficiency.

H_5: The shift in the excess value of asset buyers significantly affects investment efficiency.

Based on the theoretical justification and research questions, we developed the following conceptual framework. The framework exhibits both the aggregate and individual impact of each independent driver on asset buyer's investment efficiency. The conceptual framework based on independent factors is presented in Figure 1.

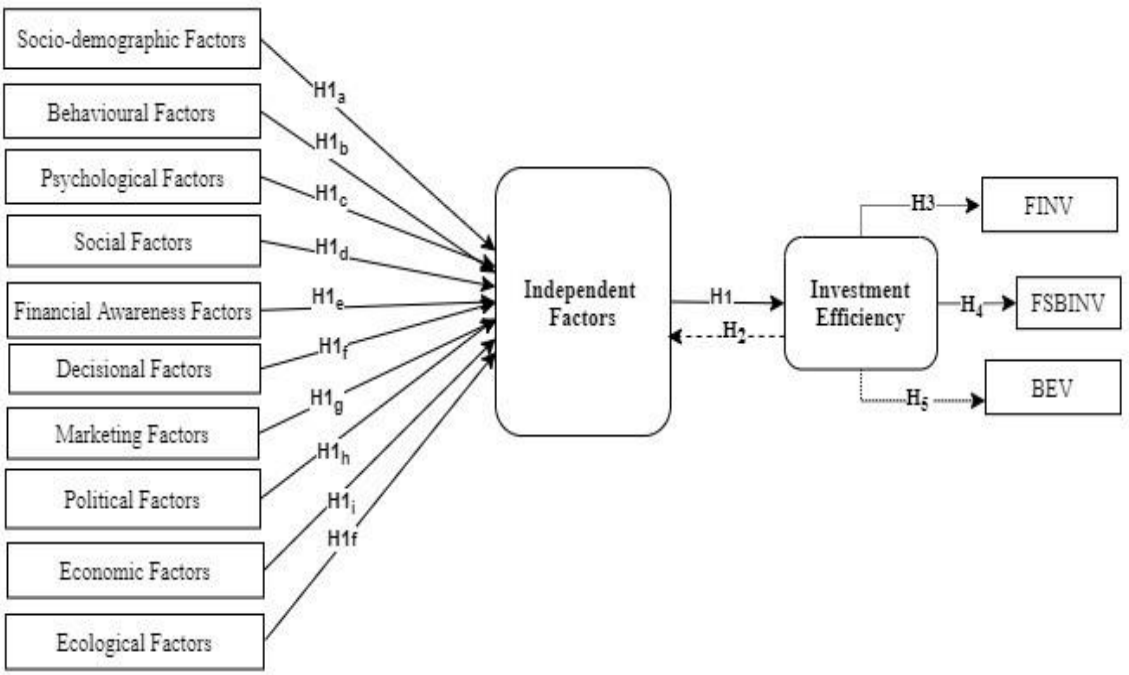

Figure 1: Conceptual Framework

Source: Self Extracted

3. Materials and Methods

3.1 Sampling Design

To achieve validity and reliability of survey data, our study targeted diversified respondents including firm CEOs, directors, managers, stock traders, acquiring shareholders, and financial analysts. The main aim of gathering data was to focus on the opinion of target respondents who are experts in corporate acquisition transactions, own businesses and familiar with the complementarities of independent factors and acquisition investment, and are also involved actively in business activities. Also the stock exchange officials as regulatory bodies of the law and enforcement, corporate analysts and brokers who directly deal with acquirers and investors. All the respondents were differentiated based on expertise. This study employed a probability sampling method for data collection. The questionnaires were randomly distributed among respondents by simple random sampling method. The main aim of adopting simple random sampling was to give each target respondent an equal chance of participation and diversified results.

3.2 Data Collection and Sample Selection

3.2.1 Primary Data Collection

The initial sample size of this study was 800 based on the availability of target respondents. The questionnaires gathered 630 responses, and after data screening a total of 584 valid responses were used in the data analysis with a 93% correct response rate. All the respondents belonged to different provinces of Pakistan. The sample size of the study significantly represents the target population. Thus the study determined a diversified target population based on the availability and final access to total respondent's information. So, 114 questionnaires have been allocated to each category (i.e., CEOs, directors, managers, stock traders/brokers, investors, acquiring shareholders) of respondents. The questionnaires were distributed through email and physically where possible. It was difficult to approach respondents, usually, the organizations do not share information about top management. Therefore, out of 630 responses, the survey yielded 14.44% responses from CEOs, 13.49% responses from directors, 15.24%responses from managers, 13.65% responses from stock traders, 14.76% responses from investors, 14.13% responses from acquiring shareholders, 14.28% responses from financial analysts respectively. The sample size fulfills the criteria of reliability and representativeness. Therefore, the sampling of the present study is reliable corresponding to prior studies (Etikan, 2016) a selected sample ranging from "30-500" responses is considered reliable. Furthermore, survey participants were briefed to fill out the survey questionnaire comprising all close-ended questions.

3.2.2 Secondary Data Collection

For secondary data, the initial sample size was composed of the top 300 firms registered on the Stock Exchange of Pakistan (PSX) and 1000 asset acquisition declarations. Several companies were selected to compose study sampling on the basis of data availability. Time series data has been used for analysis. The study sampling includes two types of companies, i.e. companies with several business units or working in different industrial segments for the diversity of goods (divergent firms), and second, companies with single segments (non-divergent firms). The sample asset purchases comprise 1000 declarations of large asset acquisitions completed by 300 Pakistani firms from 1991-2023. Moreover, the information regarding sample companies was collected through the Pakistan Stock Exchange, Competition Commission of Pakistan and State Bank of Pakistan data repository.

Out of 1000 sample asset purchases, 550 represent companies with several business units and 450 companies with single business units. Based on the available data, we have selected the acquirers which were publicly traded companies and the asset acquisition details are available in the Securities and Exchange Commission of Pakistan, CCP database and firm's official websites. The study sampling is confined to large-size asset purchases per firm annually. However, each asset acquisition deal represents a value not < than 10 million PKR. The study excluded firms having

financial declarations/ deals apart from asset acquisitions i.e. dividends, profits, and shifts in debt-to-capital ratios three days earlier/later than the initial declaration date. Regarding the study sample size, the corporate data associated with activity ratios and stock trading data was gathered from the firm's yearly reports and PSX data repository.

3.3 Questionnaire Design

The existing research on independent factors posits that the prior studies have proposed multiple structured and unstructured survey instruments to assess the determinants of shareholder's investment decisions. Based on an extensive literature review, our study methodically arranged the proposed items which were associated with demographic, behavioral, social, psychological, awareness, economic and political factors, and combined them to construct a TIndF index/scale to assess the acquirer's approach regarding the factors affecting acquisition investment other than internal control. Moreover, the study also developed new instruments not proposed by the existing literature i.e. ecological factors.

3.4 Measures of Scientific Constructs

The survey questionnaire was divided into multiple sections, e.g., Section (1) was associated with the social and demographic attributes" of survey participants (i.e. age group, gender, educational status, matrimony, employment level and yearly earnings). The measurement items for demographic factors are constructed following the study of (Kannadhasan, 2015). Whereas, (Section_2) was related to behavioral factors including heuristic bias, availability bias, representative bias, locus of control, decision-making behavior, market behavior and herding bias suggested by (Sabir et al., 2019). All the items are measured by using a five-point rating scale (i.e. varying from strongly disagree (SD) _1 to strongly agree (SA) _5). Moreover, (Section_3) was related to social factors. Coherent to (Borgers et al., 2015), the social factors were measured using eight items that comprise *(SF1-SF11)*. Furthermore, the psychological factors include five items which comprise (PF1-PF5). All these items were assessed using the same rating scale (e.g. varying from strongly disagree (SD) _1 to strongly agree (SA) _5). Furthermore, (Section_4) was related to decisional factors. As proposed by (Sabir et al., 2019), the decisional factors are composed of three items (DF1-DF3).

Whereas, the (Section_5) was related to financial awareness factors and consisted of nine items (FA1-FA9) by using the Likert scale (less aware_1, aware_2, fairly aware_3 and highly aware_4) as suggested by prior studies (Samsuri et al., 2019);(Sabir et al. 2019); (Cavezzali et al., 2015). Moreover, (Section_6) was related to marketing and political factors. Based on the study of (Aspara and Tikkanen, 2011) marketing factors were measured by four items such as (MF1-MF4*)*. Furthermore, the political factors were measured by six items including (PLF1-PLF6). Furthermore, (Section_7) gathered data related to economic factors. Based on the prior study (Singh and Yadav, 2016) the economic factors are

measured by six items including (EF1-EF6). All the items are measured by a one to five-point rating scale (e.g. varying from strongly disagree (SD) _1 to strongly agree (SA) _5). Finally, (Section_8) gathered data related to ecological factors. The ecological factors are measured by thirteen items including (EnvF1-EnvF13).

3.5 Measures of acquisition investment efficiency

Furthermore, to measure the total allocation investment efficiency of firms, we employed three drivers such as rel-eff "relative investment" percentage, rel-value "relative allocation value added" and abs-value "absolute allocation value added" recommended by Chen and Chen (2017). Hence, (rel-eff) refers to the divergences in Σ sales weighted (*SS*) of company_ and_ industry_ adjusted (*IAS*) capex to sales proportion between high q and low q units. While assessing rel-eff, the study employed weighted company and *IAS* unit investment (capex to sales proportion) through the deviation between units estimated q and the firm's mean sales weighted *q*. Whereas, *qi* represents the mid-point (median) q of individual unit firms performing under the same industrial units. However, the abs-value is estimated through the difference between (company's real unit investments – company's single unit investment) and weighted by the divergence between the units Q ratio and 1.

3.6 Measures of constructs for control variables

The "Company $Size_{it}$" is assessed by the natural logarithm (ln) of aggregate assets (Rustam and Chengxuan, 2022). Moreover, $Growth_{it}$ is assessed through an annual % growth in aggregate assets (Swandari and Sadikin 2016). Likewise, the gearing ratio (Lev_{it}) is calculated by the debt to asset ratio (i.e. aggregate debt/ aggregate assets). Further, ROA_{it} is calculated by the (firm's net income after tax/aggregate assets). Lastly, ROE_{it} is calculated by dividing the net income/equity of the Company by *t* year suggested by (Rustam et al., 2019); Adeniyi and Adebayo (2018).

3.7 Research Models Specifications

Further to assess the aggregate impact of independent factors on the investment efficiency of asset buyers, we developed a single econometric model in equation (1) below;

$$TIndFI_{it} = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (1)$$

Where TIndFI represents the total independent factors index used as the dependent variable, β represents the beta coefficient and Invit represents the acquirer's investment efficiency employed as a predictor in the formulated model.

Moreover, to measure the reverse impact of the acquirer's investment efficiency on TIndFI, we developed another econometric model in equation (2);

$$INVit = \alpha_{\circ} + \beta_1 TIndFI_{it} + \varepsilon_{it} \quad (2)$$

Hence, to measure the single impact of each component of independent factors (i.e., demographic, behavioral, social, psychological, decisional, financial awareness, marketing, political, economic and ecological) on investment efficiency of asset buyers, multiple econometric models have been developed to assess the cause and impact association. Hence, to measure the single impact of demographic factors on the asset buyer's investment efficiency following regression model has been formulated below;

$$DemographicFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (3)$$

To estimate the individual impact of behavioral factors on the asset buyer's acquisition efficiency, we developed a single econometric model (4) and to assess the impact of psychological characteristics on the asset buyer's INV_{it}, we constructed a model (5). The econometric specification of the models are expressed in the equations below;

$$BehaviouralFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (4)$$
$$Psychological Factors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (5)$$

To analyze the individual effects of social factors and financial awareness factors on INV_{it} of asset buyers, the two models are formulated below;

$$SocialFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (6)$$
$$FinancialAwarenessFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (7)$$

Furthermore, to analyze the individual effects of decisional factors and marketing factors on the asset buyer's investment, we developed the following single regression models below;

$$DecisionalFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (8)$$
$$MarketingFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (9)$$

Moreover, to measure the single effects of political, economic and ecological factors on the asset buyers INVit, three distinct regression models are specified in the following Equations;

$$PliticalFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (10)$$
$$EconomicFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (11)$$
$$EcologicalFactors = \alpha_{\circ} + \beta_1 INV_{it} + \varepsilon_{it} \quad (12)$$

Where coefficient (β) and Inv_{it} represent the index of acquirer's investment efficiency employed as a predictor in the equation. To further assess the influence of independent attributes on change in Inv_{it}, variations in surplus-value of asset purchases and changes in company-based and sales-level drivers of inv_{it} for divergent acquirers, we formulated equations 13-15. We also employed multiple regression analysis of the variations in the acquirer's INVit starting from the year prior to acquisition declarations (Y–1) to year after the declarations (Y+1). Thus INV_{it} efficiency of diverse acquirers can be dependent on chances of growth, diversification of acquisition opportunities and size of the company. Therefore, we formulated the Equation (13) below;

$$\Delta FINV_{it} = \alpha_{\circ} + \beta_1 TIndFI + K_1 \Delta InverseQ + K_2 \Delta Diversity + K_3 \Delta Size + \varepsilon_{it} \quad (13)$$

Where $\Delta FINV_{it}$ indicates the shift in the company-level drivers of the asset buyer's efficiency. The ΔInverse-q defines the variations in the reverse of q ratio and Δdiversity represents the variations in the measures of heterogeneity of divergent buyers (that is the SD or σ of the unit's sales-based q for the buyer's/equal-weighted mean q of units for the acquirer) and Δ company size calculated by a variation in the radical [√] of acquirer's sale transactions. Assessing the variations in sales-level drivers of INV_{it}, starting with the year prior to the acquisition declarations "Y-1" to the year after the declarations "Y +1". Hence, the sales-level INV_{it} of diverse asset buyer's likely relies upon the margin of growth, diversification of acquisition opportunities and entity size. Thus, we developed Equation 14 below;

$$\Delta FSBINV_{it} = \beta_{\circ} + \beta_1 (TIndFI) + K_1 \Delta Inverseq + K_2 \Delta Diversity + K_3 \Delta Size + \varepsilon_{it} \quad (14)$$

Where $\Delta FSBINV_{it}$ indicates sales-level acquisition efficiency which is determined by three sub-indexes i.e., "changes in {Δrel-eff, Δrel-value and change in Δabs-value}.To examine the change in the surplus value of asset acquirers (or occurring change in surplus value for acquirers) by adding fitted values (e.g., estimated in Equation 12 to calculate the predicted value). We, therefore, estimated the Equation 15 below;

$$\Delta BEV_{it} = \beta_{\circ} + \beta_1 \Delta F\hat{I}NV + K_1 DAgency + K_2 \Delta CAPEX + K_3 \Delta OPI + K_4 \Delta Inverseq + K_5 \Delta Mispricing + K_6 \Delta Size + \varepsilon_{it} \quad (15)$$

The ΔBEV represents the variation in the acquirer excess value for the year prior to acquisition declaration of an asset (Y-1) to after the declaration year (Y+1). Also, *EV* is calculated by (In) of the company's market value ratio to the company assumed value recommended by Chen and Chen (2017). Therefore, the dummy variable *"Agency"* indicates "1 for low-q/high-cash flow firms such as (including companies which have q-ratio less than the selected middle-point and a free cash flow > the selected middle point) and 0 in other ways. Moreover, "Δ*Capex"*

represents the variation in the *industry-adjusted (ind-adj)* percentage of capex to sales revenue. Thus *"*Δ*Opi"* represents variation in the *ind-adj* percentage of operational revenues to sales. Lastly, *"*Δ*mispricing (MISP)"* refers to variation in the *ind-adj* price to book ratio. These are control variables proposed by prior studies e.g. (Chen and Chen, 2017) that may affect ΔBEV for the asset buyers.

4. Empirical Analysis and Results

4.1 Demographic information of respondents

The primary independent factor is the demographic distribution of respondents on the basis of associated attributes such as age, gender, marriage, size of family, employment type, level of education, level of income and investment level). The diagrammatic representation of all demographic factors on the basis of responses is given below. Figure 2 exhibits the gender distribution of respondents who participated in the survey. The overall distribution indicates that male respondents are 68.15% and female respondents are 31.85 %. Suggesting that the corporate industry has the majority of male investors executing investment activities compared to females**.**

Figure 3 exhibits the distribution of respondents by age. Five age categories of respondents were assessed for the analysis. The classification indicates that out of 360 respondents 5.6% lie in the age group (18-30), 19.86% lie in the age group (30-40), 32.19% lie in the age category (40-50), 25.86% lie in the age group (50-60) and 18.49% lie in age group (>60). Suggesting that the maximum number of investors are in the category of middle-aged and senior citizens with experience and expertise. Figure 4 exhibits the distribution of respondent's marital status. Four categories of respondents were assessed for the analysis. The classification indicates that 27.91% of respondents are single, 63.87% married, 5.82% divorced and 2.40% widows. Suggesting that the majority of respondents are married. Figure 5 exhibits the distribution of respondent's family size/ number of children. Six categories of respondents were assessed for the analysis. The classification indicates that 5.48% of respondents have 0 children, 14.55% have 1, 30.14% have 2 children, 36.13% have three, 16.95 % have four and 16.78% have six or more children. Indicating that the majority of respondents have small family sizes.

Figure 6 shows the distribution of respondent's education level. Five categories of respondents were assessed for the analysis. The distribution indicates that 15% of respondents have a high school education, 24.14% possess bachelor's degrees, 26.71% have master's degrees, 10.62% have PhD degrees (highly qualified), and 23.46% have other business-related and technical education. Indicating that the majority of respondents are well-qualified.

Figure 7 shows the employment level of respondents. The eight categories of respondents were assessed. The distribution indicates that the majority of respondents 22.26% are self-employed and 23.12% are individual investors. Whereas, the ratio of unemployed respondents is also high. The respondents employed in the private sector are 11.47% and the public sector employees are

14.73%. Comparatively, 8% of respondents are retired and 5.65% are housewives. Also, 2.57% is associated with the banking/finance industry.

Figure 8 shows the distribution of respondent's income levels. Four classes of respondents were assessed for the analysis. The distribution indicates that 5.48% of respondents have 20-25000 income, 15.58% of respondents have 30-35000 income, 30.99% have 40-45000 income, and 47.95% of respondents have more than 50,000 income, higher than others. Indicating that the majority of respondents have higher annual income. Figure 9 shows the distribution of respondent's investment levels. Four categories of respondents were assessed for the analysis. The distribution indicates that 7.02% of respondents possess a 5-10 Lakh investment, 18.32% possess a 10-25 Lakh, 30.99% have a 25-45 Lakh investment, and 50.68% have more than 50 Lakh investment (maximum) compared to others. Indicating that the majority of respondents have a higher investment level or invested capital see (Figures 2-9 Demographic Information of survey participants).

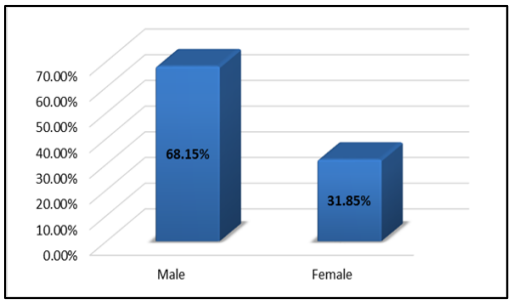

Figure 2: Percentage of Participants by Gender

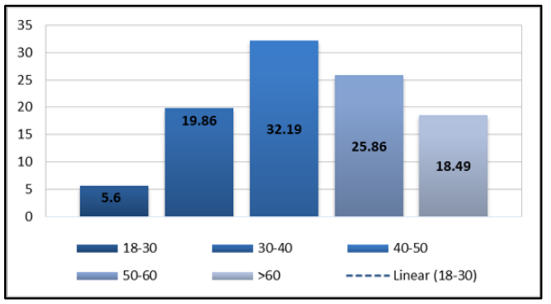

Figure 3: Age Distribution of Participants

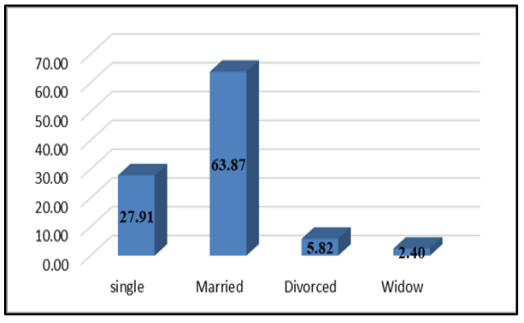

Figure 4: Marital Status of Respondents

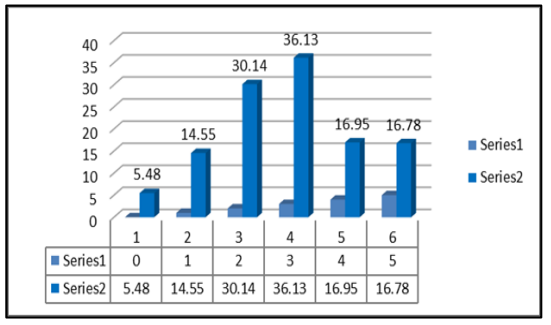

Figure 5: Respondent's Family Size (No. of Children)

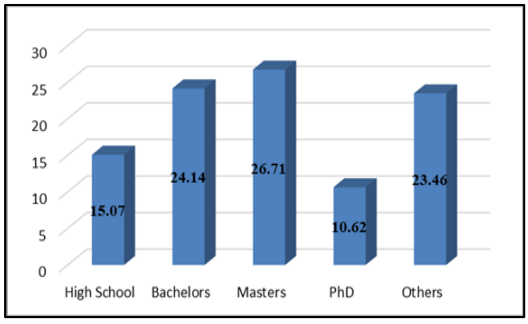

Figure 6: Education Level of Respondents

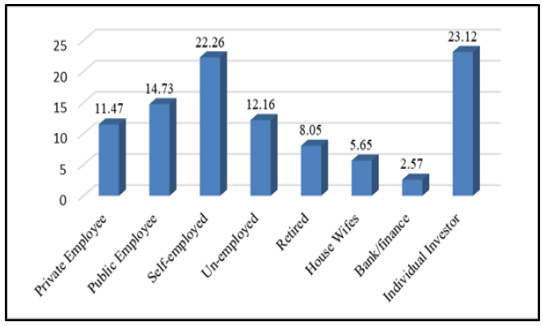

Figure 7: Respondent's Level of Employment

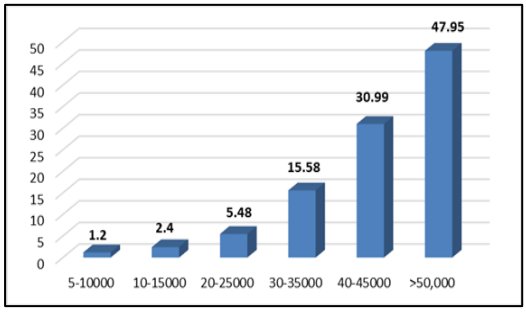

Figure 8: Respondents Annual Income

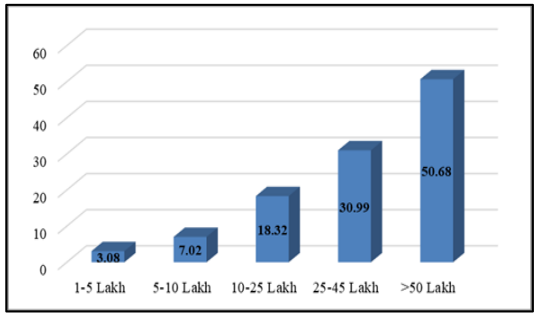

Figure 9: Respondent's Investment Level

Figures 2-9: Demographic Information of Survey Participants

4.2 Confirmatory Factor Analysis, Reliability, Adequacy and Validity

In the first stage, we employed an initial factor solution with KMO and Bartlett, s technique to test sample adequacy and factors matrix.

Table 1: Estimations of Overall Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
0.836	0.883	584

The outcomes shown in Table 1 reveal the overall reliability of items/constructs used to measure the effect of independent factors. The maximum value of Cronbach's alpha 0.836 posits that all the items are valid and consistent for further estimation and can be reproducible.

Table 2: Estimations of KMO and Bartlett Test

Kaiser-Meyer-Olkin Sampling Adequacy	0.8641	
Bartlett's Test of Sphericity χ2	44296.422 *	df=464

Notes: * represents the p-value of Bartlett's test of Sphericity is=0.01.

Table 2 exhibits the Kaiser-Myer-Olkin and Bartletts method results. Therefore, the value of Kaiser-Myer-Olkin measure of sampling adequacy was equal to "0.936" and "Bartletts- test-of-Sphericity" with chi-squared value (χ^2 =4862.861, DF=328, p=0.01) indicating the adequacy and accuracy of the estimated factors.

Table 3: Confirmatory Factor Analysis

Coding	Constructs/Scale Items	Standardized Factor Loadings [>0.5]	Cronbach' s Alpha (α)
1	**Socio-demographic Factors**	0.840	0.901
2	**Behavioral Factors**		0.890
BF1	I prefer to buy/sell assets on the…	0.776*	
BF2	I prefer to invest in local assets …	0.759*	
BF3	I consider the information from my close friend….	0.826*	
BF4	I consider the past performance of the assets…	0.693*	
BF5	I neglect investments in assets with low revenue records.	0.821*	
BF6	I purchase 'hot' assets that earned a higher return in the recent past...	0.814*	
BF7	I always utilize predictive analysis while making investment decisions.	0.763*	
3	**Social Factors**		0.900
SF1	I perceive that i am not happier than other people.	0.768*	
SF2	I perceive that an individual who does not trust people are good investor.	0.803*	
SF4	I prefer to get information from best friends or family useful for investment decision-making.	0.700*	
SF7	I consider buying assets if many "buy" orders by the inception of the trading period.	0.798*	
SF8	In case the total volume of trading is abnormally higher, I will enhance market securities/assets.	0.819*	
SF9	I will consider selling the stocks in case i notice multiple people leaving it.	0.790*	
SF10	Competency of the persona/individual has big shares in the firm.	0.811*	
SF11	Suggestions from professionals and popular stock traders.	0.780*	
4	**Psychological Factors**		0.892
PF1	Over-confidence Bias	0.734*	
PF2	Fear of Loss	0.681*	
PF3	Stress	0.860*	
PF4	Positive Attitude	0.674*	
PF5	Consultancy Effect	0.841*	
5	**Decisional Factors**		0.900
DF1	Accounting Information	0.765*	
DF2	Subjective/Personal	0.808*	
DF3	Risk Aversion	0.710*	
6	**Financial Awareness Factors**		0.859
a	**Acquirers Awareness**		0.862
FA1	Brokerage firms have been providing sufficient trading information?	0.706*	
FA2	Listed companies have been disclosing required information on time?	0.659*	
FA3	PSX/SECP has been providing sufficient market information?	0.674*	

FA4	Newspapers and magazines allotted sufficient space for financial/market information.	0.663*	
b	**Access to Information**		0.820
FA5	Electronic media has been providing valid financial and market information.	0.721*	
FA6	Do you think the current sources of information are sufficient?	0.711*	
FA7	Do you think the advertisement is necessary to create investor's/acquirer's awareness?	0.820*	
FA8	Do you think the existing brokerage firms are sufficient to meet the current/ market needs?	0.732*	
FA9	Do you think the stock market and its policies are sufficient to meet the firm's and investor's needs?	0.704 *	
7	**Marketing Factors**		0.882
MF1	Firm's marketing strategies influence my approach toward investment.	0.681*	
MF2	Return on investment from marketing is satisfactory.	0.712*	
MF3	Marketing competes with competitor's marketing strategies regarding assets.	0.722*	
MF4	Marketing strategies are satisfactory and unique.	0.686*	
8	**Political /Institutional Factors**		0.901
PLF1	Changes in tax incentives	0.735*	
PLF2	Changes in royalties	0.702*	
PLF3	Corruption premium	0.730*	
PLF4	Changes in legislation	0.806*	
PLF5	Political instability	0.791 *	
PLF6	Changes in the interest rate	0.848*	
9	**Economic Factors**		0.893
EF2	I would say that the firm that I dislike more will pay low returns on assets.	0.756*	
EF3	I would say that the economic situation of the economy directly affects stock prices in the stock market.	0.845 *	
EF4	I always examine the future economic situation of the economy before making investment decisions.	0.797 *	
EF5	I would say the favorable economic situation in the economy is the timing to invest in shares.	0.811 *	
EF6	All events influencing the global securities market conjointly impact domestic share value.	0.706*	
EF7	I would say that the expected gain on stocks by a firm with efficient performance...	0.733*	
10	**Ecological Factors**		0.916
EnvF1	Does Damage from natural disasters affect a firm's acquirer's value?	0.721*	
EnvF2	Risks of Climate change affect a firm's acquirer's value.	0.869 *	
EnvF3	Environmental damage affects a firm's acquirer's value.	0.795 *	
EnvF4	The firm's failure to climate change mitigation and adaptation affects the acquirer's value.	0.752 *	
EnvF5	Global warming affects the acquirer's assets value.	0.863*	
EnvF6	Hazardous waste by firms affects the acquirer's value.	0.821*	
EnvF7	The reduction of natural resources affects a firm's asset value.	0.899*	
EnvF8	Toxic substances in the environment affect the acquirer's value.	0.801*	
EnvF9	Eco-friendly production by firms affects the acquirer's value.	0.765*	
EnvF10	Eco-friendly Packaging of Products by firms affects the acquirer's value.	0.717*	
EnvF11	Environmental awareness and practices of firms affect the acquirer's value.	0.832*	
EnvF112	Realization of the consumer's effects of business processes on the planet affects acquirer's value.	0.772*	
EnvF13	The use of compostable packaging and solar energy by firms affects the acquirer's value.	0.698*	

Notes:*indicates p-value=0.01 for all the standardized factor loadings.

Therefore, to check the reliability of items Cronbach,s alpha (α) has been measured for all the constructs (total independent factors), so the value is (Cα=0.836) shown in Table 1. Hence, the individual measurement of factor loadings and Cronbach,s alpha for each component of independent factors in Table 3 indicates that the value of Cronbach,s α for demographic factors is (Cα= 0.901), for the behavioral characteristics the value is (Cα= 0.890), the Cronbach,s value for social factors is (Cα= 0.900). Moreover, the value for psychological factors is (Cα=0.892), the value for decisional factors is (Cα=0.900), and the value for financial awareness characteristics is (Cα=0.859). Furthermore, the value for marketing characteristics is (Cα= 0.820), and the value for political factors is (Cα=0.901). Finally, the estimated coefficient of Cronbach,s alpha for economic factors is (Cα=0.893) and for ecological factors is (Cα=0.916) respectively. Based on the reliability check mentioned above, the present study also analyzed the validity of the constructs shown in Table 4 exhibiting the overall reliability and accuracy of all the items used to measure the constructs. The summary outcomes of confirmatory factor analysis and validity of constructs shown in Table 3 and Table 4 also exhibit that the factor loadings of all constructs are >0.50 and meet the criteria of the threshold value which is (>0.70) Hair et al. (2019). The outcomes further indicate that the estimated values of Cronbach,s α are greater than (>0.70), signifying the overall reliability of all constructs and sub-constructs and fulfilling the criterion (Suki et al., 2023). Moreover, we can claim that all the items statistically fulfill the proposed adequacy criteria and can be employed in the formulated regression model for hypothesis testing.

Table 4: Validity of Constructs

Codings	Variables	CR	AVE
DFI	Socio-demographic Factors	0.822	0.536
BFI	Behavioral Factors	0.818	0.572
SFI	Social Factors	0.836	0.549
PFI	Psychological Factors	0.759	0.576
DFI	Decisional Factors	0.767	0.698
FAF	Financial Awareness Factors	0.868	0.669
MFI	Marketing Factors	0.764	0.554
PFI	Political Factors	0.843	0.682
EFI	Economic Factors	0.851	0.575
EnvFI	Ecological Factors	0.898	0.701

Notes: CR indicates reliability; AVE indicates average variance extracted; DFI-EFI is variable coding.

4.3 Analysis of Empirical Models

4.3.1 Regression Results of Independent Factors and Acquirer's Investment Efficiency

Table 5 exhibits the results of Model (1), which indicates that the total independent factors significantly influence the acquirer's return on investment. The findings show that the independent factors that are not directly controlled by firms and acquirers have a robust impact on the efficiency of asset acquisitions and support **H_1**. Moreover, table 5 also exhibits the outcomes of individual effect Models (3-12), which posits that the acquirer's efficiency is significantly and positively associated with each element of the independent factors. Suggesting that demographic factors have a direct impact on the acquirer's performance such as gender, investment decision-making differs among men and women. These findings support **H_{1a}**.

Moreover, the results indicate a significant association between Inv_{it} and behavioral factors. Suggesting that the investment efficiency of acquirers is influenced by their emotional behavior while making decisions (i.e., heuristics, overconfidence, risk aversion, regret/loss aversion, representativeness, availability bias, different perspectives and herding effect), etc. These results support **H_{1b}**.

The findings also report the significant impact of psychological and social factors on the asset buyer's efficiency. Further findings claim that the investment decision is significantly influenced by overconfidence, stress, mood swings, optimism, anger and fear of loss. We can argue that psychological factors also influence the behavior of acquirers. These results support **H_{1c}**. Whereas the social factors have a significant relationship with asset buyer's efficiency, the outcomes indicate that the acquirer's social interactions, exchanges, media and internet, opinion of friends, family, relatives and level of trust also affect their attitude towards investment decision-making and preferences. The social factors develop an attention escapade in acquirers which results in their investment choices. These results support **H_{1d}**.

Table 6 also represents a significant association between FAFI, DFI and Inv_{it}. The results posit that the financial awareness of acquirers affects their investment efficiency such as financial literacy, acquirer's information of firms and brokerage houses and access to financial information influence the acquirer's behavior towards investment efficiency and asset allocation. The more aware the acquirer will be, the more efficient will be the investment. These outcomes support **H_{1e}**.

Furthermore, the results posit that the decisional characteristics substantially impact the INV_{it} of asset buyers. The acquirer's decision-making depends on accounting information, personal intentions, neutral information, expert recommendations, information search and economic expectations. The outcomes support **H_{1f}**. The outcomes of Table 6 also show a significant association between marketing factors and Inv_{it}. Suggesting that the marketing strategies adopted by entities for competing with their competitors, return on investment from marketing and the disclosed information by marketing have a robust effect on the acquirer's return on investment. These findings support **H_{1g}**.

The results also exhibit a significant association between political factors and the acquirer's efficiency. Suggesting that the acquirer's investment choices are restricted /encouraged by political/institutional forces such as changes in taxes, legislations, royalties, corruption premium and political instability. These outcomes support **H_{1h}**. Moreover, the results indicate a significant impact of economic factors on the asset buyer's efficiency. The results accept **H_{1i}**.

Table 5: Regression results of IndFI and investment efficiency of acquirers

Models	Variables	Coef.	β	*t*	R^2	F
Total Effect of Independent Factors						
Model.1	TIndFI	0.019	0.745	(2.32)***	0.861	(1.674)*
Reverse Effect of INV_{it}						
Model.2	Inv_{it}	0.032	0.821	(4.29)**	0.892	(3.465)*
Individual Effect of all Independent Factors						
Model.3	DFI	0.065	0.631	(3.212)***	0.812	(6.323)*
Model.4	BFI	0.054	0.524	(5.450)*	0.830	(4.458)*
Model.5	PFI	0.049	0.733	(2.842)**	0.863	(755)**
Model.6	SFI	0.029	0.692	(3.142)*	0.901	(5.312)*
Model.7	FAF	0.069	0.710	(2.486)*	0.866	(5.623)***
Model.8	DFI	0.074	0.682	(2.115)**	0.799	(8.201)*
Model.9	MFI	0.035	0.646	(3.944)**	0.871	(4.898)*
Model.10	PFI	0.052	0.579	(3.361)**	0.835	(4.221)****
Model.11	EFI	0.021	0.612	(4.108)***	0.814	(4.820)**
Model.12	EnvFI	0.042	0.839	(8.232)**	0.898	(7.946)**

Notes: p-values (* =0.01, **=0.02, ***=0.03, ****=0.04, *****=0.05; TIndFI indicates total independent factors.

4.3.2 Changes in firm-based and sales-level drivers of inv_{it} for diversified acquirers under independent factors

Table 6 exhibits the results of two Models (13-14). The outcomes signify the variations in the components of the relative efficiency of investment (Δrel_eff) from the prior year of asset acquisition declarations (*Y-1*) to the years approaching the announcement (*Y+1*). In addition, the individual estimation of (Model.13) indicates that the variation in firm-based drivers of acquisition investment ($\Delta FInv_{it}$) is significantly determined by the changes in independent characteristics of corporate management and acquirers, Tobin's Q (firm's performance), diversity and size. Indicating that the favorable and unfavorable tendencies of TIndFI, the financial efficiency of firms, the diversity dimension of diversified acquirers and the acquirer's sales volume significantly affect the firm-level determinants of Inv_{it} in the corporate market. These outcomes are consistent with **H_3**. Table 6 also presents regression results for Model (14). The findings show changes in the "firm-level_sales-level" drivers of investment efficiency. Therefore overall findings exhibit that variations in independent factors significantly control and influence the shift in $\Delta FSBInv_{it}$. These outcomes are consistent with **H_4**.

Table 6: Results of Variations in Firm-Based & Sales-Based Drivers of Inv_{it} for Acquirers under IndFI

Firm-level				**Sales-based**			
Variables	**Model.13**			**Variables**	**Model.14**		
$\Delta FInv_{it}$	Coef.	S.E	t	$\Delta FSBInv_{it}$	Coef.	S.E	t
$IndFI_{it}$	0.036	0.014	(3.59)**	$IndFI_{it}$	0.042	0.027	(1.56)**
InverseQ	0.016	0.011	(1.51)*	InverseQ	0.073	0.036	(2.83)*
ΔDiversity	0.049	0.028	(2.57)*	ΔDiversity	0.056	0.022	(2.56)*
Δsize	0.041	0.022	(1.32)*	Δsize	0.072	0.035	(2.06)*****
β	0.492	0.029	(3.81)**	β	0.578	0.033	(1.71)*
R^2	0.76	AIC	4.26	R^2	0.84	AIC	1.51
ΔR^2	0.64	SC	4.32	ΔR^2	0.84	SIC	1.56
ΔF	(2.972)**	DW	1.420	ΔF	(3.241)***	DW	1.610

Notes: p-values (* =0.01, **=0.02, ***=0.03, ****=0.04, *****=0.05; AIC indicates Akaike information criterion, SIC indicates Schwarz information criterion.

4.3.3 2SLS Regression outcomes of the relation among TIndFI, change in Inv_{it}, and variations in Surplus Value of Asset Acquirers

Table 7 shows two-stage least square regression outcomes for Model (15). The outcomes explain the relation among TIndFI, change in Inv_{it}, and variations in surplus value bounding asset purchases. Our results posit that the changes in the surplus value of acquirers across acquisitions are significantly associated with the shift in the investment efficiency of acquirers having favorable independent forces with specific characteristics that generate higher returns on the asset buyer's value. Moreover, outcomes further indicate that well-governed companies having favorable TIndFI have better alignment of interest between managers and acquirers. Also, the effective use of TIndFI can effectively encourage managerial incentives and investment decision-making for the acquirer's value creation.

The estimated Model.15 has also been tested for "endogeneity issues" to diagnose the likelihood of similar factors that promote firms to acquire assets that have a strong influence on their investment value. We also explored whether the impact of TIndFI on Inv_{it} and company value carries through by restricting the differences between asset-buying firms and non-asset-buying firms. Hence the endogeneity diagnostics has similar results. Suggesting that there is no endogeneity issue in the estimated models. Furthermore, the estimation of (Model.15) indicates that any favorable/unfavorable tendency between the execution of TIndFI, the corporate performance of firms, the diversification strategy of acquirers, and the sales capacity of the acquiring shareholders significantly influence the company-based drivers of asset buyers efficiency in developing markets. These outcomes support **H_5**.

Table 7: Results of Variations in Surplus-Value of Asset Acquirers

Variables	**Model.15**		
ΔBEVit	Coef.	S.E	t
$\Delta F\hat{I}NV_{it}$	0.083	0.077	(10.7)*
$IndFI_{it}$	0.017	0.013	(2.97)*
DAgency	0.071	0.034	(1.47)*
ΔCAPEXit	0.082	0.042	(3.69)*
ΔOPI_{it}	0.018	0.029	(1.93)*****
InverseQ	0.059	0.044	(1.34)*
ΔMispricing	0.034	0.051	(4.61)*
Δsize	0.036	0.017	(2.12)****
β	0.994	0.031	(14.5)****
R^2	0.88	AIC	2.650
ΔR^2	0.88	SIC	2.320
ΔF	(32.05)***	DW	1.980

Notes: p-values (* =0.01, **=0.02, ***=0.03, ****=0.04, *****=0.05.

4.4 Robustness and Endogeneity Check

Hence to treat the anticipated endogeneity issue, we employed the instrument variable(IV) approach suggested by Budziński and Czajkowski (2022). Firstly, we added 2 instrument variables e.g., Firm-based TIndFI (FTIndFI) and Segment-based TIndFI (STIndFI), for controlled extrinsically obtained components of TIndFI. Moreover, in Table 8 such as 1st step of endogeneity analysis, the study statistically retreated (regressed) TIndFI on 2 instrument variables FTIndFI and STIndFI, and control variables (such as year effect, firm size, age, industry characteristics, mispricing, PI and inverse Q see the (model 13-15). Whereas, in the 2nd step, we regressed Inv_{it} on the estimated TIndFI and control variables. Specifically, we used four distinct techniques, (e.g., G2SLS, GMM, 2SLS, LIML) for the assessment of 2nd step contrarily in models (13-15). Thus, the 1st step findings exhibit that the standard coefficients (β,s) of instrumental variables added (FTIndFI & STIndFI) are positive and significant. In addition, the regression findings of the 2nd step indicate that the influence of TIndFI on acquisitions investment efficiency prevails significantly and positively, under random, fixed impacts as well as robust standard errors (RSE), indicating that there is no endogeneity in the formulated models results.

Table 8: Outcomes of Endogeneity Analysis of Model. (13-15)

	1st -Stage			2nd-Stage	
	OLS	**2SLS**	**G2SLS**	**LIML**	**GMM**
		(with Fixed effects)	*(with random effects)*		*(with Robust Standard Errors)*
Variables	**Model.(13)**	**Model.(14)**	**Model.(14)**	**Model.(15)**	**Model.(15)**
β	8.341	0.816	0.816	0.816	0.834
	(12.6)*	(4.82)**	(4.82)**	(4.82)**	(10.48)**
TIndFI		0.0321	0.0321	0.0321	0.0320
		(5.43)*	(5.43)*	(5.43)*	(5.43)*
FTIndFI	0.484				
	(16.44)*				
STIndFI	0.836				
	(48.22)**				
Agency	-0.0542	-0.083	-0.083	-0.083	-0.080
	(-6.21)*	(-2.89)**	(-2.89)**	(-2.89)**	(-4.96)**
CAPEX	0.0421	0.068	0.068	0.068	0.036
	(12.16)**	(3.64)*	(3.64)*	(3.64)*	(3.58)**
OPI	0.076	0.089	0.089	0.089	0.078
	(12.43)*	(6.86)*	(6.86)*	(6.86)*	(6.92)*
Diversity	0.0366	0.074	0.074	0.074	0.071
	(38.14)*	(5.74)*	(5.74)*	(5.74)*	(4.79)*
InverseQ	0.0842	0.421	0.421	0.421	0.426
	(19.64)***	(7.35)***	(7.35)***	(7.35)***	(7.25)**
Mispricing	-0.064	-0.046	-0.046	-0.046	-0.048
	(-8.48)*	(-4.28)*	(-4.28)*	(-4.28)*	(-4.36)*
Size	0.0814	0.044	0.044	0.044	0.048
	(16.21)**	(6.12)**	(6.12)**	(6.12)***	(8.16)**
R^2	0.898	0.828	0.828	0.828	0.856

Notes: p-values *_0.01, **_0.02, ***_0.03, ****_0.04, *****_0.05, FTIndFI: firm-based TIndFI, STIndFI: segment-level TIndFI.

5. Discussion

Investment efficiency of asset acquirers has been a crucial component of corporate finance and financial decision-making literature. The increase in the acquirer's investment efficiency is essential as it is the core driver of the company's financial sustainability and market performance. This study aims to extend the previous literature by exploring the independent factors as significant drivers of the investment efficiency of acquirer's. Referring to study results and proposed hypotheses, we can argue that the independent forces have mixed impacts, subject to favorable conditions they restrict the value-deterioration and discourage the empire-building of managers. On the other side, in case of unfavorable circumstances, the independent attributes adversely influence the performance of firms and the acquirer's returns on investment. Thus, the findings signify that the majority of acquirers rely on personal expertise, mental accounting, social

interactions and recommendations instead of emphasizing the existing market dynamics.

In this context, behavioral, psychological and other factors persuade acquirers to make decisions based on explicit information. Our findings indicate a negative but significant association between BFI, SFI, FAFI, DCFI, PLFI and EFI. The relationship indicates that behavioral biases, social pressure, financial awareness, decisional biases, political risk and economic factors have mixed influence on the acquirer's efficiency. They lead to behavioral errors, in contrast, positive behavior leads to rationality. Whereas, the lack of financial awareness drives inefficient decisions and investment choices. In the same way, decisional biases such as risk perception, personal needs, intentions and lack of financial literacy deteriorate the efficiency of value-based decisions of management and acquirers.

Furthermore, among all other factors demographic characteristics, psychological, decisional, marketing, political and ecological factors have a robust impact on the acquirer's investment preferences and allocation of capital. The same is the case with a firm's management, the independent factors influence the performance of corporate managers, their incentives regarding efficient capital allocation and the alignment of managerial and acquirer's interests. Henceforth, we can argue that political risk and economic uncertainty are interrelated and have a causal association. Both influence the decision-making and the acquirer's value. These findings moderately support the arguments of (Wang et al., 2018); (Alam et al., 2022) that independent factors strongly influence the investor's decision-making.

Moreover, the study results posit that the variations in company-level drivers of the acquirer's investment significantly influence investment efficiency and are determined by the changes in independent characteristics of corporate management and acquirers, supporting $\mathbf{H_3}$. In addition, the results show the variations in the sales-level drivers of the asset buyer's efficiency significantly affect acquisition efficiency, consistent with $\mathbf{H_4}$. These outcomes signify that industry attributes, diversity and diversification strategies have a pivotal role in creating excess value for acquirers on investment. These drivers are interconnected with each other. The increase or decrease causes successful/unsuccessful asset acquisitions. The synthesized findings emphasize that the independent factors directly relate to the subjectivity, objectivity and rationality of corporate players, which have a strong impact on the acquirer's value. Consequently, the favorable notion of independent factors and consideration is necessary for effective governance provisions and facilitation of the asset buyer's value-creation by decreasing value-depreciating incentives of managers and related risk aversion.

Furthermore, the outcomes also posit that the changes in the surplus value of acquirers across asset acquisitions are significantly associated with the shift in investment efficiency of acquirers having favorable independent factors with specific characteristics (i.e., demographic, behavioral, psychological, social, decisional, awareness-related, marketing, political, economic and environmental dimensions) leads to maximization of acquirer's efficiency, supporting $\mathbf{H_5}$**.** These outcomes signify that the well-governed companies having favorable TIndFI have

a better alignment of interest between managers and acquirers. Also, the effective use of TIndFI can effectively encourage managerial incentives and investment decision-making for the acquirer's value creation.

However, several studies individually assessed the impact of societal trust, ethnic diversity, government integrity and social responsibility on the underinvestment and investment efficiency in developed economies (i.e., Afriyie & Adza (2019); Fonseka et al. (2021); Zou et al.(2021); Ramesh & Athira (2022); Knetsch and Salzmann (2022). Few studies (Quaicoe and Eleke-Aboagye, 2021) and (Naveed and Taib, 2021) assessed the individual effects of psychology-related and societal biases on the decision choices of investors and firm performance. The main emphasis of existing studies was limited to specific attributes and sample size. The matter of concern was the sampling bias, variable bias and insufficient to address the subject matter such as the acquirer's investment instead of general investment. The existing state of work overlooked the collective role of all independent factors in the value-creation of acquisition investment. Still, there is a lack of research to address the collective impacts of independent characteristics on the acquirer's investment efficiency. Furthermore, there is scarce literature to explain and put forward a gripping framework to measure the cause-and-effect relationship between independent drivers and the acquirer's efficiency.

The present study is different from previous research on the basis of subject matter, direction of analysis, and novelty of findings; initially, prior studies focused on the association between social determinants and investment efficiency/ under-investment. Conversely, the current study focuses on the value-based assessment of the cause-and-effect relationship among independent factors and the investment efficiency of acquirers. Secondly, they focused on single-factor assessment in developed economies rather than aggregate assessment. The corporate scenario of developed economies is different from underdeveloped countries. They adopted a single-factor approach and sample bias which may not represent the total effect of all factors.

Contrarily, the sampling of the present study is focused on target respondents including 584 responses. Furthermore, some recent studies i.e., (Huang, 2022);(Ramesh and Athira, 2022); (Rustam and Chengxuan, 2022) assessed the social trust, ecological, social and sustainability governance factors, but they emphasized the signaling and stakeholder perspectives of firm value and investment efficiency. The aforementioned studies entirely overlooked the presence of all independent factors in determining the value of acquiring shareholders. However, based on prior knowledge, there is a scarcity of research to signify the value-based impact of independent factors on the acquirer's value.

Henceforth, there is limited research to address and introduce a novel framework to estimate the independent factors in the context of the asset buyer's value creation. The current study is novel and unique from the previous state-of-the-art work based on the proposed conceptual and empirical framework to estimate independent factors and their potential effect on the asset buyer's efficiency. Secondly, the present study contradicts prior literature for the reason that the acquirer's value

maximization is not restricted to external/internal and sustainability governance regimes only, the independent factors are also critical drivers of the asset buyer's investment efficiency in the capital market which remained untouched by researchers. Therefore, also the firm-based acquisition investment literature overlooked the valuable role of independent characteristics in the context of the acquirer's return and positive acquisitions.

The current study diverges from the abovementioned literature; firstly, the independent factors such as the cognitive, behavioral, social, political, economic and ecological determinants are divergent in financially sustainable developed countries compared to developing counterparts. Secondly, prior research emphasized selective individual sub-components such as social trust, government integrity, social responsibility and ethnic diversity rather than aggregate independent factors concerning investment efficiency of acquirers. So the single factor is not fully representative of the total independent factors. Thirdly, the acquisition investment/value creation of acquiring shareholders is different in developing and sustainable financial markets subjected to economic scenarios, policy implementation, sustainable governance practices, shareholders protection, acquisition mechanism and acquirer's return.

Relevant to theoretical reasoning, the current study used a single theory approach to justify the value-maximizing effects of independent factors on the acquisition investment of acquiring shareholders. Our research expands the individualized classical agency doctrine by incorporating independent factors as critical drivers of an acquirer's investment efficiency other than principal/agent-based internal and external governance components. In comparison, the study outcomes propose stakeholder's theory as a mediator to signify potential cause and effect association between independent factors, asset allocation mechanism and acquirer's investment efficiency. The theory endorses consideration of independent factors in the value creation of shareholders. To this end, the study findings negate classical agency doctrine that emphasizes an individualized governance mechanism and is inconsistent in justifying the independent factors in the context of the investment efficiency of acquisition. Relative to the internal control mechanism, the independent forces significantly influence the increase and decrease in asset buyer's value maximization. Corresponding to the sum and substance of the discussion as mentioned earlier, it can be claimed that the consideration of independent factors that are not directly controlled by firms plays a pivotal role in arbitrating efficient allocation of capital, decisions and the return of asset buyers.

6. Conclusion and Policy Implications

The outcomes of this study assert that the total independent factors (TIndFI) significantly influence the acquirer's investment efficiency, supporting H_1. Whereas individual assessment of TIndFI components (i.e., demographic, behavioral, psychological, social, decisional, awareness-related, marketing, political, economic and ecological dimensions) have a significant and statistically mixed influence on

the acquisition investment of acquirers. The above outcomes support the sub-hypothesis (*H_{1a}, H_{1b}, H_{1c}, $H_{1d,}$ H1e, H_{1f}, H_{1g}, H_{1h} and H_{1i} and H_{1j}*) refer to "Table 9 for the summarized hypothesis in Appendix". Also supports the stakeholder's doctrine which states that corporate entities create externalities that influence various parties, both intrinsic and extrinsic to the company. And extends stakeholders theory by providing a direction towards considering independent factors critical in determining the return on successful acquisition investment. Moreover, the study results posit that the shift in company-level drivers of the acquirer's investment is significantly determined by the changes in independent characteristics of corporate management and acquirers, supporting **H_3**. In addition, the results further specify the shifts in the company-based sales-level determinants of the acquirer's investment, signifying that industry attributes, diversity and diversification strategies have a pivotal role in creating excess value for the acquirer's investment, consistent with **H_4**. Furthermore, the outcomes also posit that the shifts in the surplus return of acquirers across asset acquisitions are significantly associated with the shift in the investment efficiency of acquirers having favorable independent forces and specific characteristics leading to enhanced efficiency of asset buyers, supporting **H_5.** These outcomes signify that the well-governed companies having favorable TIndFI have a better alignment of interest between managers and acquirers.

6.1 Theoretical implications of the study

The present study proposes multiple theoretical implications for the existing state of the artwork. Firstly, the novel addition of the current research is to engage in the analytical knowledge in this context that provides different insights for new research in corporate finance. Secondly, the study proposed a unique theoretical framework for estimating independent factors in the context of value maximization of acquirers that endorses a standardized qualitative and empirical foundation for the measurement of independent factors and their potential influences on firm-level acquisition investment. Thirdly, the present study extends the classical individualized agency theory by incorporating independent factors as core moderators of a firm's acquirer's value maximization other than principal/agent-based internal and external governance components. Fourthly, this study assessed that the favorable political, economic, marketing and environmental factors significantly increase the long-term value of the acquisitions. Thus the study findings broaden the implications of stakeholder's theory which provides a direction towards considering independent factors critical in determining return on successful acquisition investment. Finally, the present research is independent to empirically justify unique study findings in an extended way.

6.2 Policy Implications of Research

Contrary to theoretical insights, the current study proposes many policy suggestions that provide empirical directions for policy experts. Firstly, the present study provides analytical justifications and a framework for corporate entities and policymakers to determine the return on acquisition investment by considering independent factors. Secondly, from a broader perspective, the government may transform a healthy institutional setup that can be interlinked with internal and external corporate policy formulations and support a flexible approach towards independent factors regarding the value maximization of acquirers. Thirdly, the findings suggest that the majority of acquirers rely on personal expertise, mental accounting, social interactions and recommendations instead of emphasizing the existing market dynamics. Finally, the policymakers may address the favorable notion of independent factors for effective provisions and facilitation of asset buyer's value-creation by minimizing value-decreasing incentives of managers and related risk aversion.

Declarations

Ethical Approval: An ethical approval or consent to participate does not apply to this study. Consent for publication is also not relevant for the same reasons.

Consent to the Participate: Not Applicable

Consent to Publish: Not Applicable

Author contributions: Author contributions to the present paper are as follows: **Adeela Rustam**: Conceived and designed the framework; conceptualization; performed the formal analysis, methodology, analyzed and interpreted the data; funding acquisition, resources, software, wrote the paper original draft, review, revision and editing.

Gang Zeng: Contributed to resources, funding acquisition and supervision.

Ihsan Ullah: Contributed to conceptualization, Data curation, data analysis tools; Review; Validation, Analysis and Interpretation of the Data.

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