INFORMATION ASYMMETRY: A CONCEPTUAL REVIEW OF MEASUREMENT MODELS

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ABSTRACT

Measuring information asymmetry involves determining the knowledge imbalance between parties to a transaction and is an activity that is carried out basically byeconomists, financial analysts and researchers using various models and proxies that have to do with stock price, corporate disclosures and market behavior. This paper adopted conceptual review approach and reviewed measurement models of information asymmetry that have been employed in previous relevant empirical research works. The main source of data for the paper wasrelevant empirical research articles published in various Accounting and Finance journals from 2010 to 2025. And based on the conceptual review conducted, the paper concluded that majority of the measurement models of information asymmetry that have been used in previous relevant studies are suitable for developed and emerging markets and so, there can be some limitations while applying them in underdeveloped/frontier markets. Also, the models offer several specific benefits and none of them are without any limitation. Therefore, the paper suggested that investors, corporate firms, financial analysts, economists and future researchers should always take into account the type, nature and peculiarity of their markets, the benefits and limitations of each model before deciding on which to use while measuring the value of information asymmetry. The paper made conceptual and theoretical contribution to the literature on information asymmetry. Also, it made practical contribution by influencing the choice and application of measurement models by economists, investors, financial analysts and researchers.

Keywords: Information Asymmetry, Adverse Selection, Moral Hazard, Measurement Models, Perfect Market, Imperfect Market

1.0 Introduction

One of the key theoretical characteristics of a perfect market or perfect competition is the existence of perfect information, that is, a situation in which the numerous buyer and sellers in the market have equal access to and possession of relevant information about the identicalor homogeneous products in the market. This saves the market from all form of imperfections and inefficiencies especially information asymmetry (Quy-Toan Do, 2003; Hayes, 2019).

Information asymmetry occurs when market is imperfect, and it denotes a circumstance in which the sellers know more (than the buyers) about the

products been traded (Eid, 2015). In other words, information asymmetry means a situation in which there is imbalance of knowledge between two parties, like buyer and a seller, employer and employee, regulator and operator, borrower and lender etc. (Salhi, 2020). And thus, in such situation, one of the individuals to the transaction is more informed than the other (Zhang, 2024).

Existence of information asymmetry in markets (for instance, Stock Markets) creates not only adverse selection and moral hazards, but also imbalance of power in transactions,capital misallocation, reduced overall trust, increased risk and financing cost (Kazemi &Rahmani, 2013; Levi & Zhang, 2014; Asadbakhti&Malgharni, 2016; Zhang, 2024). These and other problems created by information asymmetry necessitate the need to measure the level of information asymmetry in the markets.

Measuring level of information asymmetry offers a number of benefits to buyers, sellers and other market participants (Bhargava & Chen, 2012; Shamsoddini et al. 2016, Decourt et al.2024). For instance, by measuring and knowing their level of information asymmetry, corporate firms can improve on their level of information disclosure thereby enjoying reduction in financing costs and improved performance (Bhargava & Chen, 2012; Kazemi & Rahmani, 2013; Asadbakhti&Malgharni ,2016; Khatali, 2020).

Moreover, investors benefits from measuring and knowing the level of information asymmetry as it enables them to make better investment decisions (Istrate, 2018; Aidoo, 2023; Ahmad, Hunjra& Taskin, 2023). Other benefits to be gained from measuring asymmetric information include mitigation of adverse selection, optimization of sales strategy and improved market liquidity. Thus, parties interested in the level of information asymmetry include a wide range of professionals, researchers, and market participants who are concerned with market efficiency, fairness, and risk management.

Measuring information asymmetry involves quantifying the knowledge imbalance between parties to a transaction and is an activity that is carried out basically byeconomists, financial analysts, investors and researchers using various models and proxies that have to do with stock price, corporate disclosures and market behavior. For instance, Financial Analyst employ analyst coverage and forecast dispersion to measure the extent to which information is unevenly distributed among different market participants (Decourt et al.2024).

Economists and Researchers use trading volume, bid-ask spreads and stock price movements to determine the existence of informed versus uninformed traders (Ferriani, 2010; Acheson, Coyle & Turner,2018). Moreover, Researchers look at corporate disclosures to measure how much more one party knows than the other. Also, investors primarily measure information asymmetry via analyst forecasts, market microstructure data and company financial disclosures (He et al. 2013). Hence, as Clarke and Shastri (2000) pointed out, models for measuring information asymmetry were

many and could be grouped into analysts forecast measures, investment opportunity measures and microstructures measures.

Previous research works on information asymmetry have focused mostly on assessing its impact on items like cost of capital, performance, value and capital structure (Petacchi, 2015;Asadbakhti&Malgharni, 2016; Fosu et al., 2016, Khatali, 2020; Li & Yang, 2023; Gao et al., 2026, Ayagi, 2026). And to the best of our knowledge, there has been scarcity of research works that specifically reviewed the measurement models of information asymmetry. This paper is an attempt to bridge this gap and thus, aimed at reviewing the measurement models as employed in published empirical studies on information asymmetry over fifteen year period (2010-2025).

The paper contributes to the conceptual and theoretical literature on information asymmetry, as it identified and reviewed various asymmetric information measurement models, their benefits, limitations and suitability for developed, emerging and frontier markets. Also, the paper made theoretical contribution by underpinning its arguments with asymmetric information theory which explains the information asymmetry in capital markets, its likely risks and thus, the need for its measurement. Moreover, the practical contribution of the paper comes from the way in which it will influence the choice and application of measurement models by economists, investors, financial analysts and researchers, as it clearly revealed the suitability of each model to various types of markets. Other sections of the paper cover literature review, methodology, conclusion and recommendation.

2.0 Literature Review

2.1 Conceptual Review

Information Asymmetry

IA is defined by Pettinger (2017)as a situation where there is imperfect knowledge between buyers and sellers in the market. It is a circumstance in which one party in a transaction has more or superior information compared to another (Bloomenthal, 2019). It is also defined as a situation where by one party to a transaction is better informed than the other (Gołembska, 2021;Bergh et al., 2019). Model of IA presupposes that at least one party to a transaction possesses some relevant information that the other party does not have. Aside from posing imbalance of power in a transaction, IA creates two types of risks or problems known as adverse selection and moral hazard.

Adverse selection as defined by Hayes (2019) refers to a situation where sellers are in possession of some relevant information about some aspects of product quality that buyers do not have. It is a situation where by two (or more) persons are about to agree on a trade, and one of them appears to possess some information that the other(s) do not have (Quy-Toan Do, 2003)**.** Mankiw (2011) defined adverse selection as the tendency for the mix of unobserved attributes to become undesirable from the standpoint of an uninformed party.Adverse selection poses risk in form of immoral behavior which takes

advantage of asymmetric information before a transaction takes place.

A good example of adverse selectionis a risk exposure that exists before money is lent or invested. Because, a company's managers sourcing funds in order to finance capital investment may capitalize on the asymmetric information and issue shares that are overpriced or overvalued at a given time. In this case, the less informed buyer who lacks some relevant information about the real value of the company may end up purchasing the overpriced shares and hence risking or losing his investment. Thus, adverse selection can be said to create a risk, likelihood or tendency that the seller may take advantage of IA and hide some relevant information about true quality or value of a given product.

Moral hazard on the other hand is regarded byQuy-Toan Do (2003)as a circumstance in which IA arises after an agreement is reached between parties to a given transaction. It is the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior (Mankiw, 2011 in Rymar, 2016). Moral hazard is normally analyzed in the framework or context of principal-agent problem whereby after signing the contract, the agent is likely to either take an action (hidden action) that is not observable by the principal or gather some relevant information about the environment that the principal cannot obtain. Thus, moral hazard as explained in Wikipedia (2017) instigates immoral behavior or risk that the agent may take advantage of the asymmetric information after the agreement and undertake an action that is not detectible and which may not be in the best interest of the principal.

Both adverse selection and moral hazard as components of IA were identified by Pettinger (2017) to be the source of problems or imperfections while borrowing or lending in the financial market as the borrower is better informed about his real financial state than the financier. The financier will have some challenges in appreciating the credit worthiness or the real financial status of the borrower. As a result, he will recompense himself for the adverse selection and moral hazard risks by charging higher rate. Pettinger (2017) therefore concluded that banking institutions for instance would not have to charge the risk premium, if the information was not asymmetric.

Measurement of Information Asymmetry

The following are some of the measurement models that this paper found to have been developed and used in previous empirical studies.

i. Probability of Private Informed Trades (PIN Variable)

This model was originally developed by Easley et al. (2002). PIN variable as defined by Ajward and Takehara (2010)is an unconditional probability of a randomly selected trades which originate from an informed traders. Thus, as used in the work, PIN variable is the ratio of expected informed order flow to the expected total order flow. It is computed as follows:

$$PIN = \frac{A\mu}{\alpha\mu + \varepsilon_b + \varepsilon_s}$$

Where:
α= probability that a private information event will occur in a given day
μ= order arrival rate based on private information
ε_b = arrival rate of uninformed buy orders
ε_s= arrival rate of uninformed sell orders

Yan and Zhang(2012) Zagaglia (2013), Farhad et al. (2020), Cepoi et al. (2023) are among the studies that employed PIN variable. Identification of adverse selection risk and applicability to various market conditions are some of the advantages of PIN variable over other measures of information asymmetry (Zagaglia, 2013; Farhad et al., 2020). However, the criticisms that The model is as follows:

the model suffered include Computational intensity and dependence on trade signing (Duarte & Young 2009; Yan & Zhang,2012; Farhad et al., 2020; Cepoi et al., 2023).

ii. Adjusted PIN

PIN variable was criticized by Duarte and Young (2009) as cited in Ajward and Takehara (2010)for being developed mainly on unusual trading which is based on private information. They further argued that the model is composed of two elements, i.e. The degree of asymmetric information and illiquidity, which has no correlation with the degree of information asymmetry of a given enterprise. Hence, they came up with adjusted PIN variable which according to them is more purified and could exactly measure the IA.

$$\text{Adjusted PIN} = \frac{\alpha[(1-\delta).\mu_b + \delta.\mu_s]}{\alpha[(1-\delta).\mu_b + \delta.\mu_s] + (\Delta_b + \Delta_s)\theta + \varepsilon_b + \varepsilon_s}$$

Where:
α= probability that a private information event will occur in a given day
μ= order arrival rate based on private information
ε_b = arrival rate of uninformed buy orders
ε_s= arrival rate of uninformed sell orders
δ = fraction of bad news in private information
Δ_b = uninformed investors'additional buy order arrival rates when symmetric order flow
shock event occurs
Δ_s = uninformed investors' additional sell order arrival rates when symmetric order flow
shock event occurs
θ = probability of symmetric order flow shocks

Ajward and Takehara (2010) revealedthatan increase in the Adjusted PIN variablesignifies an increase in the degree of information asymmetry. The model offers other benefits like refining how information asymmetry is measured, higher accuracy in measuring adverse selection and separation of information from liquidity shocks (Duarte & Young 2009). It is also suitable for both developed markets and emerging markets(Agudelo et al.,2015; Kuzmin &Boulatov, 2024). However,

despite being a modification to PIN variable, the model was criticized for significant computational challenges, failure to distinguish information types, model structural limitations and inability to fully capture modern information flow (Brennan et al., 2016; Ersan&Ghachem, 2025).

iii. Bid-Ask Spread

This is in other words called bid–offer spread. It is the difference between the ask price and bid price for a given share, or the amount by which the ask price exceeds the bid price of a share in the capital market. The ask price is the lowest price that a seller is willing to accept, while the bid price is the highest price that a buyer is willing to pay for a given share (Ganti, 2019). Bid-Ask Spread model was developed by Chiang and Vinkatesh (1986) and was used in Fu, Kraft and Zhang (2012) and Heydari, Hashemi and Shokrani (2016), Ayagi and Kurawa (2019)as follows:

$$Spr_{i,t} = \frac{Ap_{i,t} - Bp_{i,t}}{\frac{Ap_{i,t} + Bp_{i,t}}{2}}$$

Where:

$Spr_{i,t}$ = Bid-ask spread of firm i in the year (t)

$Ap_{i,t}$ = Average of the ask price of firm i in the year (t)

$Bp_{i,t}$ = Average of the bid price of firm i in the year (t)

The Bid-ask spread is expressed in absolute value and Fu, Kraft and Zhang (2012) explained that the higher the level of IA, the wider the spread. Employing the bid-ask spread as a proxy for information asymmetry is an important element of market microstructure theory, but the model was criticized for some key challenges and limitations such as measurement bias, valuation friction, reduced liquidity and volatility and data scarcity. For instance, there could be data scarcity in many markets especially those with automated or, conversely, highly infrequent trading. thus, obtaining consistent, real-time bid-ask data could be very difficult (Kwon, 2016) Furthermore, While a wider spread always shows higher adverse selection risk (informed trading), it is not a pure measure and is affected by multiple confounding factors like market volatility, adverse selection, inventory risk and stock split information (Ajina & Habib, 2017). Other research works that employed Bid-ask spread are Kazemi and Rahmani (2013), and Nurcholisah (2016).

iv. High-Low Spread Estimator

This model was developed by Corwin and Schultz (2012) and it is grounded on daily high and low stock prices and could also be used with intraday data (Cerqueira & Pereira, 2013).Ripamonti (2016)explained that it is based on two assumptions. First, the daily high stock prices are initiated by buyers, while low stock prices are initiated by sellers. Second, the volatility component of the high-to-low price ratio increases in proportion to the length of trading interval, whereas the component due to bid-ask spreads does not. The model is as follows:

$$S = \frac{2(e^{\alpha} - 1)}{1 + e^{\alpha}}$$

Where:
S= spread
e = mathematical constant (e basis) of x
α =

Xie (2013) explained that higher spread signifies more uncertainties in the capital market and higher asymmetric information among investors. High-Low Spread Estimator as a measure of information asymmetry has some advantages over other measures that includehigh accuracy, capturing information asymmetry, reduced estimation bias and efficiency across time intervals (Lin, 2014;Abdi & Ranaldo, 2017).Some of its limitations are confounding volatility with information asymmetry and significant estimation bias (Tremacoldi-Rossi & Irwin, 2022, Fałdziński et al., 2024).

v. Analysts' Earnings Forecast Dispersion and Error

These models were used in Xie, (2013) based on the arguments that analysts are famous information intermediates in the capital markets who search for relevant information from public and private sources. Their forecast dispersion and error are forward-looking and comprehensive measures of IA; hence, they were employed in previous studies such as Krishnaswami and Subramaniam (1999) and Thomas (2002). Besides, Ohlson (2001) and Bryan and Tiras (2007) as cited in Xie (2013) confirmed that financial analysts forecast not only mirrors or reflect the information delivered by accounting fundamentals, but also contain other relevant information about future earnings of a given firm.

As in Athanassakos and Kalimipalli(2003), Xie (2013) defined Forecast dispersion asdisagreement among analysts regarding expected earnings per share (EPS) of a given enterprise. It is a forward looking or progressive variable that captures analysts' anticipation of the firm's future performance. Analysts' Earnings forecast error on the other hand refers to the difference between realized earnings and estimated earnings underlying the stock price of a firm (Danielson et al., 2013). Xie (2013) argued that High dispersion signifies low consensus among analysts' forecasts, and is a signal of low transparency of a firm. Therefore, Firms with higher degree of IA are presumed to have higher forecast dispersion and error.

Forecast Dispersion = (standard deviation of the financial analysts' earnings forecasts/ stock price at fiscal year-end) *-1

Forecast Error = (absolute earnings forecast error i.e. actual-median forecast/stockprice at the fiscal year-end)*-1

Analysts' earnings forecast dispersion and error as measures of information asymmetry are suitable for developed markets (Wang & Chou, 2014). Their limitations includemanagement manipulation, limited ability to capture uncertainty and alternative explanations (Papakroni, 2013; Brightbill, 2024)

vi. Volatility of Daily Stock Returns

This was alternatively called by Xie (2013) as the market-adjusted residual volatility of the daily stock returns. The measure was employed based on the notion that higher volatility in stock

returns and stock price spread is an indication of more uncertainties in the market and higher level of IA among investors or providers of capital. Thus, as a measure of IA, Xie (2013) quantified the Volatility of Daily Stock Returns as follows:

a. Regress a firm's daily stock returns on market daily returns and obtain its residuals for each year.
b. Determine the volatility of daily stock returns which is the standard deviation of the residuals

As a measure of information asymmetry Volatility of Daily Stock Returns is suitable for developed and emerging Markets (Muguto&Muzindutsi, 2022). It gives its users benefits like capturing informed trading intensity, provision of better forecasting, high-frequency applicability and reflection of leverage effect (Bhowmik & Wang, 2020).

vii. Information Asymmetry Index

This was developed by Decourt et al. (2024). The model captures analysts' perception about the level of corporate firms' disclosure and information asymmetry. It utilized market and firms' specific proxies that reflect analysts' perception of the level of information asymmetry of companies. It also involves construction of an algorithm generated from Elo ratings and takes into account the perception of analysts that make choose between two corporate firms on the basis of their information asymmetric level. As pointed out by Decourt et al. (2024), Information asymmetry index could be applied in both developed and emerging Markets and might give some advantages over other measures in terms of market-based perspective, unique methodological approach, high association with key proxies.

viii. Johnson and So (2018) Multimarket Measure

Johnson and So (2018) developed Multimarket information asymmetry (MIA) and termed it a 'simple multimarket measure of information asymmetry'. MIA is a measure of information asymmetry developed from unsigned daily trading volumes across both options and equity markets. The model premised that informed traders often decide to trade in options rather than equity markets as a result of higher leverage, especially when they have strong signals. The model focuses on how trades are scattered across equity and option markets and it is based on a study of informed trade in a multimarket setting and relies mostly on volume totals.

MIA was designed to be simple to compute. Because, it requires no complex structural modeling or estimation, instead, it focuses on observed volume data and event study utility. Also, it identifies informed traders and detects shocks. Moreover, it has edge over several other measures of information, because, it has high-frequency, robust performance, predictive power, and (johnson&So, 2018)

ix. Amihud's (2002) Liquidity Measure

This model measures illiquidity that is determined as a daily ration of absolute

stock returns to its dollar volume. Amihud (2002) argued that the measurement can be interpreted as the daily price response associated with one dollar of trading volume and hence serving as a measure of price impact. The model demands only daily data on return and volume to calculate and can be calculated for longer time period (Ødegaard, 2018). Amihud (2002) Liquidity Measure was employed by Derrien et al. (2014) in a study of 824 USA publicly traded firms.

Some of the advantages of Amihud (2002) Liquidity Measure according to Armitage et al. (2014) and Ødegaard (2018)are the ability to capture trading volume for a stock and being simple to construct. However, it has been criticized by Kim & Kim (2023) for being size bias andasymmetry in returns.

x. Price Non-Synchronization (PNSY)

PNSY was popularized by Kelly (2014). It measures the extent to which a stock's price changes are caused by firm-specific, idiosyncratic information instead of broad market trends. It quantifies how little a stock's returns move along with the total market or industry, indicating the level of idiosyncratic information not captured by market-wide movements. When stock price synchronicity is at a very low level (that is, non-synchronization is high), it usually shows that company-specific information is being absorbed, which may indicate a higher, yet more turbulent, flow of information to informed investors.

Price Non-Synchronization (PNSY) is often expressed as:

$1\text{-}R^2$

R^2 is obtained by regressing the stock returns on the market returns (Muslim & Setiawan, 2021). PNSY was used in Muslim and Setiawan (2021) as a measure of information asymmetry. Kelly (2014) in Muslim and Setiawan (2021) argued that low R^2 indicates poor quality of information environment and high degree of information asymmetry as well.

xi. The Minimal Question Subset (MQS)

MQS was used in (Salhi, 2020) to measure the extent of information gap (asymmetry).It involves subset of questions, whose answers can provide all the information needed in a given situation.MQS serves as alogic-based, axiomatic approach that quantifies the minimum information needed to bridge the gap between two parties in a given transaction.It identifies the smallest set of questions required to minimize an information imbalance, accounting for the fact that answering certain questions can make others redundant. The size or complexity of the MQS is employed in measuring the intensity of extent of asymmetric information, that is, a larger, more complex MQS suggests a greater level of asymmetry. MQS is applicable in both developed and emerging Markets. Moreover, it identifies minimal required information, allows quantifiable comparisons and reduces irrelevant data (Salhi, 2020).

xii. Ratio of Zero and Missing Return Days to Total Trading Days

This is a liquidity-based measure for quantifying information asymmetry in which higher value of the proxy suggests lower liquidity and increased information gaps. Ratio of zero and missing return days focuses on firm-specific non-disclosure, acting alongside bid-ask spreads or Amihud (2002) model to identify increased, or "noisy," trading environments. The model is employed alongside analyst coverage changes to assess information asymmetry's impact on cost of debt (Kelly & Ljungqvist, 2012).

Frequency of missing data or returns usually implies that informed traders are not trading or information is not being factored into prices, showing high information asymmetry. A higher ratio suggests that the stock is less liquid and is usually linked with a higher cost of borrowing or, as in the case of analyst coverage, higher credit events. The measure was used in Derrien et al. (2016).

xiii. The Magnitude of Earnings Announcement Surprises

Earnings surprises can be seen the difference between realized earnings and the median of the latest prevailing analyst forecasts. The magnitude of earnings announcement surprises is used as an effective proxy for quantifying information asymmetry between company's insiders and external investors (Derrien et al., 2014). Large and unexpected deviations from analyst forecasts generally suggest a wider, pre-existing gap in information, leading to higher adverse selection costs (bid-ask spreads) for uninformed traders. A higher magnitude of surprise (the absolute value of the difference) implies that market participants' prior beliefs (analyst forecasts) were far from reality, suggesting that informed traders likely held a significant informational advantage over the public prior to the announcement. This measure was used in Derrien et al. (2014).

xiv. Volatility in Market Reactions

Volatility in market reactions, especially increased bid-ask spreads and options suggests volatility and hence, serves as a measure of information asymmetry around earnings announcements. Asymmetry, or the gap between informed and uninformed investors, usually arises before anearnings announcements as a result of private information trading, then drops afterwards as the information reaches public. Increased volatility, especially in option prices (implied volatility spread), implies that informed traders are active before the announcement, which assist in accelerating the market's response to the new information, sometimes reducing under-reaction (Lei, Wang & Yan, 2020; Kim et al., 2024). The approach enables investors and researchers to understand the extent of insider information and the speed at which public information is factored into the market. Volatility in market reactions as a measure of information asymmetry was used in Derrien et al. (2014).

xv. Trading Volume Coefficient of Variation (VCV)

VCV is a financial metric that is used by analysts to measure information asymmetry. It is computed as the ratio of the standard deviation of trading volume to its mean. A higher VCV indicates

greater informed trading, often found in smaller, less liquid, or riskier firms. VCV is considered as very effective measure, as it increases with the proportion of informed trading. Trading VCV serves as a critical indicator of information asymmetry, as informed investors with private information generate abnormal volume while attempting to profit, causing adverse selection problems for uninformed investors.

VCV is usually higher for smaller, younger firms with low analyst coverage, high volatility, and low liquidity. Lof and Van Bommel (2023) employed VCV in the study of cross-section of US stocks. They obtained VCV from daily observations of trading volume and produced convincing evidence supporting the hypothesis that VCV indicates information asymmetry. The model is suitable for developed and emerging markets and benefits users for being empirically tractable and sensitive, independent from volume surges, unitless and scale-invariant (Lof & van Bommel, 2023)

2.2 Theoretical Review

Theory of Asymmetric Information was developed by Akerlof (1970). It proposes that uneven access to information in certain economic transactions disrupt the normal market for the exchange of goods and services. Asymmetric information theory is termed as deviation from perfect information and explains a situation in which two parties (corporate firms borrowing to finance investment project and lenders) possess uneven, unequal or disproportionate information about a given transaction. This imperfect knowledge, according to the theory, brings about imbalance of power between the parties and further creates information asymmetric problems/risks such as adverse selection and moral hazards.

Verdi (2006) and Biddel et al. (2009) further explained how presence of IA in the capital market ignites the adverse selection and moral hazard risks. Using adverse selection model, Biddel et al. (2009) explained the likelihood of managers to capitalize on the level of IA and issue overpriced shares in order to raise excess capital that might be used in financing unprofitable investment. Xie (2013) also explained that existence of IA in the capital market worsens adverse selection problem/risk.

On moral hazards risk, information asymmetric theory can be said to support the proposition of agency model, since, the presence of IA itself can be linked to the agency relationship between managers and investors. Thus, the argument of information asymmetric theory on moral hazards risks is in consonance with moral hazards model of agency theory. On this also, Verdi (2006) attributed the moral hazards risk to the level of IA between managers and shareholders.

3.0 Methodology

As the main aim of this paper is to review the measurement models of information asymmetry, it adoptedconceptual review approach in

order to gain a deeper understanding of the existing models and rationale behind using them as measures of information asymmetry. Relevant empirical research articles published in various Accounting and Finance journals from 2010 to 2025 wereused as the main source of data for the study.The main inclusion criteria used is that the articles must have information asymmetry in or as part of their title and must have clearly used measurement model(s) of information asymmetry.

4.0 Conclusion

Based on the conceptual review conducted in the previous section, this paper concluded that majority of the measurement models of information asymmetry that have been used in previous relevant studies are suitable for developed and emerging markets and so, there can be some limitations while applying them in underdeveloped/frontier markets. The models offer several specific benefits and none of them are without any limitation. Therefore, this paper suggested that investors, corporate firms, financial analysts and future researchers should always take into account the nature and peculiarity of their markets, the benefits and limitations of each model before deciding on which model to use while measuring the value of information asymmetry.

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